Marketing and Communication in the digital age: AI, social media, and new narratives

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Prologue

Marketing and communication have always been disciplines in constant evolution, reflecting changes in society, technology, and the ways humans interact. From printed advertisements in early newspapers to the television revolution and, more recently, the rise of the Internet, each technological advance has transformed how brands and companies connect with their audiences. However, at no other time has the transformation been as rapid and profound as it is today, with the emergence of artificial intelligence (AI), social media, and the digitalisation of human interactions.

In this context, marketing and communication have not only changed in terms of tools and platforms but have also undergone a radical reconfiguration in their fundamental principles. The advent of AI has introduced new paradigms in content creation, data analysis, and process automation, enabling brands to better understand their audiences and deliver increasingly personalised and effective messages. Social media, in turn, has transformed consumers into content creators and redistributed the power of communication, creating an ecosystem where companies no longer dictate the message unidirectionally but must engage in constant dialogue with their communities.

This book explores precisely this new scenario, where the convergence of technology and communication is redefining business strategies and the relationship between brands and consumers. From an in-depth analysis of the impact of AI on corporate communication to a detailed study of best practices in social media, each chapter offers an updated and critical perspective on the challenges and opportunities faced by professionals in the sector.

Artificial intelligence is undoubtedly one of the key drivers of this revolution. Its applications in marketing include content automation, advanced audience segmentation, campaign optimisation, and the creation of chatbots capable of interacting with customers in real-time. This has allowed companies to become more efficient and adapt quickly to consumer trends and preferences. However, it has also sparked significant debates about the ethics of AI usage, the role of humans in the creative process, and challenges related to privacy and the handling of personal data.

Social media has revolutionised how brands build their image and engage with their audiences. Platforms like Instagram, TikTok, Facebook, Twitter, and LinkedIn have redefined the concept of influencer marketing, allowing any user to become a brand ambassador. Virality, real-time interaction, and the ability to build communities have made social media a fundamental communication channel for any marketing strategy. However, these same tools also present challenges, such as managing reputational crises, controlling misinformation, and the need to maintain constant authenticity in a world saturated with content.

This book also addresses how brands are using innovative narratives to connect with their audiences. In the digital age, storytelling has evolved, combining visual, interactive, and emotional elements to create a deeper impact on consumers. Personalising messages, using immersive experiences, and incorporating short-form audiovisual formats have become key strategies to capture attention in an environment of fleeting and ephemeral information.

The research and analysis presented in this book are based on recent studies, concrete data, and success stories of companies that have adapted to this new era. Thus, readers will be able to obtain practical tools and applicable knowledge to develop effective strategies in their own marketing and communication projects.

The impact of digitalisation is not limited to marketing and communication but is also reshaping the role of consumers. Today, users not only receive advertising messages but also create, modify, and share them, actively participating in building a brand's image. This new ecosystem requires companies to develop more flexible and adaptable strategies, based on constant interaction and the capacity for immediate response.

Furthermore, it is essential to understand the role of personalisation in modern communication. Thanks to AI and big data, brands can analyse their audiences' behaviour in real-time and offer personalised messages that align with their interests and needs. This not only enhances the user experience but also increases the effectiveness of advertising campaigns.

On the other hand, technological evolution also raises questions about the future of marketing and communication. Where are we heading? What will be the next innovations that will redefine the industry? How can professionals prepare for a constantly changing future? These questions will be addressed throughout this book, providing a comprehensive view of the challenges and opportunities that lie ahead.

In short, "Marketing and Communication in the Digital Age: AI, Social Media, and New Narratives" is an essential guide to understanding the digital revolution in the world of communication and marketing. Through a detailed and rigorous approach, this book offers a complete view of the current landscape and the future that awaits us in this constantly transforming discipline.

It is time to explore the impact of artificial intelligence, analyse the power of social media, and discover how new narratives are redefining communication in the digital age. Welcome to this fascinating journey through the marketing and communication of the future!

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Memory, Gender and English Language Learning: A Quasi-experimental Study

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Introduction

Learning through digital or mobile applications has become a fundamental tool for personal and professional development in today's digital era. This method, known as *m-learning* or mobile learning, offers numerous advantages and is transforming the way we acquire knowledge (Sung et al., 2016). One of the most prominent features of mobile learning is its accessibility. It allows users to access educational resources from anywhere and at any time, as long as they have a mobile device and internet connection. It also offers flexibility, since students can learn at their own pace, adapting their studies to their schedules and personal needs. Personalization is another important advantage, as many applications offer learning paths adapted to the level and style of each user, which improves learning efficiency (Dabbagh and Kitsantas, 2012). Controversy regarding mobile apps for language learning, according to Elaish et al. (2017), appears due to challenges related to quality, usability, and lack of human feedback.

This current study aims to investigate the relationship between memory, gender and learning English as a foreign language using mobile applications.

The use of mobile applications for learning has multiple benefits. The interactivity offered by multimedia elements and gamification makes the learning process more engaging and motivating (Zainuddin et al., 2020). In addition, the *just-in-time* format allows learning at the precise moment when the information is needed, which increases efficiency (Crompton & Burke, 2018). It is also important to mention cost-effectiveness; many resources are free or have a lower cost compared to traditional methods (Ally & Prieto-Blázquez, 2014). Studies have shown that regular use of platforms such as Khan Academy can increase students' grades significantly (Murphy et al., 2014). There are several apps that have demonstrated the potential of mobile learning. Duolingo, for example, has helped more than 500 million people learn languages through a gamified approach (Vesselinov & Grego, 2012). Khan Academy offers free online lessons, reaching over 100 million users in 190 countries (Murphy et al., 2014). LinkedIn Learning provides courses to improve professional skills, all accessible from mobile devices (Dabbagh & Kitsantas, 2012).

The impact of mobile learning extends to both formal education and professional development. In education, it has been observed that a high percentage of students using learning apps report higher satisfaction compared to traditional methods (Zainuddin et al., 2020). In the professional environment, companies such as Deloitte have implemented mobile training platforms, leading to a significant increase in participation in professional development programs (Pimmer et al., 2018). In summary, learning through digital or mobile apps is not only redefining education, but also empowering users to meet the challenges of today's world (Crompton & Burke, 2018). With their accessibility and interactivity, these tools offer unprecedented opportunities to acquire essential skills in a dynamic and entertaining way, preparing individuals to succeed in an increasingly digitized environment (Zainuddin et al., 2020).

Current research on the characterization of the learning/acquisition procedures of an additional language (hereinafter LE/L2) increasingly takes into account the cognitive and affective factors of the subject (Lozano, 2020; Martín, 2001; Méndez-Santos and Llopis, 2021; Murillo-Reyes, 2020; Rodríguez el al., 2020). This leads us to take into account not only the teaching methodology employed, but also to characterize the learning/acquisition processes of an LE/L2 according to the functioning of the intrinsic mental mechanisms of the individual, exposed to the different communicative interactions (Govea Piña and Sánchez, 2006; Martínez Agudo, 2003; Rincón et al., 2010).

At this point, the base language and the target language are subject to relationships and connections such as transfers and interferences (Silva-Corvalán and Enrique-Arias, 2017; Spisiakova, 2014). This mental functioning has been analyzed from several perspectives, either from an approach intrinsic to the subject (Fernández, 1999) or extrinsic (Corbacho-Sánchez, 2003). Two of the constructs observed in these procedures are attitude and memory.

To understand LE/L2 learning/acquisition, it is essential to characterize memory in its dimensions and its relationship to attitude. In addition, it is necessary to understand how the L1 works and how memory is connected to the LE/L2. The complexity of memory requires studying it from different perspectives (Ballesteros, 199) in relation to the language, whether it is L1, LE/L2 or L3 (Fessi, 2014). It is vital to consider memory as a factor related to the cognitive and affective dimensions of the individual, linking memory with the attitude. This study focuses on university informants of Spanish language as L1, as these dimensions converge in the construct of attitudes.

From a mentalistic perspective (Chinellato, 2015), attitude is defined as a construct that organizes beliefs. In social sciences, it is understood as an enduring organization of beliefs that influences behavior towards an object or situation, being also a hypothetical construct and a manifestation of conscious experience (Aigneren, 2008). Aigneren (2008) distinguishes between attitudes and beliefs, since attitude implies believing in something plausible, being hierarchically organized in value systems. To understand the functioning of an L1 and L2 in LE/L2 learning, it is essential to analyze the subject's attitude, considering how the cognitive, affective and behavioral components of the attitude construct intercede and influence the process.

The controversy about attitude lies in that attitudes are complex constructs that can be understood across multiple perspectives, such as the duality between explicit and implicit attitudes (Bar-Anan and Vianello, 2018), causal networks of evaluative reactions (Delege et al., 2016), associative and propositional processes (Gawronoski and Bodanhousen , 2007), and the influence of accessible beliefs on memory (Ajzen, and Fishbein, 2000), all of which influence behavior and may vary according to context and belief structure.

Behaviorism, cognitivism and attitude

From psychology, the concept of attitude has been explored from two contrasting approaches. Behaviorism, proposed by Skinner (1953) and considered anti-mentalist by Richelle (1992), equates behavior and mental processes, distinguishing between methodological behaviorism (focused on the observable) and radical behaviorism (which makes the mental and the behavioral indistinguishable). This approach is applied to language learning (LE/L2). In contrast, cognitivism holds that the mind structures reality, defining four approaches: methodological, epistemological, ethical and institutional (Richelle, 1992).

Although both approaches seem antagonistic, there are combinations, such as ethical cognitivism, and both view learning as a mechanistic process (Leiva, 2005). Advances in cognitive psychology have revealed mental processes and constructs, such as memory, that have enriched language teaching (Ashcroft et al., 2018; Christiner et al., 2023; Honarzad and Soyoof, 2023). Organismic and structuralist theories have also been integrated, promoting an active understanding of learning (Pozo, 1997).

Current research analyzes mother tongue (L1) and foreign language (LE/L2) according to these theories (Brieño, 2013; Escobar, 2001; Rosas & Sanchez, 2005; Soto & El-Madkouri, 2005). This research focuses on the relationship between memory and attitude in language learning, considering Spanish language as L1 and English as L2. Attitude is defined as a construct comprising cognitive, behavioral and affective components, allowing the analysis of psychological factors and variables such as motivation.

The concept of attitude has also been defined in various ways, highlighting psychological (Ajzen, 2001) and socio-anthropological (Allport, 1935) approaches. The psychological dimension considers that attitude is based on several components. Traditionally, it was believed that the cognitive and affective components were the basis of the behavioral one, but now continuous feedback between them is recognized, suggesting a dynamic in attitudes. This implies that the subject develops behaviors towards himself and his environment, where the mentalistic perspective prioritizes the internal component in the management of external stimuli. From social psychology, attitude is related to social representations and the theory of the collective unconscious. Attitudes, by developing value schemes (Parales-Quenza and Vizcaíno-Gutiérrez, 2007), predispose to specific behaviors (Tuncalp and Jagdish, 1975), thus justifying the constant interaction between components.

Nowadays, the absolutist approaches led by the behaviorist and mentalistic currents have been amalgamated, leading us towards a mixed perspective in research (Eagly and Chaiken, 1995, 1998; Farr, 1994; Fazio, 1986; Fishbein and Ajzen, 1975; Fraser, 1994; Moliner and Tafani, 1997; Petty and Cacioppo, 1981). According to Chinellato (2015), the mentalistic approach has prevailed, given that it allows investigating not only behavior in the face of stimuli, but also how the individual internalizes such information according to his or her mental schemas and values, which are subjective in nature. This approach resonates with the individual and community worldview, nourished by socio-historical and cultural information.

Fabrigar et al. (2005) argue that mind and experience are interdependent, implying that the cognitive component is linked to the affective component, affecting the evaluative assessment of experiences. This feedback is reflected in behavior, justifying the dynamic component of the attitudinal construct. Furthermore, the affective component, together with the cognitive (Spychala, 2015), influences attitudinal variables such as motivation, impacting linguistic interaction processes. Therefore, language and communication are constant reflections of individual and collective attitudes, affecting linguistic interaction and language learning, which are intrinsically related to memory.

Memory

As a construct inherent to attitude from a cognitive perspective, memory constitutes an indispensable factor in shaping attitudes. This has been extrapolated to creativity and imagination (Sant'Anna, 2021). Thus, at present, the main research focuses either on a causalist perspective (Martin and Deutscher, 1966) or on a simulationist approach (Bernecker, 2010; Michaelian in *Against discontinuism* and *Mental time travel* 2016a). From both perspectives, attitude and memory are inherent constructs in any linguistic interaction process. However, to state this idea clearly, a summary of the state of the art is made, from which the starting hypothesis is formulated.

The first studies on memory with experimental scientific methodology date back to Ebbinghaus (2013), who focused on the memorization of syllables. Later, Bartlett (1932) introduced the concept of schema, as knowledge stored from experience and based on mental representations. G. Miller demonstrated that short-term memory can store five to seven components, using the unit "chunk", a simple unit of information. Thus, human beings construct memories by selecting, structuring and representing information. Today, it is recognized that memory encompasses systems, processes and levels of analysis, thanks to the multistorey theory of Atkinson and Shiffrin (1968), which distinguishes between sensory, short-term and long-term memory.

Sensory memory makes it possible to recognize and label the physical peculiarities pertaining to stimuli. Through this type of memory, perceptions and sensations are recorded. Short-term memory makes it possible to store and retain information in the present moment. As will be seen, this type of memory is fundamental for the so-called working memory. Long-term memory preserves the concepts and memories we have about the world and reality.

According to Atkinson and Shiffrin (1968), the three types of memory are interrelated. Thus, data have their input through the senses. This leads us to consider, within sensory memory, echoic, iconic, haptic, gustatory and olfactory memory.

As for the short-term memory, it stores the data referred to the sensory memory. It analyzes and organizes the information transferred from the sensory memory from which the experience is interpreted. Ultimately, this information can be transferred to long-term memory. The data retained in short-term memory are mostly visual (iconic versatility) and acoustic (echoic versatility). Semantic information can also be part of this, although to a lesser extent than the other types.

Short-term memory remembers no more than seven *chunks* simultaneously in a period of concentrated attention. These units of information constitute memories that can be altered by experience. The retention interval of such information is around twenty seconds, although it can be prolonged by patterns of interpretation and organization. This type of memory has also been identified with the so-called working memory, which integrates verbal and spatial information and is closely related to the processes of attention and concentration. By means of this type of memory, the individual can handle various stimuli simultaneously.

In reference to long-term memory, this contains data linked to the physical world, culture, one's own experience, language and meaning. This storage of language allows for the revision, discursive organization and relating of information. This type of memory is, in principle, unlimited. However, disorganized information is also susceptible to being lost, distorted and forgotten. This means that the duration interval of information storage does not have a fixed pattern.

Thus, given the complexity of long-term memory, different patterns of its consideration are currently distinguished. In this characterization, procedural and declarative memory stand out.

Declarative memory, also called conscious knowledge, stores the data and contents that constitute an individual's knowledge. This content can be expressed both in thought and verbally. It is an explicit, intentional type of memory.

Procedural memory, also called automatic knowledge, stores skills and abilities. It does not deal with data, as is the case with declarative memory, but with ways of proceeding. It is a type of implicit memory, of an incidental nature.

On the other hand, some researchers, such as Tulving (1985), highlight other dimensions of long-term memory: episodic and semantic. Episodic memory stores data from sensory perception. This leads us not only to remember data, but how we remember them. This type of information is organized around a temporal axis. Semantic memory stores knowledge related to the world and language. This type of memory does not take into account the circumstances in which the data were stored. The primordial data capture for this type of memory consists of society and the cultural environment. This memory archetype is less susceptible to forgetting, since the contents it stores have been internalized by the individual, as is the case with language or mathematical skills such as counting.

These ideas are under constant revision, as memory continues to present gaps in its characterization. Craik and Lockhart (1972) refuted Atkinson and Shiffrin's (1968) conception of a multistorey of memory, proposing instead a dynamic module. How a memory is generated and stored influences the memory itself and subsequent memories, leading to three levels of processing: surface, intermediate, and deep. The surface level focuses on sensations and perceptions, the intermediate level on feature recognition, and the deep level on meaning. The most complex information and effort to store is the most durable. Craik and Lockhart (1972) argue that storage processes are fundamental to generate, store and manage memories.

The alternative study hypotheses consist of the following:

Hypothesis 1 (H_1): The learning/acquisition of English as a foreign language (EFL) by university students of Spanish as L1 using the *Papua Learn English* (s/f) *application* will be highly dependent on working memory.

Hypothesis 2 (H_2): The significant correlation between English proficiency and the female gender variable is predicted to be linked to the cognitive component of memory in the acquisition/learning process.

We estimate and specify that the first hypothesis (H_1) is due to the fact that the student will have to combine cognitive processes of both short-term memory, basically sensory stimuli, and different contents linked to medium-term memory. The main novelty of this application is that the student interacts according to the possibilities of the software in real time, by means of an avatar in a virtual context. This makes it possible to memorize data (declarative memory) while also making use of procedural memory. All this is due to real-time virtual interaction by the learner according to the different possibilities of the app. This procedure assumes that the learner does something, while receiving cognitive information, both sensory and conceptual.

At the same time, it is estimated that these interaction possibilities allow a greater identification by the student with the learning scenarios that offers the application. In the case of this digital application, these contexts are identified with real contexts of interaction, which allows a greater knowledge of the environment and cultural reality. In this case, these are English-speaking countries. From the memoristic approach, it is considered that the cultural component is linked to episodic memory. The way in which the learner interacts brings him/her closer to a reality much closer to a real interaction context than other EFL learning/acquisition programs. This implies that the cognitive component of attitude in EFL learning/acquisition processes is further developed by virtue of the enhancement of the affective component. This will result in a behavioral component on its part.

A sample of 128 university students was investigated. The survey took place during 2021 in a university in southern Spain. The age range established was 18-19 (40 subjects); 20-21 (57 subjects); 22-23 (20 subjects); 24-25 (4 subjects); 26-30 (4 subjects) and over 30 (3 subjects). As for gender, 37 participants were male versus 91 subjects who were female. In addition to these two variables, the English level of each of the subjects was also considered. For this purpose, three classification possibilities were established: below B1; with unofficial B1 certificate; with official B1 certificate (77.8%).

The quasi-experimental study was conducted over a six-week period. Each student was given a password to use the application whenever he/she wanted to use it individually. The process was considered completed when the student completed nine learning scenarios corresponding to a first level, available in the software. The scenarios are followed through a gamified story whose protagonist is a young man or woman of the student's choice. Each scenario is composed of several sections. First, the conversation for oral development with the help of pronunciation identification using artificial intelligence, second, a section for literacy development, third, to reinforce vocabulary and syntax, and finally, fourth, for self-evaluation of the scenario and in parallel for the teacher's follow-up.

At the end of the educational intervention, data collection was done using Google Forms with questions on personal data (numerical age, gender, English level) and the validated CAAAL questionnaire (Peña-Acuña and Crismán-Pérez, 2021), which is available at the end of this work.

This questionnaire is composed of 13 closed questions with 5 nominal answers in gradation according to: *Little, Somewhat, Well, Quite a lot* and *Very much*. This test measures the subjective perception of the three components: cognitive, affective and behavioral. These variables with respect to additional language learning through digital application consist of: first, attitudes towards affective-cognitive learning/acquisition, including memory; second, attitudes towards learning/acquisition of oral and written skills and their interaction possibilities; and third, attitudes towards motivation. The informants voluntarily agreed to the test. This process is described below:

Figure 1. Phases of teaching intervention and research.

Source: own elaboration

The results were contrasted according to two possibilities about the EFL teaching/learning procedure: memory and proficiency skills. Among other authors, Ellis (1993) and Kissling and O'Donnell (2015) were taken into account.

Among the competency skills, we took into account reading competence, oral competencies and cognitive knowledge factors such as vocabulary acquisition and application or the writing of answers in pre-selected communicative contexts.

The results showed that oral competencies were the ones that showed significant results in relation to other variables. Among the main data provided by the results of the study, the correlation between the informants' level of English and oral competence is noteworthy. This is especially relevant because it corroborates the hypothesis formulated about the relevance of working memory with respect to acquisition-learning procedures using the Papua Learn English application (n.d.). This finding coincides with the inquiry of Peña-Acuña and Crismán-Pérez (2022). However, in this previous study, a mixed study was conducted, focusing only on the working memory process. From the memory category, certain codes were extracted from the qualitative results: repetition and learning of content, comprehension, pronunciation, learning by error and metacognition resource. On the other hand, the relationship between working memory and other types of memory was not explored in depth, as has been done in this study.

The results of the one-factor ANOVA test in Table 1 with respect to age are shown below.

Table 1. *One-factor ANOVA (age*)

		Sum of squares	gl	Root mean square	F	Sig.
oral skills 1	Inter-group	5,438	5	1,088	2,056	,076
	Intra-group	64,011	121	,529		
	Total	69,449	126			
oral proficiency 2	Inter-group	2,218	5	,444	,792	,557
	Intra-group	67,750	121	,560		
	Total	69,969	126			
oral comp. 3	Inter-group	5,616	5	1,123	1,367	,241
	Intra-group	99,408	121	,822		
	Total	105,024	126			
reading com. 4	Inter-group	1,494	5	,299	,379	,862
	Intra-group	95,435	121	,789		
	Total	96,929	126			
reader.com 5	Inter-group	2,052	5	,410	,382	,860
	Intra-group	129,932	121	1,074		
	Total	131,984	126			
com. language 6	Inter-group	2,833	5	,567	,593	,706
	Intra-group	115,686	121	,956		
	Total	118,520	126			
facilitates, know cog 7	Inter-group	2,931	5	,586	,709	,617
	Intra-group	99,967	121	,826		
	Total	102,898	126			
fac. cogn. cog. 8	Inter-group	3,738	5	,748	,896	,486
	Intra-group	100,987	121	,835		
	Total	104,724	126			
fac.cono. cog 9	Inter-group	3,217	5	,643	,689	,633
	Intra-group	112,972	121	,934		
	Total	116,189	126			
fac.cono. cog 10	Inter-group	1,946	5	,389	,511	,767
	Intra-group	92,164	121	,762		
	Total	94,110	126			

Source: own elaboration

The results of the one-factor ANOVA test with respect to gender are shown in Table 2.

Table 2. *One-factor ANOVA (gender)*

		Sum of squares	gl	Root mean square	F	Sig.
oral skills 1	Inter-group	1,809	3	,603	1,097	,353
	Intra-group	67,640	123	,550		
	Total	69,449	126			
oral proficiency 2	Inter-group	1,180	3	,393	,703	,552
	Intra-group	68,788	123	,559		
	Total	69,969	126			
oral comp. 3	Inter-group	1,745	3	,582	,693	,558
	Intra-group	103,278	123	,840		

	Total	105,024	126			
reading com. 4	Inter-group	1,386	3	,462	,595	,620
	Intra-group	95,543	123	,777		
	Total	96,929	126			
reader.com 5	Inter-group	2,118	3	,706	,669	,573
	Intra-group	129,866	123	1,056		
	Total	131,984	126			
com. language 6	Inter-group	5,692	3	1,897	2,068	,108
	Intra-group	112,828	123	,917		
	Total	118,520	126			
facilitates, know cog 7	Inter-group	3,551	3	1,184	1,466	,227
	Intra-group	99,346	123	,808		
	Total	102,898	126			
fac. cogn. cog. 8	Inter-group	3,986	3	1,329	1,622	,188
	Intra-group	100,738	123	,819		
	Total	104,724	126			
fac.cono. cog 9	Inter-group	8,492	3	2,831	3,233	,025
	Intra-group	107,697	123	,876		
	Total	116,189	126			
fac.cono. cog 10	Inter-group	1,809	3	,603	,803	,494
	Intra-group	92,302	123	,750		
	Total	94,110	126			

Source: own elaboration

Table 3. *Correlations between English certificate and other variables*

		English certificate	oral skills 1	oral proficiency 2	oral comp. 3	reading com. 4	reader.com 5	com. language 6	facilitates, know cog 7	fac. cogn. cog. 8	fac.cono. cog 9	fac.cono. cog 10	inform autoeval.11	inform autoe. 12	nforme autoe. 13	report autoe. 14
English certificate	Pearson correlation	1	-,186*	-,245**	-,041	-,001	,014	,154	,142	,077	-,074	,045	,088	,058	,130	,092
	Sig. (bilateral)		,036	,005	,647	,989	,875	,084	,112	,391	,406	,619	,327	,514	,146	,306
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
oral skills 1	Pearson correlation	-,186*	1	,420**	,310**	,312**	,164	,124	,239**	,218*	,199*	,222*	,289**	,204*	,165	,232**
	Sig. (bilateral)	,036		,000	,000	,000	,065	,166	,007	,014	,025	,012	,001	,022	,063	,009
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
oral proficiency 2	Pearson correlation	-,245**	,420**	1	,159	,231**	,200*	,057	,266**	,178*	,159	,325**	,294**	,285**	,198*	,287**
	Sig. (bilateral)	,005	,000		,075	,009	,024	,524	,003	,045	,074	,000	,001	,001	,025	,001
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
oral comp. 3	Pearson correlation	-,041	,310**	,159	1	,130	,111	,087	,198*	,150	,183*	,019	,114	,079	,159	,156
	Sig. (bilateral)	,647	,000	,075		,146	,213	,333	,026	,091	,039	,831	,201	,380	,074	,080
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
reading com. 4	Pearson correlation	-,001	,312**	,231**	,130	1	,377**	,328**	,232**	,185*	,202*	,241**	,186*	,224*	,212*	,286**
	Sig. (bilateral)	,989	,000	,009	,146		,000	,000	,009	,038	,022	,006	,036	,011	,017	,001
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
reader.com 5	Pearson correlation	,014	,164	,200*	,111	,377**	1	,379**	,298**	,390**	,212*	,451**	,246**	,241**	,223*	,323**
	Sig. (bilateral)	,875	,065	,024	,213	,000		,000	,001	,000	,017	,000	,005	,006	,012	,000
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127

com. language 6	Pearson correlation	,154	,124	,057	,087	,328**	,379**	1	,296**	,142	,314**	,276**	,126	,216*	,271**	,293**
	Sig. (bilateral)	,084	,166	,524	,333	,000	,000		,001	,111	,000	,002	,158	,015	,002	,001
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
facilitates, know cog 7	Pearson correlation	,142	,239**	,266**	,198*	,232**	,298**	,296**	1	,496**	,486**	,175*	,241**	,236**	,203*	,389**
	Sig. (bilateral)	,112	,007	,003	,026	,009	,001	,001		,000	,000	,049	,006	,008	,022	,000
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
fac. cogn. cog. 8	Pearson correlation	,077	,218*	,178*	,150	,185*	,390**	,142	,496**	1	,517**	,198*	,214*	,240**	,128	,385**
	Sig. (bilateral)	,391	,014	,045	,091	,038	,000	,111	,000		,000	,026	,016	,007	,151	,000
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
fac.cono. cog 9	Pearson correlation	-,074	,199*	,159	,183*	,202*	,212*	,314**	,486**	,517**	1	,041	,095	,050	,039	,379**
	Sig. (bilateral)	,406	,025	,074	,039	,022	,017	,000	,000	,000		,648	,289	,579	,666	,000
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
fac.cono. cog 10	Pearson correlation	,045	,222*	,325**	,019	,241**	,451**	,276**	,175*	,198*	,041	1	,276**	,274**	,239**	,262**
	Sig. (bilateral)	,619	,012	,000	,831	,006	,000	,002	,049	,026	,648		,002	,002	,007	,003
	N	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
*. Correlation is significant at the 0.05 level (bilateral).																
**. Correlation is significant at the 0.01 level (bilateral).																

Consideration of results

Based on the findings of this study, as a consequence of the different sensory stimuli, among which the acoustic stimuli and images should be highlighted, the students had to integrate this information with other contents of a procedural nature, according to the virtual contexts of interaction proposed by the application. This implied for the informants to handle different contents and information channels simultaneously, which is directly related to working memory.

Based on the integration of contents of different nature, it is considered that the medium-term memory integrated the contents it considered most relevant, aligning in part with the results of Lin et al. (2020) on long-term memory. It is important to highlight, on the other hand, the link between these types of memory and semantic memory, particularly in relation to the lexical module. Indeed, lexical knowledge is fundamental to communication and interaction in a second language according to Vine-Jara et al. (2021). Vocabulary storage occurred from the recognition and integration of new signifiers, which appeared according to the possibilities of communicative interaction offered by the app.

At this point, it follows that working memory and semantic memory, at the same time as episodic memory, worked simultaneously in the informants' EFL acquisition/learning processes. This interrelation between memory types has been raised in terms of visual and semantic memory in the study by Jiménez and Díez (2018) with apps and video games. Likewise, it has been studied with good results in relation to semantic and episodic memory considering Huchim (2018) with serious video game to stimulate adults with dementia. In contrast, Huff (2023) in his study highlights that the use of cell phones negatively affects working memory.

On the other hand, the contrast between the results and the age variable did not show significant correlations. This opens the door to the possibility of hypothesizing that, depending on the age of the informants, there may or may not be different cognitive stages for the management of the information received according to the classification of memory described above. One of the possible causes of this result could lie in the homogeneity of the age of the sample of informants.

As for the gender variable, the results indicated a significant correlation between female gender and the linguistic factors of communication. At this point, the cognitive component acquired, therefore, a paramount importance in the EFL acquisition/learning process belonging to the informants. This finding also coincides with the result of Peña-Acuña and Crismán-Pérez (2022).

Conclusions

The present investigation corroborates the initial hypothesis of article H_1. Using the *Papua Learn English* (s/f) application, the informants worked on different types of memory processing, with particular relevance in the case of working memory. This was corroborated mainly by the oral skills examined through a quasi-experimental study. This study is in tune with the positive results of Hayashi et al. (2019) and Mackey et al. (2010) with respect to working memory. Huang et al. (2020) add that learning two foreign languages simultaneously improves working memory, and those who do so perform better. According to Swanson et al. (2011) working memory and short memory significantly influence second language reading and language learning in English language learners.

Likewise, the level of English in terms of the acquisition/learning process by the informants showed significant correlations. This correlation had a correspondence between the variable female gender and the informants' linguistic knowledge, which was linked to the cognitive component of memory. H_2 was also corroborated. The present investigation, prospectively, opens the possibility of exploring the variable affectivity in relation to memory processing, especially working memory, which was examined throughout the study, as well as episodic and semantic memory. This variable remains to be contrasted with other independent variables such as gender and age.

Ultimately, this study highlights the correlation between English proficiency and oral proficiency, supporting the relevance of working memory in the *Papua Learn English* application line with the study by Peña-Acuña and Crismán-Pérez (2022). The integration of varied content suggests the simultaneous interaction of medium-term, semantic and episodic memory in EFL learning. Although age did not show correlations, it is proposed to explore cognitive stages according to more diverse age intervals. The significant correlation between female gender and linguistic factors is noted, corroborating hypothesis H_2, suggesting a possible connection between cognitive components and storage mechanisms. This study is in tune with other studies (Alrashidi, 2022; Nurlindawati et al., 2022; Rianto et al., 2020) in which female learners tend to use learning strategies more frequently than male learners, including cognitive and memory strategies. This could explain why females tend to perform better academically in English than males (Nurlindawati et al., 2022; Yu, 2019)

It has also been found (Ghaith and Harkouss-Rihan, 2012; Alrashidi, 2022) that students with better English proficiency tend to use more cognitive strategies, while those with lower proficiency tend to employ more memory and affective strategies. It is added that there are significant differences in cognitive loads and attitudes toward learning English between genders (Nurlindawati et al., 2022; Yu, 2019), with females showing more positive attitudes and lower levels of anxiety. These findings allow us to answer the research questions.

For future research, we intend to develop a detailed analysis of how these types of memory interact more specifically in these EFL acquisition/learning processes according to the possibilities offered in the application. In addition, the present study will be extended to samples of informants in which there is a greater diversity of age intervals, in order to test the correlational possibilities of different age intervals in relation to the use of the app and the EFL acquisition/learning processes by learners of Spanish as L1. The relationship between this component and the mechanisms of storage of grammatical and lexical content, in relation to episodic and semantic memory, should be further explored. This correlation opens the door to another hypothesis: how the affectivity variable interrelates with memory in contrast to the gender variable. This approach considers the possibility of applying the storage and assimilation of content, linked to memory, to language learning through interaction. In summary, the combination of "learning by doing" with the gender variable and the affective possibilities of each variable according to the use of the application are explored.

This study offers valuable educational applications by highlighting the relationship between English proficiency and oral proficiency, supporting the importance of working memory, semantic and episodic memory in the acquisition of English as a foreign language (EFL). The *Papua Learn English* application, by integrating sensory stimuli and virtual contexts, facilitates the simultaneous handling of information, promoting cognitive and linguistic development. The link between memory and gender suggests personalized pedagogical strategies. In addition, the exploration of affectivity opens new avenues for enhancing interaction and learning in educational settings. These findings inform the efficacy of interactive and contextualized approaches, providing guidelines for the design of educational programs that optimize second language acquisition.

A study with a sample of 128 individuals using ANOVA and Pearson's (direct) correlation may have limitations, such as the simplification of educational complexity and the lack of temporal analysis. Therefore, combining experimental studies using pretest and posttest, fuzzy logic and indirect correlation can enrich the research, capturing broader dynamics and contexts. This study received

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Participation and engagement in social networks as a digital communication strategy for museums and art collections: the Dalí case

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Introduction and Context: from 20th Century Surrealism to 21st Century Social Networking

Museums are also using these communication platforms, approaching the idea of "social museum" or "museum 2.0" (Losada and Capriotti, 2015). Studies on museums and social networks have grown a lot in the last decade. Thus, from an epistemological point of view, the present research is located between the Information and Communication Sciences, especially Advertising, Public Relations and Marketing, and the Humanities, especially Art History, more specifically Museology and Museography, but also many others.

Contemporary art and social communication have always been linked by strong ties and this has been confirmed in several academic works (Jiménez-Marín, 2009; Cabezuelo-Lorenzo, 2013:124). All museums already use web 2.0 tools (Fernández-Hernández, Vacas Guerrero and García-Muiña, 2021:102). Today there are "new content dynamics in museums and galleries" (Quintana-Gómez, 2024:539).

In this sense, it focuses on the analysis of the use of social networks, with special attention to platforms such as Facebook and Instagram, in the field of museums and art collections, taking as a case of analysis two museums dedicated to the figure of Salvador Dalí, born in the city of Figueras/Figueres (Gerona/Girona) in 1904 and died in the same city in 1989.

This paper analyzes the presence of two Dalinian museums on the Web. The Internet continues to help the creation and dissemination of contemporary art thanks to different profiles in *social media* (González-Torres, 2018:101), especially in the case of Dalí (Elías-Zambrano and Cabezuelo-Lorenzo, 2024:187).

Dalí was undoubtedly one of the best known artists during his lifetime, both inside and outside Spain. Dalí developed a prolific artistic career that spanned from his early years in Figueras, in the Empordà region, to his international consecration. Recognition came from different spheres, from the Spanish, American and French press to King Juan Carlos I himself, who awarded him the title of Marquis of Dalí de Púbol.

Beyond his social, political or institutional recognition, from a purely artistic perspective he was an outstanding painter, sculptor, engraver, set designer and writer, as he also liked to consider himself. His work and relationship with the audiovisual media has already been much studied, especially with the cinema, in collaboration with Gala, too, which makes the two of them a "surrealist cinema couple" (Cabezuelo-Lorenzo and López-Martín, 2023:229).

However, Dalí also had great critics and detractors. Throughout his career, Dalí cultivated an eccentric and provocative personality that generated both admiration and criticism. His tendency towards narcissism and megalomania was interpreted by some as a strategy to capture public attention, while others considered these attitudes an obstacle to fully appreciate his artistic production. He himself attributed his fascination with all things excessive, luxurious and hedonistic to an alleged Arab lineage dating back to the time of Muslim domination in the Iberian Peninsula.

Recognized as one of the greatest exponents of surrealism, his work and personality profoundly marked the artistic panorama of the 20th century and his influence is still present. Several museums around the world continue to make his figure known, the most important being the Teatro Museo de Figueras (Spain) and the Dalí Museum in Florida (United States).

Salvador Dalí distinguished himself by the creation of striking and dreamlike images that characterize surrealism and that have left such a mark on later artists and public opinion in general. Some of these examples are his most emblematic and popular works, including *The Persistence of Memory (*1931), popularly known as *The Soft Watches*, which has become an icon of surrealism.

Salvador Dalí's pictorial technique is characterized by great precision and detail and reflects a deep admiration for the masters of the Renaissance and Renaissance art in general. This is manifested in his mastery of drawing and in the technical quality of his compositions.

Although his main means of expression was painting, Dalí also made very successful incursions into other artistic disciplines such as cinema, sculpture and photography, collaborating with leading figures in the audiovisual field. This creative eclecticism allowed him to develop a unique and recognizable style, which synthesized diverse influences and transformed them into a visual language of his own.

With the outbreak of World War II in Europe, Dalí moved to the United States with Gala, where he achieved great commercial success and expanded his artistic activity into fields such as film and set design. In the following decades he returned to Europe and settled mainly in Portlligat (Catalonia), where he continued to produce significant works. In the 1970s he founded and inaugurated the Dalí Theater-Museum in Figueres, a space dedicated to preserving and exhibiting his artistic legacy.

Salvador Dalí's life and work represent a synthesis of tradition and innovation, impeccable technique and boundless imagination. His ability to constantly reinvent his artistic language made him a central figure of 20th century art and an enduring symbol of surrealism. Dalí continues to arouse passions today and this is evidenced in social networks (Corral, 2019).

In the world there are several spaces, collections and museums dedicated to the life and work of Salvador Dalí, each with unique characteristics that reflect different aspects of the artist's legacy. The Salvador Dalí House-Museum (Portlligat) and the Gala-Dalí Castle (Púbol) stand out. The Portlligat house-museum is located in a former fisherman's house in Cadaqués. This residence-workshop was the artist's home for much of his life. Its labyrinthine design and natural surroundings evoke Dalí's dreamlike universe. The Gala-Dalí Castle (Púbol) is a small fortress in the style of a medieval castle that Dalí gave to Gala, his muse. This intimate space combines art and architecture in a personal tribute to Gala herself.

But, undoubtedly, the two most outstanding are the museums of Figueras in Catalonia and Saint Petersburg in Florida. The Dalí Theater-Museum in Figueras is the most representative museum and the "largest surrealist object in the world", designed by Dalí himself. It houses more than 1,500 works, including paintings, sculptures and unique assemblages, and is part of the Catalan Dalinian triangle along with Portlligat and Púbol.

For its part, the Salvador Dalí Museum in Florida, in the United States, has the largest collection of Dalí's works outside Europe, including some of his masterpieces. There is also some other space worthy of note, such as the Salvador Dalí Museum-Gallery Xpo in the city of Bruges, in Flanders (Belgium), which offers a permanent exhibition of paintings, sculptures and graphics in a surrealist environment, but it is not as large as the other two previously mentioned here.

The Dalí Theater-Museum, inaugurated in 1974 in Figueres, is considered the last great work of the surrealist genius Salvador Dalí. Built on the ruins of the old Municipal Theater, destroyed during the Spanish Civil War, this space was conceived by Dalí himself as a total surrealist object. Its design seeks to immerse the visitor in the artist's creative universe, combining art, architecture and scenography.

The museum houses more than 1,500 works spanning Dalí's entire artistic career, from his earliest creations to his final stage. Among the most outstanding pieces are *The Bread Basket, Galatea of the Spheres* and the interactive installation *Sala Mae West*. It also includes unique works designed specifically for this space, such as the rainy Cadillac and the anamorphic painting Gala naked looking at the sea. The geodesic dome that crowns the building is an iconic symbol of the museum and the city of Figueres. In this way, the Figueres Theater-Museum not only preserves Dalí's artistic legacy, but also offers an immersive experience that reflects his unique vision of surrealism. This makes some researchers such as Jordi de San Eugenio Vela and Mònika Jiménez (2010) speak at the time of "surrobranding" when studying his legacy in the Empordà.

For its part, the Dali Museum in St. Petersburg, Florida (United States), houses the largest collection of works by Salvador Dali outside Europe. Inaugurated in 1982 and redesigned in 2011 by architect Yann Weymouth. It is a building that combines contemporary functionality with some touches of surrealism, with a hurricane-proof concrete structure and an iconic glass skylight known as the name "Enigma". This design reflects the innovative spirit of the Catalan artist while the building is prepared for Florida's adverse weather conditions.

The collection at the Dalí Museum in the United States includes 96 oil paintings, watercolors, drawings, sculptures and photographs, as well as seven of Dalí's 18 masterpieces, such as *The Discovery of America by Christopher Columbus* and *The Hallucinogenic Bullfighter*. The pieces come from the private collection of philanthropists Albert Reynolds Morse and Eleanor Morse, who maintained a close relationship with Dalí for decades.

The museum has three floors, including a theater for screenings and lectures, the Gala Café with Spanish tapas, a library and rooms and galleries, which exhibit both permanent works and temporary exhibitions. Its waterfront location on Tampa Bay offers spectacular views, making it a tourist attraction for the area. This U.S. Dalí space not only preserves the artist's legacy in North America, but has also established itself as a cultural reference in Florida, attracting thousands of visitors annually.

Finally, it should also be noted that there are other museums dedicated to Dalí, but they are not covered in this work. This is the case, for example, of the smallest museum dedicated to Salvador Dalí in the world, which is the *Espace Dalí* in Montmartre, Paris (France). This space, although smaller compared to other Dalí museums, offers an intimate and focused experience of the artist's work. It exhibits a collection of sculptures, prints and graphic works that highlight Dalí's signature surrealism. Its location in the iconic art district of Montmartre makes it a special destination for admirers of the painter, offering a concentrated glimpse into his creativity and legacy, but his social networks have not been analyzed in this work.

Museums facing the digital challenge of social networks

This paper adopts a methodology based on case analysis, selecting two museum institutions dedicated to the figure of Salvador Dalí as the object of study. For this purpose, four profiles on social networks are examined considering three fundamental variables: the interactions generated, the content published and the audience reached. Thus, this research aims to highlight the strategic importance of social networks as key tools to encourage more active participation, involvement and *engagement* on the part of audiences (Viñarás-Abad and Cabezuelo-Lorenzo, 2012:87).

In this sense, the digital profiles that museums use to make themselves known not only allow them to expand their communicative reach, but also contribute significantly to building public loyalty and strengthening their digital reputation. In this line, the focus of this paper aligns with previous studies that highlight how social networks have transformed museums into more open and dialogic spaces, capable of overcoming physical barriers and attracting diverse audiences through innovative strategies, which was evident in the months of confinement during the Covid-19 pandemic (Gonzálvez-Vallés et al, 2021:203).

In this paper, we start from the idea that social networks are not only platforms for the dissemination of events or exhibitions, but also means to establish a direct dialogue with virtual communities. This is especially relevant in a context where users expect dynamic and accessible content. For example, practices such as the publication of interactive stories or live broadcasts have proven to be highly effective in generating interest and increasing interaction with audiences. Likewise, these platforms allow museums to adapt their communication strategies towards a more inclusive and collaborative model, promoting an enriching cultural experience both inside and outside the museum's physical space.

This paper aims to confirm that an active and creative management of social networks is essential for museums to consolidate their digital presence, attract new audiences and foster a closer relationship with their visitors. This not only reinforces their role as cultural agents, but also positions them as leaders in the field of digital communication within the cultural sector.

In this sense, we try to answer several questions: What specific strategies do museums use to increase their participation in social networks?

How does the use of social media compare between Spanish and U.S. museums? What impact does social media presence have on the digital reputation of museums? What additional variables might be relevant to analyze the use of social media in museums? How does social media influence audience participation and engagement in museums and art collections?

This chapter will attempt to answer these questions and many more, from a plural perspective and with respect for all points of view, or at least to open the debate. To do so, we start from a theoretical framework and from authors and researchers who have already made their previous contributions to the subject. Thus, this work starts from a very clear hypothesis that considers that museums need to have profiles on social networks because these platforms have become essential channels for cultural dissemination, communication with the public and attracting visitors.

Social networks give greater visibility and global reach to the art world as *social media* allow museums to transcend their physical boundaries and reach audiences around the world. Platforms such as Instagram, Facebook and Twitter facilitate the promotion of exhibitions, events and collections to audiences that otherwise would not have access to the institution.

In the same way, social media increase participation and interaction with audiences, since thanks to the network's museums can generate a dialogue with their followers through comments, surveys and live broadcasts. This interaction strengthens the bond between the institution and its audience, encouraging more active participation in cultural life.

In this line, it must be said that educational outreach and accessibility of museums is growing thanks to social networks because they allow sharing educational content, as well as explanations of works of art, interviews with curators and virtual tours. This democratizes access to culture and makes the museum a more inclusive space.

It is also worth noting that beyond the use of networks for the promotion of events and exhibitions, networks are always there. Through strategic publications, museums often inform about new exhibitions, conferences and activities, increasing in-person and digital attendance at their events, but they are not a one-time tool. They are always there, at all times, for data analysis and communication strategies, thanks to tools such as *Facebook Insights* and *Instagram Analytics,* which allow museums to better understand their audience and adjust their communication strategies to optimize their impact. Thus, the presence in social networks is essential for museums to expand their influence, encourage public participation and adapt to the new dynamics of cultural consumption in the digital age.

This paper uses the social networks Facebook and Instagram for the analysis. Facebook is still today a strategic tool for the dissemination of museums and art collections. In fact, for years Facebook has become a key platform for the promotion of museums and art collections, allowing these institutions to expand their reach and connect with global audiences. Thanks to its ability to share visual content, events and interactive publications, Facebook offers an effective way to publicize exhibitions, artworks and cultural activities.

In the same way, this network created by Mark Zuckerberg has established itself as an essential strategic tool for the promotion and dissemination of museums and art collections in the digital sphere. Its ability to reach global audiences and facilitate direct interaction with the public has transformed the communication strategies of these cultural institutions.

Facebook allows museums not only to share information about their collections and events, but also to encourage more active participation from users through comments, shares and reactions. This interaction not only broadens the reach of publications, but also strengthens the relationship between the museum and its audience, creating a community around the institution.

In addition, the Facebook platform offers analytical tools that allow museums to evaluate the effectiveness of their communication strategies. By analyzing metrics such as post reach, user engagement and audience demographics, institutions can adjust and optimize their content to maximize its impact. Today, while many museums have adopted Facebook as a communication channel, there is variability in the level of interaction and engagement they encourage.

Some focus on the one-way dissemination of information, while others actively seek audience participation, promoting a more dynamic and enriching dialogue.

Therefore, it can be affirmed that, despite being a network with many years of life, Facebook remains a fundamental platform for museums and art collections to expand their visibility and strengthen their connection with the public. By taking advantage of the social network's functionalities and encouraging participation, museums can enrich the cultural and educational experience of their audiences, adapting to contemporary communicative dynamics. In addition, it is worth noting that one of the main benefits of Facebook is its segmentation potential. Through advertising tools and customized algorithms, thanks to Facebook, museums can target their publications to specific audiences based on interests, location and digital behavior. This allows them to attract both local visitors and tourists interested in art and culture who continue to use Facebook as a reference network.

In addition, the platform encourages public participation through comments, reactions and sharing. This interaction generates a sense of community and belonging, encouraging dialogue between the institution and its followers. It also facilitates the dissemination of content organically, as publications can go viral when users share them on their own networks.

Facebook Live and videos in general have proven to be valuable tools to offer virtual tours, interviews with artists and exclusive presentations. This allows museums to expand their accessibility, reaching people who cannot physically visit exhibitions.

On the other hand, *Facebook Insights* provides data on the impact of publications, helping museums to adjust their communication strategies and improve their content. Facebook is an essential strategic tool for museums and art collections, as it not only increases their visibility, but also encourages public participation and engagement, ensuring a closer connection between culture and society.

In addition to Facebook, the other major social network used by museums is Instagram, which is also widely used as a strategic tool for the dissemination of the contents of museums and art collections in Spain and around the world. In fact, Instagram has become an essential platform for the promotion of museums and art collections, thanks to its visual approach and its ability to connect with global audiences. Its format based on images and videos allows these institutions to showcase their exhibitions in an attractive way, generating an immediate impact on users.

One of the main benefits of Instagram is its *engagement* capacity. Platforms like Instagram favor direct interaction between museums and their followers through comments, "likes" and story sharing. This allows museums to create a digital community that strengthens their relationship with the public and increases their reach.

Tools such as *Instagram Stories, Reels* and live broadcasts provide innovative opportunities for cultural outreach. Museums can conduct virtual tours, artist interviews and exclusive presentations, bringing their collections to people who cannot physically visit them. In addition, interactive features such as polls and questions encourage public participation, generating an active dialogue about art and heritage. It is also worth saying that Instagram has a high educational potential (Alves-López, 2017:37) and can be a good didactic proposal at times (Molina-Fajardo, 2022). It is also very useful in communication matters linked to creativity and art (Villena-Alarcón and Pérez-Ordóñez, 2020:3237), but actually about any field of fashion and advertising as well (Jiménez-Marín and Elías-Zambrano, 2019:25).

Another key aspect of Instagram is the use of *hashtags* and collaboration with cultural *influencers*, which allows the museum to expand its visibility and attract new audiences. By analyzing metrics provided by Instagram *Insights,* museums can adjust their content strategies to improve their impact. In this way, it can be safely stated that Instagram is a key strategic tool for museums and art collections, as it not only amplifies their digital presence, but also fosters audience interaction and engagement. Its visual and interactive nature makes it an ideal medium for cultural outreach in the digital age. Instagram is almost a gallery of art and literature (Olalla-Ramírez and Mula-Falcón, 2023). In addition, Instagram is also being widely used as a tool for scientific dissemination (Sidorenko-Bautista, Cabezuelo-Lorenzo and Herranz-de-la-Casa, 2021:143).

Case analysis: *engagement* and competition on Facebook and Instagram of the Dalí Museums

To study participation and *engagement*, four social media profiles are analyzed taking into account three variables: interactions, publications and audience. The term *engagement* in social networks refers to the level of commitment, interaction and emotional connection that users establish with a brand, product or community on digital platforms. The methodology of analysis of information processes is applied according to the proposal of Quintana-Gómez (2021:41).

This concept, key in digital marketing, measures the quality of the relationship between an account and its followers through metrics such as "likes", comments, shares, mentions or *clicks* on posts. *Engagement* involves not only superficial interactions, but also a deeper bond that fosters loyalty and genuine interest on the part of the audience. This engagement can manifest itself at various levels: from simple recognition of a publication to more active participation in conversations, surveys or dynamics proposed by a museum.

Table 1. *Profiles analyzed on Facebook and Instagram.*

Museum	Facebook	Instagram
Figueras	https://www.facebook.com/MuseusDali?locale=es_ES	https://www.instagram.com/museudali/
Florida	https://www.facebook.com/thedalimuseum?locale=es_ES	https://www.instagram.com/dalimuseum/

In order to carry out this work, the difference and/or evolution of these two profiles was analyzed over two years. The dates chosen are divided into two phases or stages. The first band goes from January 1, 2024 to December 31, 2024 and is compared with the period from December 31, 2022 to December 31, 2023. The Social Media Competency Report has been used.

Figure 1. Data on interactions, publications and audiences of the two museums on Facebook. Source: We Social Media Competence Report (2023-2024).

On the analysis of the data of the report on the competition in social networks of the two Dalí museums compared, it is worth highlighting some facts and figures. First of all, it is necessary to talk about the general trends of the sector. It is necessary to highlight interactions with an overall figure of 87.5K (-6.32% compared to the previous year), which indicates a slight decrease in *engagement*.

A total of 305 publications were published (+64.86%), showing a considerable increase in activity. In this sense, regarding the audience, it is maintained. There is an audience of 434K, which can be considered stable. This picture suggests that, although there is an effort to generate more content, interactions have slightly decreased. It may indicate the need to improve the quality of the content or adjust the strategy to optimize audience engagement.

Figure 2. Data on interactions, posts and audiences of the two museums on Instagram. Source: We Social Media Competence Report (2023-2024).

Regarding the performance on Facebook, there are 236K interactions (+47.99%), which reflects a significant growth. On the publications, there are 336 (+63.9%), with more shared content. Finally, on data by audience there are 147K. In terms of specific museums by the Dalí Museum (United States), there are 135K interactions (+7.07%), with an audience of 91.1K. In terms of the Dalí Museum Theater (Spain), there are 101K interactions (+204.51%), with a remarkable growth in interactions. Thus, the Catalan museum increased by 371.11% its publications, suggesting a more aggressive content strategy. The increase in publications and audience suggests that the content has been more frequent and effective in capturing the attention of the public. Regarding the other social network, Instagram, it is worth mentioning that the Dali Museum in the United States had 81.4K interactions (-9.02%), with an audience of 404K. This same museum in Florida counted 6,092 interactions (+55.41%), with an audience of 30.2K. Despite the growth in publications (+546.67% in Museu Dalí), interactions in The Dalí Museum have dropped. This could indicate that the increase in publications has not generated the same level of *engagement*.

Conclusions

This study has examined the role of social networks in the communication and dissemination of museums and art collections, with a particular focus on the Facebook and Instagram platforms of the Dalí Theatre Museum of Figueras in Spain and the Dalí Museum of Florida in the United States. For this purpose, a methodological approach based on case analysis was employed, selecting as the object of study two museums dedicated to the figure of the renowned Catalan artist Salvador Dalí (1904-1989) that have profiles on Facebook and

Instagram. The 2 profiles of the two entities in these two social networks have been analyzed. The research has focused on the detailed examination of these four institutional profiles on social networks, considering three fundamental variables: the level of interactions generated, the frequency and characteristics of the publications, as well as the composition and behavior of the audience. Through this analysis, we seek to understand the impact of the digital presence of museums in the construction of their institutional identity and in strengthening their relationship with the public.

In conclusion, it can be said that Facebook has been the channel with the highest growth in *engagement*, with significant increases in interactions and audience, while Instagram shows signs of saturation, with a high volume of publications, but a drop in *engagement in* the American case of The Dalí Museum. For its part, the Teatro Museo de Figueras has good considerations on Facebook. It has improved considerably on this network, which suggests an effective content strategy. Finally, it is worth making some recommendations. In this regard it can be said that the strategy going forward can focus on creating more attractive and dynamic content for Instagram such as more *Reels* and some more interactive *Stories.* Evaluate whether the increase in posts is negatively affecting the quality of *engagement*. Similarly, another recommendation could be to optimize strategies on Facebook, where growth has been more solid. The results obtained allow us to affirm that social media profiles play a strategic role in promoting participation, active involvement and *engagement* of audiences. In this sense, digital platforms not only act as channels for the dissemination of artistic and cultural content, but also contribute to the consolidation of communities around museums and their collections, as demonstrated by the Dalí case.

In conclusion, this study on the Dalí museums in Spain and the United States shows that the effective management of social networks is a key element in the communication strategy of museums, as it favors the loyalty of audiences and enhances the digital reputation of these institutions. Therefore, recommends that museums develop structured digital strategies based on data analysis in order to optimize their reach, improve their positioning and strengthen their relationship with their audiences in the virtual environment.

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Digital communication between consumers and agri-food SMEs

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Introduction

This chapter will address several key points of the current business situation and of a necessary and transcendental sector in the Spanish and European economy, such as the agri-food sector. On the one hand, we will analyze the reality of the concepts that relate the company to the intangible elements of brand capital, such as reputation and brand awareness, consumer confidence, and the engagement that the brand manages to establish with the customer.

All this to contribute to the positioning that the company wants to achieve, both in the market as a whole and in the consumer's mind. In addition to this review of the key concepts to understand the reasons that companies have to increase the approach with the consumer and how to do it, reference is made to one of the current trends in customer communication used by companies, social networks.

To unite these two key threads in the argument, the last part of the chapter applies these concepts, related to corporate communication, to the business and consumer type of the agri-food sector, to check which indicators show success in the relationship between agri-food companies and the consumer. In this sense, two of the most widely used communication theories are applied to analyze the relationship between consumers and the messages issued by companies, in this case, in the agri-food sector.

While the information theory of Shannon and Weaver (1948), highlights the importance of eliminating ambiguity in the communication circuit, in order to promote interaction and trust between brand and customer, the behavioral theory highlights the impact that the environment and opinion leaders have on the perception that the customer or follower has of the message and the brand. Therefore, the use of experts from the food sector within the digital profiles of fruit and vegetable brands, to disseminate content, will improve the value of publications, the reputation of the brand, as well as the connection with followers within the agri-food sector.

The brand equity of digital companies is built with intangible elements such as reputation, positioning and engagement.

This initial section should address the indicators that contribute to the success of the relationship between the consumer or customer, extended to the role of follower of said consumer and the companies themselves that manufacture and send messages in digital environments, in this case, the fruit and vegetable companies that belong to the agri-food sector.

To better understand the agri-food industry, first of all, we must address the importance and significance of this sector in the Spanish and European economy, an argument that is supported by statements such as that of Doležalová, Pícha and Navrátil who emphasize that consumer interest in quality food increases the more developed the country is. (Doležalová et al., 2009). Given that European society is composed of developed countries and as the Annual Report of the Spanish Food Industry says, in the European Union, the food industry is the main activity of the manufacturing industry, representing 14.3% of that industry." (MAPA,2023).

To address the importance of agricultural products in the national consumer, reference should be made to several studies, on the one hand what the Innova Markets report says, which addresses research on food trends, which indicates that freshness and flavor are key attributes for Spanish consumers, highlighting also another of the main variables and is the high valuation by the customer of the local environment to make their purchases and supply the need for agri-food products, said study says that Spanish consumers continually exceed the rate of interest in features such as local production, since 26% of Spanish consumers consider local origin as a very influential claim in everyday staples, compared to the world average of 19%. This preference for local products is accentuated by the high ranking of traditional manufacturing/processing claims (Innova Market Insights, 2024).

To this we can add what concludes the study by Belén Barreiro (2018), entitled "Diving into the food trends of the Spanish" reveals that, around 22% of the Spanish population needs to know the origin of the food they buy, highlighting the interest that this population has on the quality of food since, 50% of respondents prefer to buy local or nearby products, or that are branded Spain, although the product has increase its price, which shows that the national sector has a image of high quality in the mind of the consumer. These types of statements support the importance of conducting in-depth research on the commercial and communication evolution of this strategic sector. (Barreiro, 2018)

Secondly, it is necessary to take into account the regulations and legislation used by government institutions to promote the digitization of the agri-food sector. Therefore, in recent years, the Ministry of Agriculture, Fisheries and Food, hereinafter MAPA, has been supporting the development and modernization of the sector through legislation for the agri-food sector with regard to its digitization. Royal Decree 113/2022, of February 8, establishing the regulatory bases for subsidies for the promotion of actions for the transfer of knowledge and information and acquisition of skills in digitization, and for advice, management and replacement, aimed at the agri-food sector, is the main regulation that supports the digitization of the sector right now (R.D.113/2022, MAPA).

This supports the need to promote from all possible perspectives the digitization of a sector of economic weight such as the agri-food sector. According to Plaza Llorente, in his study "Agri-food value chain, prices and digitization", phenomena such as the interoperability of digital devices, the omni-channeling enjoyed by the customer to access the goods and services of their preference, the emergence of platforms for communication and exchange of goods and service are some of the possibilities offered by digitization (McKinsey Digital, 2015; Ballestero and Perez, 2017; OECD, 2016; Lund, et al, 2019, p.15).

In addition, from the Observatory for the Digitalization of the Agri-Food Sector, it is highlighted that in the agri-food industry, 44.4% of companies that have an annual revenue of more than 50 million euros per year market their products through the Internet. A relevant fact is that electronic commerce is implemented in up to 29.8% of the agri-food industry.

Thirdly, the indicators that determine the success of the company in digital environments and in its relationship with consumers and followers must be addressed. Therefore, it is necessary to talk about brand reputation in the online environment, understood as the prestige that a brand has in its online activity, being the most important value for companies and organizations because it guarantees the trust of their audiences (Vegas-García and Paniagua, 2023).

The latest European Communication Monitor (2023), which identifies the most important strategic issues for communication management, reveals that there are two strategic issues on the minds of communicators: building and maintaining trust and linking corporate strategies with communication strategies. Communicators highly value building and maintaining trust, prioritizing it over many other values, which confirms that consumer trust is essential for organizations (Ramos, 2024).

In this line should be introduced the term or indicator of commitment or engagement of the brand in the mind of the consumer or, ultimately, with the consumer. Its translation into Spanish is compromiso, implicación, vinculación, involucración (Herencia, 2019), so, applied to marketing, it is this commitment, but of the customer with the brand, taking on a fundamental role in brand management, being defined in the field of marketing as the degree of emotional, cognitive and behavioral connection that a consumer develops towards a brand or an organization (Hollebeek, et al., 2014). Other authors such as Vivek et al. (2012) expose it as the intensity of individuals' involvement with an organization's offers and activities (Vivek et al., 2012) p. 127). In other words, engagement includes aspects such as the active presence of the consumer in activities related to the brand, the commitment of this loyal customer and the affective loyalty towards the brand generated by these activities. According to Brodie et al, (2013) it is the level of emotional and behavioral connection between consumers and the brand (Brodie et al., 2013). Following this line of statements, the main factors that make up the concept of engagement can be divided into the following:

- Customer experience: customer's experiences during the purchase process and the feeling that remains as an aftertaste and subsequent link with the brand. In other words, a positive experience increases the probability that the consumer will develop a committed relationship with the brand (Lemon, Verhoef, 2016).

- Interactivity of the company in digital environments: to promote two-way communication of the connection between brand and customer, since it is necessary the use of digital tools by companies to promote engagement and facilitate real-time personalized interactions with the customer, knowing that the consumer is informed in terms of consumption and connects with brands in digital environments.

- Publication of content of value for the customer: communication actions in the digital context with content that is interesting for the customer, generating value for the brand and the followers of that brand at the same time, seeking to increase the emotional connection and in turn increase the time the customer spends interacting with the brand.

The importance of engagement in the brand's communication strategy is paramount, so, to better understand its application and how it acts on consumer behavior, it is necessary to show the engagement measurement system used by the authors Vivek et al. (2012) through a mechanism called the Engagement dimensions. Therefore, understanding and applying this analysis and planning strategies through these dimensions allows brands to obtain effective results as they form an integral basis for understanding and increasing the level of consumer engagement with the brand or organization through different areas: cognitive, emotional and behavioral (Vivek et al. 2012):

1. Cognitive Dimension: affects the level of attention and mental effort that a consumer uses to process information about a brand. This means that consumers are emotionally and rationally connected to the brand, developing feelings such as curiosity, interest and rational analysis about the brand, as well as searching for additional information about it, analyzing its value proposition, messages or specific attributes and thus creating positive mental associations with and about it. This gets the consumer interested in the product's own characteristics, researching in the corporate website and comparing its benefits with those of the competition.
2. Emotional Dimension: in this dimension neuromarketing is used through emotional marketing, because brands that communicate seeking to influence the customer's emotions are more successful in the market. The aim is to verify the emotional bond that develops between the consumer and the brand and that is built through the accumulation of positive experiences by the customer. These experiences generate trust and satisfaction as positive customer emotions, to which is added the coincidence of the brand's values with those that consumers seek to find in it. All this is aimed at achieving customer loyalty, since with these techniques the customer will develop positive feelings for the brand, such as admiration, passion or identification being the main seeds to establish a lasting brand-customer connection that can become long-term loyalty.
3. Behavioral Dimension: covers the actions performed by customers/followers to interact with the brand, which are the result of their commitment to it and function as a mechanism for activating consumer loyalty. The actions measured in this analysis are, initial purchase and subsequent repeat purchase, participation in brand-related activities such as events or contests or active promotion of the brand in their social networks and personal circles, word-of-mouth recommendations, participating in surveys or writing reviews. One of the main measurements can be done through the number of likes.

According to Ballesteros-Herencia (2019), the digital environment is ideal for the interaction between consumer and brand, since it allows an exchange of roles within the communication circuit. That is, consumers go from being passive recipients of marketing actions to become proactive participants in a new bidirectional communication process. Thus, companies take advantage of these bidirectional relationships to increase the added value of products and brands, as Oviedo-García, et. al (2014) says, and thanks to the engagement provided by social networks, an environment can be generated in which customers could develop actions such as, designing the product and financing their advertising campaign (Oviedo-García, et. Al, 2014; Ballesteros-Herencia, 2019).

In this line of research, Herrera-Torres (2017) states that the higher the engagement of the brand, the higher the level of knowledge and information that followers have of that brand and in turn, the more information the brand has about them, which favors the brand to issue content of greater value and interest to followers thus increasing the level of affinity between the follower and the brand through the messages it issues. Therefore, the author states that it is necessary for companies to detect the advantage offered by social networks as a means of communication and relationship, as well as interaction with loyal followers and potential followers, with the aim of increasing their sales and increasing brand awareness, through the use of such social profiles (Herrera-Torres 2017, p.181).

Engagement and Emotional Connection with the Brand, relationship with brand image and brand reputation

With this proposal, it can be stated that the generation of engagement between brand and consumer is necessary to produce a positive return from individuals, whether they are commercial customers or users of social networks (Ballesteros-Herencia, 2019). These statements, lead to talk about another of the terms related to the field of brand-customer relationships, i.e., brand positioning in the mind of the consumer, which is defined as the place that the company occupies in the mind of the consumer in relation to other brands with which it competes within the same sector, this being a strategic process that seeks to build a differentiated perception (Ries and Trout, 2001). In other words, positioning shows how a brand is perceived and remembered, taking into account its key attributes or distinctive features that are relevant and valuable to the consumer (Kotler et al. 2016) and the benefits that make it unique. Therefore, the co-dependence of both concepts results in a strategic integration of both approaches, which can improve the consumer experience and strengthen the brand image in the consumer's mind and in the market in the long term.

Engagement and brand positioning are intrinsically related, as both seek to build a meaningful and sustainable connection with the consumer/follower. On the one hand, engagement fosters more frequent and quality interactions, reinforcing positioning by integrating the brand more solidly in the consumer's mind. In other words, there is a causal and feedback relationship between these two concepts; if there are no quality relationships with the customer, there is no effective positioning in the consumer's mind. According to this reasoning, engagement can be understood as a catalyst for positioning, that is, through positive consumer experiences and attractive brand content, both intentionally generated by the company. Engagement helps to consolidate the desired associations from the brand and with the brand, i.e., the consumer thinks of the brand what the brand wants him to think of it, thus strengthening the place it occupies in the consumer's mind. For this to be effective and to be done in the most efficient way for the brand image, the company must learn to integrate this strategy, and thus fix in the consumer's mind the need for relationships and contact with the customer, understanding positioning as the basis for engagement, or what is the same, a clear and attractive positioning creates expectations and motivates consumers to establish interactions with the brand.

According to Kotler and Keller (2016), brand positioning is a key marketing strategy that seeks to establish a unique and differentiated place in the consumer's mind. But for the brand's actions to be efficient and the positioning to be effective, the following elements must be combined, according to these authors, fundamental, which allow building a brand perception where its values are clearly shown and favor the brand image (Kotler and Keller, 2016).

A. **Key attributes and benefits:** this element of positioning refers to the characteristics that make the brand different, and at the same time are relevant and valuable to the consumer.
   The classification of these attributes is made in tangible characteristics, such as the quality of the product that represents the brand, the design of the product itself or even the price, since these types of tangible elements directly influence the other type within this classification.
   On the other hand, there are the intangible attributes which have a high weight in the positioning and therefore in the loyalty, engagement and therefore in the consumer's purchase decision. These intangible elements are the reputation of the brand, the values and philosophy, the lifestyle represented by the brand, the affinity with the user, in short, that make the customer/follower feel more comfortable with this projection and help to convey the personality of the brand. This type of attributes must be understood by the customer or follower as possible benefits at the time of use, so they must be aligned with their needs and desires, communicating a message from the brand that makes it desirable, relevant and related to them and that they aspire to feel satisfied and represented by its values.

B. **Unique Value Proposition (UVP):** The value proposition describes the package of products and services that create value for a specific customer segment. It represents the main reason why customers choose one company over another (Osterwalder and Pigneur, 2010, Business Model Generation, p. 22). This concept is based on highlighting what makes the brand unique, differentiating it from its competitors by relating it to the concept of differentiation to support the line of argument of the positioning that the company wants to expose in the market. Therefore, it should be based on the use of tools such as research, to innovate in its portfolio of goods and associated services, which make the customer live unique experiences that can be associated with the brand.
   Therefore, through this projection of exclusivity, a promise or value proposition is established, on which the brand must base its discourse, which it uses as a central argument in its communication strategies towards its target public and which shows it as different, better or unique in the market, so that it is inimitable, justifying why the consumer should choose that brand and not another.
C. **Consistency in the message that the brand issues on its positioning and communication strategies**: that is, if brands are not stable and consistent with their message and change it constantly, they may confuse the customer and not have a clear positioning in the consumer's mind. This concept has to do with the existence of strategic coherence in the company's messages, since it is conceived as the relationship between the messages that the brand transmits, using the different media and communication tools available, with the aim of achieving a clear positioning (Caywood et al., 1991). These tools can be, visual identity instruments, such as logos, corporate colors or the design of those elements or others that accompany the corporate visual identity message, as well as communication elements related to the brand storyline, slogans focused on telling and supporting the brand values, as well as visual elements and customer service discourse when the brand comes into direct contact with the customer in the sale, either online or in physical commerce. Consistency in the message is intrinsically linked to another important term in positioning and engagement, as is the credibility of the brand in its actions, since the promises made by the brand in its sales and communication arguments, as well as in its promotional messages and when exposing its brand values, must be fulfilled, so that the customer or follower affirms their loyalty and connection with it, and that these interactions and experiences are positive and the brand image and positioning is reinforced. Furthermore, this succession of relationships, as highlighted by Kotler and Keller (2016), is directly linked to the perception that the customer and the

market have of the brand and, in turn, of the emotions and perceptions aroused by the messages that are issued to connect with customers and followers, seeking to build strong bonds through these emotions generated, using the mechanisms mentioned above (Kotler and Keller, 2016)

Framing or the construction of the message through narratives favorable to the brand image

Having explained what engagement and positioning mean, it is necessary to refer to another term related to them, which is framing, or the phenomenon of giving a favorable context to the message emitted by the brand. Framing is the technique used to design the message, in terms of its structure and the presentation of the arguments in the available media, with the aim of influencing the interpretation made by the receivers of the message, i.e., customers and followers (Entman, 1993).

In this line, Ardèvol-Abreu (2015) states that framing allows brands to highlight aspects of their personality to influence the interpretation that the target customer makes of the message issued (Ardèvol-Abreu, 2015). Therefore, the use of this technique in communication strategies allows aligning the brand message with the emotional and cognitive values of its followers, maximizing the impact of engagement. In other words, the use of framing techniques influences how followers receive, interpret, interact and respond to the brand's messages. Therefore, with this theory it can be demonstrated that the way of telling and presenting the brand message significantly affects the perception and behavior and also the relationship that the customer or follower will have with the brand. Following this line of argument, Entman (1993) points out that the use of framing in the construction of the message by brands involves a two-phase process:

1. **Select:** this phase involves choosing and determining which parts of the company's values and characteristics should be highlighted in the company's message.

2. **Framing:** it seeks to define the way in which the chosen aspects are going to be shown in the message, so that the arguments that are emitted can reinforce the desired positioning of the brand.

Another author who addresses the research of the framing concept is Rodriguez, (2023), and states that, within the marketing context, framing is used to highlight specific attributes of a product, create emotional associations between brand and follower/customer, as well as influence the perception of value, using this type of strategy to transfer the message to the market as a whole with the objective that the consumer/follower perceives greater value in what the brand offers (Rodriguez, 2023).

In this sense, it is possible to talk about the possible relationship of this element of communication so widely used today with the communication theories of behaviorism and the theory of Limited Effects. In the first place, the relationship between Behaviorism (Watson, 1913, Skinner, 1938) and Framing (Goffman, 1974; Entman, 1993), from the point of view of the definition of Behaviorism, where the external environment directly influences the observable behaviors of consumers or audiences, leaving aside the internal processes experienced by the receiver, such as emotions, being the role of framing in this sense a stimulus designed to direct the attention and interpretations of the target audience. However, framing includes a cognitive dimension that classical behaviorism does not consider, because it expands this theory considering that messages are designed to emphasize certain aspects that the brand wants to highlight, linking the receiver's external environment and the company's intentions.

In this line of relationship of Framing with traditional communication theories, the most direct relationship exists between the limited effects theory of Laszarfield (1940) with Framing (Goffman, 1974), through the reflection that limited effects recognize that audiences are not passive, but process messages according to their social context and previous predispositions, that is, limited effects depend on how messages are interpreted and recontextualized by audiences and opinion leaders, who frame the aspects that the company wants to transmit. But to understand this better, it is necessary to define how these authors understand the concept of opinion leaders:

- They are individuals within a social group who have more access, interest or knowledge about a particular subject (Lazarsfeld et. al., 1944).
- They influence the opinions and decisions of others in their social circle because of their credibility, knowledge or position within the community (Lazarsfeld et. al., 1944).

Therefore, framing is related to this theory of limited effects by showing that the impact of a message depends on how it is framed within a context chosen by the company and on the subjective interpretations made by individuals, induced by the messages emitted by opinion leaders, if the company decides to use them to frame the parts of the message that are of interest to it.

Brand Image or the integral perception of the consumer

According to Kotler and Keller (2016), brand image is the set of perceptions, emotions and associations that consumers have about a brand (Kotler and Keller, 2016). It can be understood as a result of the use of communication strategies to tell the brand story, coupled with the experiences that followers or consumers have with the brand in question. Within brand image, other related and consequent concepts can be addressed to build it, such as brand awareness or brand reputation.

1. Brand awareness: the brand starts to build engagement

This type of indicators is essential for brands, since companies are constantly trying to make consumers fix the brand name in their minds. Brand awareness is the degree to which a brand is known and remembered by consumers (Aaker, 1996), so the main objective of the brand is to be remembered by customers, since without the awareness that the company builds and achieves, the consumer does not remember it and there cannot be the intended interaction, and therefore, neither the engagement mentioned in the previous points.

2. Brand reputation, the approval of consumers

This is a concept that companies need to build consciously because it is a necessary part of brand equity, and that consumers perceive through positioning strategies. According to Fombrun and Van Riel, (2004), brand reputation or corporate reputation can be defined as the way in which all market members or stakeholders perceive the brand, basing these perceptions on past experiences, shared values and fulfilled expectations (Fombrun and Van Riel, 2004). In this same line of argument, Walker (2010) states that corporate reputation encompasses emotional evaluations and rational evaluations that consumers build over time and that directly affect the positioning of a brand in the market (Walker, 2010). Therefore, reputation can be understood as the general opinion or perception that the market as a whole has about a particular brand, which helps companies to maintain and increase consumer loyalty by influencing consumer trust, as well as supporting the competitive advantage that companies can develop to position themselves above their competition.

Following this line of argument, Dowling (2006) states that a brand with a positive reputation projection in the market as a whole is more likely to be chosen by consumers. This is because, thanks to this reputation, the company conveys reliability, consistency and perceived quality (Dowling, 2006). Therefore, the company must understand that in order to build and manage a stable brand reputation with a solid profile in the market, brands must maintain consistency between what the brand communicates and what it actually sells in the market. The reputation of a brand is composed of several elements that provide the basis for strengthening the brand image: perceived quality, consistency in the communication process and the use of social commitment or CSR strategies. Authors such as Aaker (1996) argue that perceived quality is one of the most important components in building corporate reputation, because consumer confidence is increased and strengthened when brands meet or exceed the expectations that the market places on them (Aaker, 1996). As for the consistency of communication, an important factor in framing and engagement in addition to positioning, according to Kapferer (2012), reputation depends on the brand's ability to convey its values consistently, using all available ways that the company has to reach the consumer, (Kapferer, 2012) whether traditional media, points of sale or new communication models that are developed in digital environments. Finally, with regard to the display of responsibility towards the environment by companies, i.e. Corporate Social Responsibility, Whetten and Mackey (2005) emphasize that consumers have a positive perception of brands that use environmentally responsible strategies in their operations, an aspect that reinforces their corporate reputation (Whetten and Mackey, 2005).

The needs of fruit and vegetable brand capital in terms of communication actions

Once the context of the question has been defined in all the areas considered, the context of the agri-food sector and the context of communication, it is necessary to apply it to the study variable, which is the fruit and vegetable companies. In this part of the chapter, we will try to demonstrate the importance of the relationship between digitized agri-food companies and their customers, using the indicators described, verifying the need to reduce ambiguity in two-way communication, promoting interaction and trust between company and follower and the impact of the environment that accompanies the brand and the use of expert opinion leaders in the sector with an impact on the perception of the message by the target audience.

First of all, it should be taken into account that agri-food companies belong to a sector that in its digital evolution has been more conservative, or perhaps because of its inclination to b2b type commercial relationships or wholesale markets, the digital presence was not so necessary, since in the brand reputation and image of this, other factors aimed at these businesses within the industrial marketing environment and business communication strategies mattered more.

In the agri-food sector it is important to effectively manage communication strategies together with marketing strategies, in order to stand out in a saturated and competitive market. Therefore, it is necessary to use differentiation strategies based on sustainability and health, since these are the trends that concern consumers at the moment, making use of tools that help the company to achieve that differentiation and the emotional connection with the customer, or with the audience that follows it.

With this casuistry in mind, the following table lists the main concepts that are fundamental to influencing consumer perception of agri-food products. Companies that manage to integrate these elements in a coherent manner have a competitive advantage over their competitors, with a greater likelihood of building strong customer relationships and fostering brand loyalty.

Table 1. *Concepts for influencing consumer perception of agri-food products.*

	DEFINITION APPLIED TO THE AGRI-FOOD SECTOR	STRATEGIES APPLICABLE TO THE AGRI-FOOD SECTOR
FRAMING • **Communication tool that allows to shape how audiences interpret information.** • **Select aspects of perceived reality and emphasize them in a message to promote a specific interpretation" Entman (1993).**	It is used to highlight key product attributes: • Sustainable origin • Impact on health • Contribution to social welfare. **Industry utility:** consumers are often influenced by messages that appeal to ethical and emotional values, such as environmental sustainability or support for local producers (Grunert, 2005).	• Highlight certifications that help build the framing: o Organic Product o Fair trade o Transgenic free • Communicate stories about local producers and their social impact. • Show the positive health and nutritional impact of consuming these foods.
BRAND IMAGE: **set of perceptions, associations and emotions that consumers have about a brand (Kotlery Keller, 2016).**	• Consumers value attributes such as freshness, quality, sustainability and traceability (Barreiro, 2018). • A strong brand image generates trust and loyalty, crucial aspects for agri-food companies facing competition from mass and low-cost products (Aaker, 1996). • It affects consumers' willingness to pay a higher price for products perceived as higher quality or more responsible.	• **Product quality:** Consumers associate quality with freshness and compliance with food safety regulations (Grunert, 2005). • **Traceability and transparency:** Informing about the origin of products reinforces consumer confidence. • **Social and environmental commitment:** Alignment with ethical values improves brand perception (Kapferer, 2012).

ENGAGEMENT: Engagement involves the active and emotional interaction between consumers and the brand, resulting in a meaningful and long-term relationship (Hollebeek et al., 2014). Strong engagement reinforces loyalty and turns consumers into brand advocates (Brodie et al.,2013).	• Essential to foster consumer loyalty and differentiate in a saturated market. • Social networks and other digital platforms allow agri-food companies to interact directly with their audiences, fostering engagement through educational content, recipes, promotions and campaigns that invite active participation.	• Creation of educational content on sustainability or food preparation. • Interactive social media campaigns, such as recipe contests or consumer testimonials. • Co-creation initiatives, where consumers can participate in the development of new products or packaging design.

Source: own elaboration

In recent times, consumer trends are forcing agri-food companies, particularly those involved in the fruit and vegetable sub-sector, to give personality to the brand and tell its benefits for the connection with the end consumer, whether the companies themselves sell directly to the end customer or because they need intermediaries, but always with the aim of standing out from the competition, with these new communication trends. Brand reputation no longer affects only B2B trade, but the end consumer perceives fruit and vegetable products classified by quality, not only by origin or sizes marked and commented by intermediaries, but receives communication from the brand as *pull strategies*, either by traditional methods or by social networks and other digital communication, which communicate and intervene in the positioning and image of the products, as well as in the notoriety and reputation, causing customers to go to the intermediary demanding those brands of products, or to buy directly from the official websites of the brand, with the development of ecommerce in the agri-food sector. And this is of vital importance since in the digital environments in which companies broadcast their messages or have commercial activity, the reputation expands, especially due to the reach provided by the social networks of the brand, the online store itself where the company has direct sales activity, as well as in the reviews of consumers in these digital environments (Chaffey and Ellis-Chadwick, 2019).

But how do these aspects influence the marketing strategy? How important is the customer relationship with the brand to influence the improvement of positioning? In order to improve this situation that the food industry has not worked so far, it is necessary to take into account that this interaction is essential, and for this, the basic thing is, on the one hand, the construction of brand communities where consumers participate in digital environments, which will strengthen the engagement and solidifies the positioning of the brand. According to Espejel et al. (2008), brands that manage to connect emotionally with their consumers through digital platforms generate greater loyalty and trust (Espejel et al., 2008).

To support these hypotheses, it is necessary to define which are the essential elements for agri-food companies to take into account in order to improve Brand Positioning:

Table 2. *Essential elements of positioning in agri-food companies*

	Description	Example
1. SOCIAL NETWORKS	- Increase visibility and connection with local and international consumers.	Posts about the origin of agricultural products and processes on Instagram and TikTok.
	- They communicate values such as sustainability and quality.	
	- They educate consumers.	
2. KEY POSITIONING STRATEGIES		
a) Consistent Brand Identity	- Use of colors and designs related to nature.	Highlight certifications of organic farming or fair trade practices.
	- Clear messages aligned with the mission and values.	
b) Educational and Transparent Content	- Publications on production processes, product benefits and sustainable practices.	Show audiovisual content on the process of cultivation and harvesting to demonstrate transparency.
	- They reinforce consumer confidence.	
c) Use of Digital Trends	- Collaborations with influencers.	Audiovisual content of any influencer cooking with the brand's vegetables or eating these foods.
	- Engaging visual content: images, videos, reels, etc.	
	- Short and dynamic formats.	
d) Interaction and Community Building	- Answer queries and promote contests or surveys.	Creation of an own hashtag for followers to share recipes in networks made with the brand's products.
	- Encourage the use of hashtags for conversations and user participation.	
e) Promotion of Certifications and Differentiators	- Highlight certifications such as organic or fair trade.	Companies that grow in PDO areas showing the traceability of the process with content in networks.
	- Highlight characteristics: "fresh", "local", "chemical free".	
3. POSITIONING CHALLENGES	- High competition in similar messages.	To show the quality and transparency of the product, as well as a real and permanent customer service team.
	- Technological limitations in rural enterprises.	

	- Possible reputational crises amplified in networks.	
4. METRICS TO EVALUATE POSITIONING	- **Engagement Rate**: likes, comments, shares. - **Reach**: unique users who see the content. - **Digital reputation**: analysis of mentions.	Track brand impact on networks and maintain activity to enhance reputation and influence brand positioning.

Source: own elaboration

What importance can reputation have then for fruit and vegetable brands, noting the importance of positioning and the elements that build it.

In short, it influences as in the rest of the sectors, since it works as an intangible asset, what changes are the attributes on which to rely to create that positive reputation in consumers, since, being an edible product and focused on healthy eating and health, as well as food safety and its commitment to the environment, whose prices increase with the increase in the quality of the products, they must support this reputation in the quality itself. But with the new sociocultural trends of consumers, the attributes of a good reputation of these brands should be based on traceability and origin of products showing transparency in these processes, sustainability and business ethics (Grunert, 2005)

In this sector, the main supplier of the human food market, it should be taken into account that the use of communication and marketing techniques, such as building brand reputation, must be responsible and consistent with the intrinsic characteristics of the sector, with an active and recurrent communication strategy, showing the benefits and establishing clear protocols of quality and traceability, to handle risk situations that may arise and maintaining an honest and direct communication with their followers, as it is necessary to foresee the repercussions that their actions may have, because, as Grunert, (2005) states, crises related to food safety, as well as product recalls or cases of food contamination, can have a devastating impact on the reputation of agri-food brands in general, particularly fruit and vegetable brands, as reputational crises can spread rapidly in these environments due to the speed with which information is disseminated in social networks and digital media (Grunert, 2005).

Table 3. *Key Factors in Building the Digital Reputation of Agri-Food Companies.*

	DEFINITION	PROPOSAL FOR DIGITAL STRATEGY
TRANSPARENCY AND TRACEABILITY:	• Consumers value transparency in production and distribution processes in the agri-food sector. • Companies that clearly communicate the origin of their products and their sustainable practices are able to build trust and strengthen their reputation (Grolleau et al., 2007).	• **Use of informative labels:** labels or QR codes with information so that consumers can trace the origin and production process of the food, as well as providing a route to the information of the producing company in digital environments, i.e., its website and social networks.
SUSTAINABILITY AND CORPORATE SOCIAL RESPONSIBILITY (CSR):	• Sustainable practices are a growing expectation among consumers of agri-food products. • Brands with a visible commitment to the environment and the local community generate positive consumer perceptions (Whetten and Mackey (2005).	• **Use of audiovisual content in social networks:** create and share the company's reality in video format through corporate social networks, showing the positive impact of the brand in agricultural communities. • **Creation of sustainability-related content** on the company's website, such as reports or own actions.
MANAGEMENT OF ONLINE REVIEWS AND OPINIONS:	Positive online reviews increase the perception of trust, while negative reviews can generate reputational damage if not managed appropriately (Chaffey and Ellis-Chadwick 2019).	• **Review monitoring team:** incorporate this tool in the company to help respond to customer comments and reviews. • **Drive positive digital word-of-mouth:** Encourage satisfied customers to share their experiences by rewarding them with promotions, discounts or sweepstakes.
CREATION OF DIGITAL COMMUNITIES:	• Social media helps agri-food brands build communities that share common values to increase and enhance their reputation. • Consistent communication in social networks helps brands to strengthen their market positioning Kapferer (2012).	• **Create participatory content with the consumer:** creation of recipes with the brand's products, either experts or consumers themselves record and share it with the brand to appear on the brand's social networks.

- **Use of proprietary hashtags:** to encourage interaction between and with consumers.

Source: own elaboration

According to Hingley (2005), reputation in this sector is strongly influenced by the perception of product quality, through certifications, such as whether it is organic or fair trade, as well as commitment to sustainable agricultural practices (Hingley, 2005). In this context, digital environments become a tool that offers opportunities to fruit and vegetable companies in this new way of creating brand personality, due to the proximity it brings to the consumer, as well as the ease and speed in telling the values of the brand and other practices, through communication strategies and actions, but also gives them a risk, because of the greater public exposure that they were not previously involved in, since the responsibility of telling the goodness of the sector fell on intermediaries.

Analysis of the results of brand equity communication in the agri-food sector

Once the key concepts have been described, the pertinent relationships must be made to understand the relevance of the concepts in themselves and the need to create a network among them to establish communication strategies applied to agrifood markets.

The positioning of agri-food companies in social networks requires a complete strategy in terms of marketing and communication, which must combine values that differentiate the company, own and exclusive content that defines it, as well as the use of social networks to transmit to consumers all the attributes of the brand that the company builds and thus promote and reinforce engagement with the consumer and strengthen the competitiveness of the company in digital environments.

Due to the very nature of the sector, this communication strategy must include brand values such as sustainability, product quality and processes, as well as transparency and traceability in the company, so that the relationship with the consumer is solid.

In the next section, the relationships between positioning and the rest of the elements that make up the brand architecture in the agri-food sector are discussed:

- Companies that manage to establish a clear and consistent positioning will reinforce the brand's notoriety with the aim of making consumers aware of the brand and remember it, so that these two premises influence their purchase decision (Aaker, 1996). Therefore, in agri-food companies it is necessary to apply these premises to bring the customer closer to the brand and thus encourage the purchase of products on the websites of fruit and vegetable brands.
- From the perspective of improving the brand image of agri-food companies and especially of fruit and vegetable companies, it should be taken into account that brand image is directly influenced by positioning, considering that decisions in this area are made by the company from a strategic point of view, seeking brand differentiation, with the ultimate goal of influencing the perception of consumers (Kotler and Keller, 2016).

The attributes of engagement, reputation, notoriety and brand image are listed below.

- For companies to build a strong engagement between the consumer and the company itself will reinforce their brand image, since the positive interaction that consumers can make with the company's content will be the confirmed acceptance of the values and attributes that the brand communicates by its followers (Hollebeek et al., 2014). Therefore, agri-food brands have to connect with the consumer and establish solid and lasting relationships seeking to improve the brand image, also relying on the strategic use of framing to create content to influence and shape how consumers interpret and associate the brand with certain important values in the sector, such as traceability, sustainability, social, productive and commercial commitment to the local environment, health or healthy nutrition.

- If agri-food companies achieve a positive brand image with the creation of content posted on their social media profiles, they can build a good reputation, being essential this relationship of attributes that contribute to brand equity. This connection reflects the coherence between what the brand communicates to its followers and what it sells in the market (Dowling, 2006). Therefore, a strong brand image strengthens the reputation of brands, especially when the associations are consistent with the values communicated by agri-food companies and are relevant to their consumers. In addition, it should be noted that brand reputation is influenced by engagement, as the interactions and experiences shared by consumers on social networks can influence how others perceive the brand and strengthen or weaken the public perception of the brand (Chaffey and Ellis-Chadwick, 2019).

- If fruit and vegetable brands want to achieve a high level of brand awareness, they need to build a relevant brand image in the market and have a positive reputation. This is because customer awareness of the brand begins when it is recognized above the competition and remembered (Aaker, 1996). Therefore, brand awareness is essential to build quality engagement, since followers and consumers feel comfortable interacting with companies that they consider relevant and that they recognize within the market (Hollebeek et al., 2014). This reasoning helps to argue that awareness is also essential for establishing brand positioning, because a high level of awareness increases the likelihood that the brand will occupy a position of relevance desired by the company in the consumer's mind.

Conclusions

The agri-food sector is a sector that is undergoing a digital transformation that favors its expansion in the omnichannel, bringing production and commercial processes closer to consumers. This new situation forces agri-food producers and wholesale intermediaries to connect more directly with their target consumer but through all areas of communication. This is why the incursion of social networks in their marketing strategy is marking the new steps of this strategic sector in the national and European economy. Concepts such as engagement, framing or positioning are now essential to understand the communication actions of agri-food SMEs. The new window to the world offered by corporate profiles on social networks such as Instagram or TikTok bring the company's philosophy closer to new customers, who are younger and concerned about health and sustainability, values necessary to build quality brand equity in companies in the sector.

In short, agri-food companies, but specifically fruit and vegetable SMEs, have found a springboard in social networks to bring their activity closer and improve their sales figures thanks to new actions and communication strategies, based on online communities, informative content related to health and nutrition, as well as the promotion of quality seals and transparency in their processes.

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Technological perspectives in the optimization of the supply chain: A focus on sustainability

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Introduction

Efficient supply chain (SC) management has historically been an essential component of business competitiveness. However, in the last two decades, the pressure to align this efficiency with sustainability criteria has radically transformed organizational priorities. Today, the supply chain must not only reduce costs and time, but also minimize its environmental and social impact, promoting ethical and responsible practices throughout the value network (Seuring & Müller, 2008).

Sustainability has become a key dimension in the formulation of operational strategies, driven by the urgency of climate change, environmental regulations and growing consumer awareness. This new paradigm demands supply chains that are resilient, transparent and adaptable to changing contexts. In this regard, emerging technologies offer powerful tools to rethink traditional operating models and move towards smarter and more sustainable chains.

Technologies such as the Internet of Things (IoT), blockchain, artificial intelligence (AI) and Big Data analytics are revolutionizing logistics systems, facilitating automation, real-time traceability, data-driven decision making, and agile coordination among multiple actors (Srai & Lorentz, 2019). For example, through IoT sensors it is possible to monitor transport conditions such as temperature or humidity, which is vital for the food or pharmaceutical industry. Likewise, the blockchain ensures transparency of transactions and verification of compliance with social or environmental standards.

Despite these advances, incorporating technology into supply chains is not without its challenges. Many companies face economic, cultural and digital infrastructure barriers, especially in emerging contexts. In addition, technological adoption must be aligned with ethical principles, avoiding practices such as planned obsolescence or digital labor exploitation, which contradict the principles of sustainability.

This chapter sets out to analyze how emerging technologies are influencing sustainable supply chain optimization, addressing both their benefits and limitations. The central question guiding this research is: How are emerging technologies influencing sustainable supply chain optimization? From this premise, it is hypothesized that the effective integration of these technologies not only improves operational efficiency, but also drives the environmental, economic and social sustainability of organizations.

To address this analysis, recent academic literature and emblematic case studies of leading companies in sustainable digital transformation will be reviewed. In addition, a conceptual model of a sustainable digital supply chain will be proposed, aligned with the United Nations Sustainable Development Goals (SDGs), especially SDG 9 (Industry, innovation and infrastructure) and SDG 12 (Responsible production and consumption).

With this, this chapter seeks to contribute to both the theory and practice of industrial engineering and operations management, serving as a reference for researchers, decision makers and professionals in the area who seek to integrate sustainability as a cross-cutting axis in their supply chains.

Conceptual foundations of the sustainable supply chain

The supply chain is a complex network of entities involved in the production, transformation and distribution of products or services. This system includes suppliers, manufacturers, distributors, retailers and final consumers, as well as the relationships and exchanges of information, materials and financial resources that occur between them (Christopher, 2016). The traditional objective of this network has been to optimize the flow of goods and services to achieve efficiency and profitability. However, this approach focused solely on cost has proven to be insufficient in the face of contemporary demands for environmental and social responsibility.

In this new context, the concept of sustainable supply chain (SSC) emerges as a natural evolution of previous models. According to the definition proposed by Seuring and Müller (2008), a SSC integrates economic, environmental and social objectives in its activities, seeking a balance between corporate profitability, respect for the environment and social welfare. This triple line of sustainability aligns with the approach of the Sustainable Development Goals (SDGs) established by the United Nations, especially with regard to SDGs 9, 12 and 13.

Companies that adopt sustainable management of their supply chain have the ability to generate shared value, not only for their shareholders, but also for their broader stakeholders, including communities, governments and future consumers. In addition, sustainability in supply chains is increasingly seen as a competitive advantage, as it enables organizations to reduce operational risks, enhance their reputation, access new markets and respond to pressure from conscious consumers (Gold et al., 2010).

From an operational perspective, sustainability can be integrated into various stages of the chain. For example, in the procurement phase, through responsible purchasing that prioritizes certified or fair-trade suppliers; in production, by applying principles of clean manufacturing and efficient use of resources; and in distribution, by optimizing logistics routes to reduce the carbon footprint. Also included are reverse logistics and circular economy practices, such as recycling, reusing or redesigning products.

Emerging technologies in supply chain management

Digital transformation represents one of the most important drivers of change in contemporary supply chain management. So-called emerging technologies, including the Internet of Things (IoT), artificial intelligence (AI), blockchain, cloud computing and big data, offer new capabilities to address logistics challenges, particularly those related to sustainability (Waller & Fawcett, 2013; Barreto et al., 2017).

These technologies enable companies to collect and analyze large volumes of data in real time, improve visibility across the supply network, and make more informed and agile decisions. IoT, for example, enables the sensorization of fleets, warehouses and products, facilitating the monitoring of environmental and geographic conditions, which reduces losses, improves quality and ensures regulatory compliance. Artificial intelligence, meanwhile, enables the development of predictive models for demand, detecting anomalies or automating complex logistics processes.

Likewise, the use of blockchain has gained ground in sectors such as food and pharmaceuticals, where product traceability and authenticity are critical. This technology provides a distributed, secure and transparent record of transactions, eliminating unnecessary intermediaries and strengthening trust between actors (Kouhizadeh et al., 2021). In addition, when technologies such as AI and blockchain are combined, an intelligent ecosystem can be generated that facilitates real-time environmental audits or verification of ethical practices across the network.

From a sustainability perspective, these technologies enable organizations to implement more accurate mechanisms for measuring their environmental and social footprint, facilitating regulatory compliance, access to international certifications and continuous improvement in key processes. Companies can now more accurately trace the origin of their raw materials, identify suppliers with high social or environmental risk, and automate responses to disruptive events such as disruptions due to natural disasters or pandemics (Ivanov, 2020).

Current context

Despite the transformative potential of emerging technologies, their effective adoption in supply chains presents a number of structural, financial and cultural constraints. First, many organizations lack a clear strategy for digitization, limiting themselves to implementing technological solutions in a fragmented or isolated manner. This lack of integration leads to inefficiencies, increases costs and generates internal resistance (Kache & Seuring, 2017).

Second, there are significant gaps between large corporations and small or medium-sized enterprises (SMEs) in terms of investment capacity, digital infrastructure and human talent. In developing countries, these gaps are even larger and reflect systemic inequalities that affect sustainable technology adoption. In addition, many organizations continue to operate under a linear production-consumption-waste logic, which ignores fundamental principles of circularity and extended producer responsibility (Geissdoerfer et al., 2017).

Another critical aspect is the lack of alignment between the objectives of different functional areas within companies. While the operations area may seek efficiency, the sustainability area may have environmental goals that conflict with short-term financial decisions. This strategic disconnect hinders the adoption of technologies oriented to sustainable results.

Finally, the absence of clear and updated regulatory frameworks, coupled with the lack of global standards for traceability, data privacy and system interoperability, generates uncertainty and slows down investment in innovation. Although there are initiatives such as the United Nations Global Compact or the

ISO 14001 and 26000 standards, these are not yet mandatory or sufficiently adapted to the digital context.

Against this backdrop, there is a need to rethink the digital transformation of supply chains from a holistic perspective, integrating operational efficiency with the principles of environmental, social and economic sustainability. In line with the Sustainable Development Goals, particularly SDG 9 and SDG 12, this chapter seeks to analyze the strategic role played by emerging technologies in the transition to more resilient, responsible and inclusive supply chains. In this context, the following research question is posed: How do emerging technologies influence the sustainable transformation of supply chains, considering their impact on efficiency, traceability, environmental performance and social equity?

Development of the research - Methodological process

This chapter was built under a qualitative methodological approach, of an exploratory and descriptive nature, aimed at examining in depth and contextually the role of emerging technologies in the sustainable optimization of supply chains. This choice responds to the need to address a complex and multidimensional phenomenon, in which technological, logistical, economic, environmental and social aspects converge. The selected methodology is based on a systematic review of academic and technical literature, complemented by the analysis of real cases of companies that have implemented technological strategies aimed at sustainability in their supply chains.

The methodological design contemplated the identification, selection, evaluation and interpretation of scientific sources extracted from databases such as Scopus, Web of Science, ScienceDirect, SpringerLink and Emerald Insight, prioritizing articles published between 2015 and 2023. Keywords used in the search included terms such as "sustainable supply chain", "digital transformation", "emerging technologies in logistics", "blockchain supply chain", "IoT logistics", "AI sustainability" and "Industry 4.0". As a complement, technical reports, white papers, studies from global consulting firms such as McKinsey & Company, Deloitte, PwC, as well as reports from multilateral organizations such as the UN, the World Economic Forum and the International Organization for Standardization (ISO) were included.

The final selection was made up of 42 relevant documents that meet the criteria of academic rigor, practical applicability and timeliness. Through comparative analysis and triangulation of sources, it was possible to build a solid evidence base to support the arguments presented in this chapter. In addition, three emblematic case studies were analyzed: Walmart, Maersk and IBM, as companies recognized for integrating technology and sustainability in a strategic and systematic manner.

Among the most relevant findings, it was identified that emerging technologies are not only transforming traditional logistics processes, but are also enabling new organizational capabilities oriented towards sustainability. The Internet of Things (IoT), for example, has established itself as a key tool for real-time monitoring of logistics assets, making it possible to record variables such as location, temperature, vibration and humidity. This is especially useful in sensitive sectors such as food or pharmaceuticals, where condition monitoring can prevent massive product losses and improve regulatory compliance (Moktadir et al., 2020). In addition, the use of IoT contributes to reducing energy consumption by enabling more efficient management of transportation and storage.

Artificial intelligence (AI), meanwhile, is being applied for predictive demand analysis, route optimization and preventive maintenance of equipment. These uses make it possible to reduce inventory levels, shorten delivery times and minimize operating costs, all with a lower environmental impact. For example, the use of machine learning algorithms makes it possible to anticipate consumption patterns, which avoids overproduction and waste of resources (Baryannis et al., 2019). Likewise, AI is used to develop digital twins, virtual simulations of logistics processes that allow testing scenarios without incurring real costs or generating waste.

Blockchain is another technology that has gained particular relevance in recent years, especially in terms of traceability and transparency. Its application in supply chains makes it possible to immutably and decentralized record all transactions and events that occur in the life cycle of a product. This facilitates the verification of environmental certifications, regulatory compliance and trust between the different actors in the network (Queiroz & Wamba, 2019). In the case of Walmart, the implementation of blockchain in its food chain has made it possible to trace the origin of products such as meat and fruits in a matter of seconds, instead of days, which has strengthened food safety, reduced waste and optimized response times to eventual health crises (IBM, 2018).

The benefits of these technologies are not limited to the operational level. They have also proven to generate strategic value by enhancing corporate reputation, facilitating access to markets with more demanding environmental standards and reducing the risks associated with regulatory non-compliance. In the case of Maersk, the digitization of port processes through the TradeLens platform has reduced document transit times by up to 40%, reduced port congestion and optimized the use of space, thus contributing to a reduction in emissions associated with maritime transport (Notteboom et al., 2021).

From the analysis of these cases and the theoretical framework reviewed, it is clear that the implementation of emerging technologies should not be conceived as an isolated or merely instrumental action. To achieve significant sustainable impacts, such technologies must be integrated into a coherent organizational strategy, with a long-term vision and an explicit commitment to sustainability values. Technological adoption must be accompanied by changes in organizational culture, investments in training, process redesign and updating of environmental and social performance measurement systems.

Another relevant aspect identified at this stage of the research is the digital divide that exists between large corporations and small and medium-sized enterprises (SMEs), as well as between developed countries and emerging economies. SMEs generally face greater barriers to adopting advanced technologies, due to budgetary constraints, lack of trained personnel or the absence of government incentives. These inequalities represent a major obstacle to the generalization of sustainable practices throughout the supply network, and require active public policies that promote the democratization of innovation (Sarkis et al., 2020).

The evidence gathered allows us to confirm the hypothesis put forward at the beginning of the chapter: emerging technologies, when used in a strategic, integrated and ethical manner, have the potential to improve not only the efficiency of supply chains, but also their environmental, social and economic sustainability. However, their effective adoption requires overcoming significant organizational, technical and regulatory challenges. The following section will discuss these tensions in greater depth, as well as the conditions necessary to ensure that the digitization of supply chains is also an opportunity to drive large-scale sustainable transformation.

Critical challenges in sustainable digital supply chain transformation.

The findings outlined in the previous section clearly reflect the significant impact that emerging technologies are having on the efficiency and sustainability of supply chains. However, beyond the obvious benefits, it is necessary to enter into a critical discussion that allows us to interpret the findings in light of the academic literature and the current challenges facing both companies and entire logistics ecosystems.

First, the incorporation of technologies such as IoT, blockchain and artificial intelligence has been celebrated for their ability to generate greater visibility, traceability and agility. However, as suggested by Ivanov et al. (2019), this digitization process also introduces new vulnerabilities and technological dependencies. Increasing automation can make supply chains more rigid to unforeseen disruptions, such as cyber attacks, energy disruptions, or systemic failures. Indeed, it has been observed that overly integrated and technology-dependent systems tend to collapse faster in extreme scenarios, as evidenced during the COVID-19 pandemic (Ivanov, 2020).

In this regard, the literature emphasizes the need for supply chains to be not only efficient or sustainable, but also resilient, i.e., capable of adapting, recovering and learning from adverse events. The challenge, then, is to design technological architectures that do not increase systemic risk, but rather distribute and mitigate it. This requires robust technological governance, up-to-date cybersecurity protocols and an organizational culture that favors flexibility and continuous learning (Sheffi, 2020).

On the other hand, the contrast between the practices of large multinational corporations and the realities of small and medium-sized enterprises remains one of the main bottlenecks to the advancement of digital sustainability. As the study by Kache and Seuring (2017) indicates, many SMEs lack access to financial resources, technical training or digital infrastructure needed to adopt these technologies, which creates technological segmentation within the same chains. This asymmetry limits the scope of sustainable solutions and can perpetuate inefficient or environmentally harmful practices in the weakest links.

Similarly, recent literature has pointed out that the adoption of technology is not in itself a guarantee of sustainability. Moreover, there is a risk that some initiatives may be perceived as "technological greenwashing", i.e., façade strategies that adopt emerging technologies for purely reputational purposes, without substantially modifying their underlying practices (Delmas & Burbano, 2011). This is especially common in industries where environmental regulation is lax or where there is little consumer pressure. Consequently, it is essential to develop sustainable performance monitoring and evaluation systems based on verifiable, traceable and public indicators that combine qualitative and quantitative data and are aligned with international frameworks such as the SDGs, the Global Compact or the GRI guidelines.

A fundamental ethical debate also arises: who controls the data and algorithms that govern logistics decisions. The concentration of data in the hands of a few digital platform providers can generate power imbalances, affecting transparency, competition and technological sovereignty of smaller organizations or developing countries. As Zuboff (2019) posits, surveillance capitalism could also extend to the industrial sphere, compromising privacy, autonomy and labor rights, if firm legal frameworks and ethical principles are not established.

Another relevant line of discussion is the relationship between technological innovation and environmental sustainability from a life-cycle approach. Although the use of sensors, digital platforms and robots can generate immediate benefits in terms of efficiency, it also involves intensive use of energy, rare minerals and natural resources. The production and discarding of hardware, the energy consumption of data centers or the international transportation of electronic components, can neutralize environmental benefits if they are not planned under circular economy principles (Geissdoerfer et al., 2017). Therefore, it is crucial to incorporate life cycle and ecological footprint analysis in the design, selection and use of emerging technologies in the supply chain.

Finally, the findings suggest that sustainable supply chain transformation should not be reduced to a technical issue. On the contrary, it is a deeply organizational and political process, where decisions about which technologies to adopt, how to implement them and for what purposes, reflect values, interests and visions of the future. In this framework, technological sustainability cannot be understood in a neutral way, but must be guided by principles of social justice, intergenerational equity and inclusive participation.

In conclusion, the discussion of results confirms that emerging technologies can be powerful allies in achieving more efficient, transparent and sustainable supply chains. However, their implementation must be framed within a comprehensive strategy that considers both benefits and risks, promotes technological equity and ensures that digitalization does not become a form of exclusion, but a real lever for transformation towards a fairer and more sustainable economy.

Conclusions

This chapter has approached the phenomenon of digital transformation of the supply chain from a holistic perspective, analyzing how emerging technologies can contribute to its operational optimization and, at the same time, to its alignment with sustainability principles. The evidence gathered, both from specialized literature and from relevant business cases, allows us to argue that tools such as the Internet of Things (IoT), artificial intelligence (AI), blockchain, data analytics and advanced automation not only increase logistics efficiency, but also enable new ways of managing the environmental, social and economic impact of operations.

One of the main contributions of this study has been to demonstrate that technology adoption is neither neutral nor automatic, but depends on multiple organizational, strategic, cultural and regulatory factors. Sustainable supply chain transformation requires more than technological infrastructure: it demands a systemic vision, committed leadership, inter-organizational coordination and governance frameworks oriented to the common good. Thus, technologies should be understood as enablers, but not as ends in themselves.

The findings also show that, although there are successful cases of technology integration for sustainable purposes, these are still the exception rather than the norm. Most organizations, especially small and medium-sized enterprises, face significant barriers to accessing and adapting these technologies to their specific contexts. This technology gap threatens to deepen existing inequalities within globalized supply networks, undermining efforts towards shared and equitable sustainability.

It has also become evident that the environmental and social benefits of emerging technologies can be nullified if criteria of ethical responsibility, energy efficiency and circular economy are not adopted in their design and operation. Digitalization, if not guided by principles of justice, transparency and participation, runs the risk of reproducing patterns of exclusion, surveillance and technological extractivism.

From the methodological point of view, the qualitative and exploratory approach adopted has allowed the construction of a critical view, based on impact literature and real cases, which integrates conceptual elements with practical applications. This approach has been useful to identify not only the opportunities, but also the contradictions, tensions and limits of sustainable digital transformation.

In strategic terms, it is concluded that the path towards a sustainable digital supply chain must start from the recognition of its complexity. Sustainability cannot be reduced to operational metrics, nor can technology be reduced to isolated tools. Only from a holistic, collaborative and ethically committed vision will it be possible to turn the digital revolution into a true vector of transition towards fairer, more resilient and environmentally responsible economic models.

Finally, it is suggested that future research should delve deeper into multiscale and longitudinal empirical studies to assess the real impact of these technologies in different industrial contexts and geographic regions. It is also necessary to advance in the construction of robust indicators that measure not only technological adoption, but also its effective contribution to sustainability objectives.

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Analysis of the impact of artificial intelligence tools on communication and marketing agencies

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Introduction

The corporate communication landscape has undergone a disruptive change. The digital revolution, the rise of social networks and the increasing proliferation of technological tools have changed the way companies interact with their audience and their impact on the business world (Georgescu & Popescul, 2015). In this constantly evolving environment, communication agencies have evolved rapidly to adapt to the audiences and the new needs of their clients and brands.

In this transformation, the role of social networks and the rise of the relevance of creativity in a context where images and visuals are becoming more and more important (Rubik, 2022).

The advent of artificial intelligence marks a new milestone in this transformation. (Herrera-Ortiz et al., 2024) AI-based technologies are changing not only the internal processes of agencies, but also the strategies and tactics they employ to build and manage their clients' corporate brand. From trend scouting to content creation, artificial intelligence unlocks scenarios that were recently considered mere imaginative constructs (Salazar, I. 2018)

However, the incorporation of artificial intelligence in corporate communication brings with it a number of challenges and challenges (Herrera-Ortiz et al., 2024b) Questions are raised about the use of these technologies, data privacy and even the co-creation of communication materials (ChatGPT, 2023) In addition, agencies face the challenge of adapting their structures and capabilities to take advantage of the potential of artificial intelligence.

This introduction contextualizes the role of communication agencies, how social networks are key in the creation of corporate communication and the impact of artificial intelligence in the world of communication through the vision of communication and marketing agencies (Hidalgo-Marí & Segarra-Saavedra, 2019).

This chapter focuses on answering the following research question: How is artificial intelligence impacting the work of communication and marketing agencies in creating and managing brand messages?

To address this research question, this chapter will delve into the evolution of communication agencies in the digital age, the strategic role of social networks, the transformative impact of AI (especially generative AI) on communication, and the ethical and privacy challenges arising from its implementation, helping to define the opportunities and challenges for communication and marketing agencies today.

Evolution of communication and marketing agencies in the digital era

The communications agency industry has undergone a significant evolution in the modern era, driven by technological, social and economic changes. These agencies play an essential role in the creation and management of effective communication strategies for companies, organizations and brands. They are key players in the contemporary business environment, playing a leading role in the creation, planning and execution of effective communication strategies (Moreno, 2023). The digital revolution has meant that, and the change in consumer behavior has transformed the relationships between agencies and clients, as well as the communication and marketing strategies employed by brands and business organizations.

Nowadays, communication professionals within agencies adopt a holistic approach from different channels, such as digital marketing, online content, social networks, and media relations, building the corporate brand in a global way. They must keep in mind that the content strategy must be designed for the brand's audience, creating relevant and engaging content that responds to the clients' corporate communication strategy. Whose objective should be to increase visibility and reach through publications in social networks, creation of articles, press releases and visual creativities.

Digital culture and consumer behaviors have transformed the advertising industry, making necessary changes in agency structures and creative processes to meet new market demands (del Río Pérez & Kaufmann Argueta, 2014). In this sense, agencies should go a step ahead in the use of new technologies and social networks, to shape the best communication strategies for their clients (Martín, 2022) and also adapt to new creative processes and adopt new digital and communication capabilities.

Communication strategies in social networks

The digital revolution of social platforms has redefined the paradigm of business communication, profoundly altering the channels of interaction between corporations and their various target audiences. Corporate brands are adopting strategic approaches to building their brand through social networks. "In short, social networks have become a crucial strategic tool for corporate communication, brand building, and customer engagement in various sectors" (Birim, 2016)

In this context, according to the IAB Spain social media study (2024) in Spain, 86% of Internet users between 12 and 74 years of age currently use social networks, which represents approximately 30 million users. This IAB study also reveals that industry professionals use social networks especially for four strategic objectives: to strengthen *branding* of brands, facilitate customer service, promote sales and increase awareness in the market. Furthermore, in 2024, the average use of social networks reached its highest point in the last seven years, with users interacting with an average of 4.9 platforms.

In this sense, different researchers recognize that communication strategies in social networks, such as interaction and generated content can improve brand image as Rivanto & Novianti (2019) "A good communication strategy in social networks can help companies to build or maintain their image more easily, benefiting from the company's presence" In addition, these facilitate bidirectionality between organizations and the audiences they address, creating connections and emotions between brand and audiences.

In addition, the IAB study (2024) reveals that the leading channels in terms of commercial use by professionals are Facebook, YouTube and Instagram. A 41% of professionals have declared in this study that they have increased their investment in advertising compared to 2023. This trend shows a growing relevance of social networks as key tools to generate advertising and communication strategies for brands and communication agencies.

In short, social media management requires, in fact, a well-planned content strategy to unify commercial messages along with others to maintain and enhance the image, with the aim of attracting different audiences (Hidalgo-Marí and Segarra-Saavedra, 2019: 108). It is evident that social networks collaborate in the construction of opinions and behaviors of users and brands, and that it is essential to adapt brand strategies to today's changing digital landscape.

In summary, good social media management for brands enhances marketing strategies by providing personalized experiences and increasing brand equity (Gupta et al., 2023)

Impact of AI on social networks and corporate communication.

The advance of artificial intelligence is profoundly transforming the landscape of communication in the contemporary world (Torres Toukoumidis, Leon Alberca, 2024). AI is transforming the ways of making and telling stories, within communication the impact is significant in areas such as marketing, digital communication, and journalism. In this sense, the term artificial intelligence according to Carbonell-García et al. (2023) is defined "as a way of systematizing activities performed by humans through computations". However, in addition to all the technical definitions, we could assume artificial intelligence, as Herrera-Ortiz et al. (2024b) assert "as a process of cultural transformation and of the forms of social interaction". Thus, the irruption of technological innovations is catalyzing a cultural metamorphosis that permeates all areas. In this context of widespread change, artificial intelligence emerges as a disruptive factor, offering a range of potential applications that promise to redefine our interaction with the environment (Herrera-Ortiz et al., 2024).

Since the release of the Stable Diffusion code and the popularization of similar programs, such as DALL-E and Midjourney, the evolution of AI and AI generators has accelerated. The democratization of the use of ChatGPT, has experienced an intense impact on the world of communication.

In this sense, artificial intelligence is presented as a powerful tool to reshape 21st century communication and revolutionize marketing and brand building strategies, as it offers new opportunities for companies to connect with consumers. In addition, it can enhance communication strategies and reinforce brand identity, supported by a good corporate brand image (Krisprimandoyo, 2024).

Generative artificial intelligence technologies have emerged as an invaluable resource in the creation of material for social platforms. These tools enable the automated elaboration of various content formats, including text, visuals and audio. As a result, communication experts experience a marked improvement in the efficiency of their creative processes (Franganillo, 2023).

According to Mas Garcia (2023), generative intelligence "is a branch of artificial intelligence that aims to create new and original content from existing data. For example, it can generate texts, images, music, voices or videos that do not exist previously, but are coherent and realistic. To do this, it uses complex mathematical models that learn from the data provided to them, and are able to combine them stochastically and probabilistically to produce new and surprising results."

The wide diffusion of this technology with examples such as Dall-E 2, GPT-4, and Copilot is currently revolutionizing the way we work and communicate with each other. Among the most prominent tools in the field of generative artificial intelligence applied to communication, automated conversational assistants, commonly known as *chatbots*, stand out. The integration of these virtual agents has led to the emergence of innovative modalities in communication processes.

"A chatbot is a web program that convincingly simulates, as a human would, behavior in a conversational environment, processing text in natural language and interacting to generate intelligent and relative responses" (Sanchez et al., 2020, p.683 as cited in Herrera-Ortiz et al., 2024) The combination of *chatbots* with AI represents a significant development in the way companies interact with their customers, offering a more personalized experience.

Today's media landscape is fundamentally shaped by the convergence of digital social networks and artificial intelligence. These elements have become essential components of the communicative ecosystem. The magnitude of this change is such that, as Salazar (2018: 296) points out, "AI and robotics are triggering an unprecedented transformation that impacts all social and professional sectors." This synergy between digital technologies is redefining not only the channels of communication, but also the way in which information is created distributed and consumed in our society.

For example, artificial intelligence is also used to manage and automate content on social networks through tools such as Hootsuite, Tweetdeck, Sprout Social and similar applications, or even to support decision making through tools such as Google Analytics (Abdulah, 2020, as cited in Cusnir & Nicola, 2024)

Searching for trends, articles, content analysis through digital monitoring or image creation are another use in communication and marketing (Cusnir & Nicola, 2024) In addition, there are many other applications of artificial intelligence in the field of public relations, covering not only the immediate posting of responses on social media channels on behalf of the client, but also managing potential crises, collecting media and their impacts to follow up. (Galloway & Swiatek, 2018; Panda, Upadhyay & Khandelwal, 2019, as cited in Cusnir & Nicola, 2024)

This advanced technological innovation allows marketing and communication agencies to meticulously analyze large amounts of data, facilitating a deeper understanding of their target audience and enabling them to tailor their communication strategies more accurately and effectively. For example, the implementation of artificial intelligence can significantly help discern which digital platforms offer the greatest effectiveness for advertising purposes, in addition to providing robust methodologies for assessing the real-time impact and effectiveness of campaigns (Nair & Gupta, 2021).

In this context previously described, the general hypothesis of this research is the following: the irruption of artificial intelligence in communication agencies is changing the way in which they build communication messages for brands, and how those contents are created for corporate brands.

From this general hypothesis, several interrelated objectives are derived that seek to deepen the use of artificial intelligence by communication agencies in the creation of content for social networks of their brands or clients, as well as to examine the fundamentals and tools that these agencies use when constructing brand messages. The aim is to define how agencies implement AI in the generation of content for social networks, and to analyze the criteria, methods and technological resources they use to develop effective communication strategies and impactful messages that resonate with their clients' target audiences in today's digital environment.

Ethical and privacy challenges in the implementation of AI in communication and marketing.

A fundamental challenge in the field of ethics and privacy related to the use of artificial intelligence in communication and marketing lies in the widespread concern about transparency in the implementation of these technologies. The opacity in the operation of AI algorithms, the collection and processing of personal data, as well as automated decision making, raise questions about accountability, informed consent and the protection of users' privacy. This scenario calls for a delicate balance between technological innovation and safeguarding ethical principles and fundamental rights in the digital age.

Professionals working in communications and marketing express a number of fears related to the ethical obligation to disclose to their clients the use of artificial intelligence systems in the content creation process, as such disclosure has the potential to substantially influence and alter the perceived value and integrity of the services they provide. In addition, there are concerns revolving around the issues of intellectual property rights and the determination of authorship in relation to AI-generated content, which together generate a number of significant ethical dilemmas that must be critically addressed in the context of professional practice. (Cusnir & Nicola, 2024)

This book chapter methodologically, developed within the framework of a broader research, combines an exhaustive literature review with the use of the survey as the main tool to analyze the behavior of communication agencies in brand building in the face of the advent of artificial intelligence. The survey was designed with the following specific characteristics:

These are the specific characteristics used in the survey design of this research:

- **Definition of the universe:** communication and marketing profiles working in communication, advertising and marketing agencies, or freelance professionals in the sector, in Spain.

- **Sample design and selection:** A non-representative sample, also known as a non-probabilistic sample, whose main purpose is exploratory, was used. Thus, it is a non-stratified sample design, since this research seeks to represent a universe or population as a whole.

The selection of the sample has been done intentionally through LinkedIn to send the survey to a total of 281 communication and marketing professionals, from which we obtained 131 responses of which 120 completed the survey in its entirety. In order to obtain greater relevance and credibility in the data obtained, publications were published on LinkedIn, with access to the survey. This social network was chosen for the distribution of the survey due to its ability to connect directly with professionals in the communication agencies and freelancers sector in Spain. This platform, recognized for its wide participation of the target audience, facilitates access to the selected sample.

- **Measurement techniques:** open and closed questions related to the main topic of the research: the professional use of artificial intelligence in the field of communication and the influence of new technological tools, in the creation of social network content, article writing, trend research, design and creativity.

- **Method of implementation:** By means of the digital tool, **Encuesta Fácil**, which facilitates the generation of statistical analyses.

- **Type of survey:** through a hyperlink that was sent to the respondents with the publication in the social network LinkedIn.

- **Periodicity:** unitary survey, designed for the exclusive purpose of examining a particular problem.

- **Period of performance:** From 11/25/2024 to 01/21/2025 (1 month and 27 days)

- **Number of questions**: with a total of 18 questions. Structured in four main categories: professional profile and demographics, current use of artificial intelligence by communication and marketing agencies, content creation process, and perceptions and foresight.

Disruptive impact of artificial intelligence on communication strategies

The results reveal a predominant profile among respondents, characterized by communication and marketing professionals (men and women alike) between 20 and 45 years of age (82%) with a balanced gender distribution (49.6% men and 50.4% women). The majority occupy leadership positions, with 64.1% in director or *manager* roles, and have significant experience, with 54.2% having 10 years or more in the field. As for the type of agency or professional, most work in communication agencies (48.1%), followed by advertising agencies (24.4%), while *freelancers* represent 10.7% of the sample.

The results confirm one of the starting points of this research: the irruption of artificial intelligence is changing the way communication agencies build messages for brands.

94% of surveyed professionals report using AI tools, albeit mostly occasionally, indicating widespread but cautious adoption of this technology (57% occasionally, 37% frequently).

Furthermore, 95% of respondents believe that AI is essential to the future of communication and marketing. This suggests that industry professionals recognize the transformative potential of AI in their field.

Figure 1: Question on AI and perception in the sector.

Análisis técnico

Media	1	**Conclusiones destacadas**
Intervalo de confianza (95%)	[1 - 1]	La opción mas elegida fue **SI**.
Tamaño de la muestra	131	La opción menos elegida fue **NO**.
Desviación típica	0	
Error estandar	0	

Source: Easy Survey

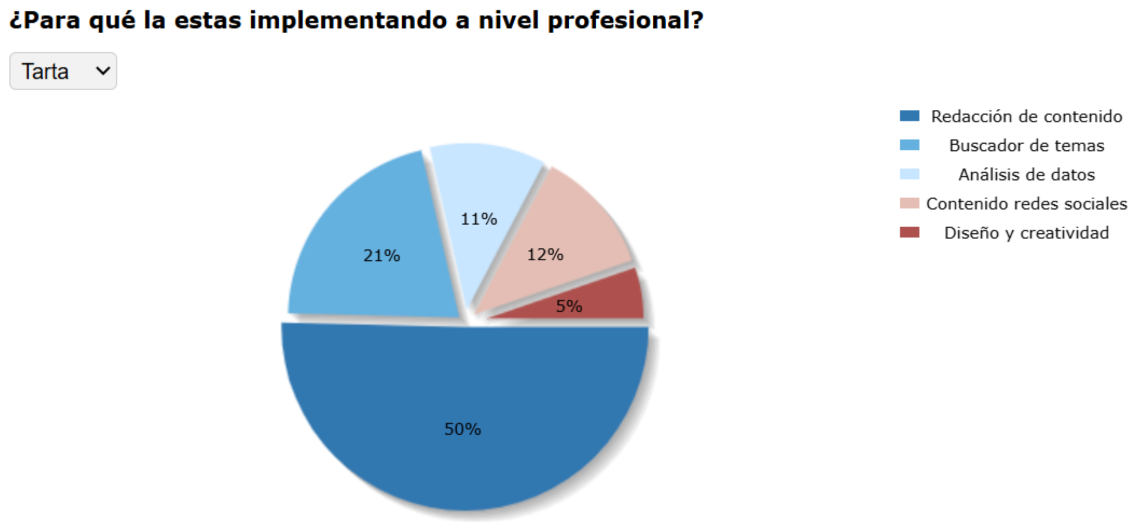
71% of professionals believe that AI has improved the quality of content produced, a scale of 1-10, with 61% rating the improvement between 6-8. This positive perception of AI's impact on content quality reinforces the idea that it is significantly changing the way the industry works.

However, it is critical to recognize that AI is not a magic bullet. Its success depends on the ability of agencies to integrate it effectively into their processes and strategies. This requires a thorough understanding of AI's capabilities and limitations, as well as an investment in training professionals.

In this analysis, it reflects that a majority, 56% of respondents consider content creation as "Very important" in the context of overall brand success. This perception underscores the critical role that content generation plays in marketing and communication strategies.

Social media remains a fundamental tool for corporate communication, but its role is evolving in the age of AI. AI can help agencies analyze social media trends, identify trending topics and personalize content for different audiences. However, it is important to remember that social media is a dynamic and changing environment. Agencies need to be aware of new platforms and trends, and adapt their strategies accordingly.

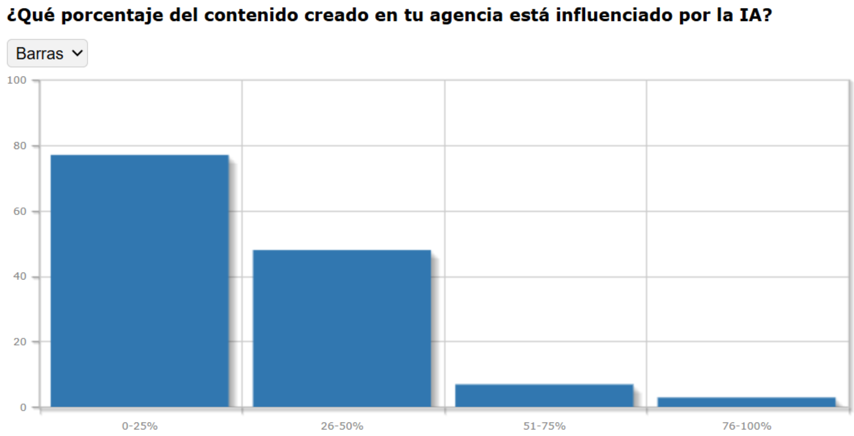
Figure 2: Question on the current use of artificial intelligence.



Source: Easy Survey

Professionals use these tools primarily for topic research and content writing, especially for social media posts. Although AI adoption is widespread, only 25% of agencies generate more than 50% of their content with the help of AI. This indicates that while AI is having a significant impact, it has not yet completely replaced human labor in content creation.

Figure 3: Question about the content creation process.



Source: Easy Survey

Some 57% of the professionals surveyed indicate that AI influences only 0-25% of the content created, while 35% report a more significant influence, between 26-50%. These percentages suggest a balanced approach, where AI complements human work without excluding it. The AI implementation shows a diversified adoption curve: 36% of respondents have been using it for several months, 35% have incorporated it during the last year, and 25% have more than one year of experience. This distribution indicates a gradual but steady integration of the technology into creative processes, reflecting a trend towards the normalization of AI use in the communications and marketing industry.

On the other hand, in terms of tools used to create social media content and build editorial calendars, ChatGPT has positioned itself as the dominant platform, used by 58% of the surveyed professionals. Copilot is the second most used tool, but with a much lower adoption (32%), which shows a rapid integration of artificial intelligence technologies in digital communication processes by communication agencies.

In parallel, a trend towards visual optimization of content has been detected, with Canva consolidating its position as a fundamental tool, used by 48% of the survey participants. This preference therefore highlights the growing importance of graphic design and the visual presentation of brands' content strategies.

In this sense, the results obtained have detected diversification of content management tools, with platforms such as Metricool and Hootsuite emerging as preferred solutions for planning and scheduling content on social networks. However, differentiated usage patterns were detected, with some traditionally recognized tools such as Buffer and Hubspot showing considerably lower adoption among respondents.

The results show a differentiated adoption according to professional profile, with more experienced professionals and managers leading the adoption of AI and showing a more optimistic view of its impact. 40.6% of professionals with more than 10 years of experience use AI frequently, compared to 35.7% of those with 0-5 years of experience. Larger firms show a slight advantage in AI adoption, with 96.2% usage in large firms versus 92.3% in small firms. Freelancers are turning more heavily to AI for tasks such as content writing, with 61.5% of *freelancers* using it primarily for this task.

Regarding concerns about the use of artificial intelligence in relation to the privacy of personal data, 52% of respondents show moderate concern. On this point, communication agencies reflect in the survey that they are aware of the potentials of AI, but recognize the risks of new technologies and data protection.

AI is transforming the way communications and marketing agencies work, and this transformation will only accelerate in the coming years. Agencies that embrace AI strategically and ethically will be better positioned to succeed in the future.

However, it is important to remember that AI is only a tool. Success will depend on the ability of agencies to use AI to improve their work and deliver added value to their clients. This requires an investment in training professionals, a thorough understanding of AI's capabilities and limitations, and a commitment to ethics and transparency.

However, the rise of generative AI also poses ethical and quality challenges. It is critical to ensure that AI-generated content is accurate, unbiased and respectful of copyright. In addition, it is important to maintain a balance between automation and human creativity, as AI cannot replace the strategic thinking and cultural sensitivity of professionals.

Conclusions

This research has provided a current view on the state of artificial intelligence implementation in communication and marketing agencies, showing how these technologies are being integrated into the industry.

First of all, we can affirm that the present research validates the main hypothesis posed at the beginning of this research: AI is significantly transforming the way in which communication agencies build messages for brands. The implementation of AI has significantly changed the content creation process in agencies. Professionals perceive an improvement in the quality of the content produced thanks to AI, which reinforces the idea that it is significantly changing the way the industry works. However, the use of AI seems to be more of a complement than a replacement for agency creativity, underlining the importance of a balanced approach to the integration of these new technologies. So one could speak today of co-creation between new technologies and today's professionals, where they combine new tools and develop strategies tailored to the specific needs of each client or brand.

Based on the data obtained, the vast majority of surveyed professionals use AI tools in content creation, mainly for topic research and content writing, especially for social media posts. It reveals a widespread but cautious adoption, where AI complements human work without replacing it completely.

The results show a differentiated adoption according to professional profile, revealing patterns in the integration of AI in the communication and marketing sector. More experienced professionals and managers are leading the adoption of AI, showing a more optimistic view of its impact. This suggests that experience in the sector allows a better understanding and exploitation of new technologies, facilitating their effective implementation in work processes. Larger companies show a slight advantage in the adoption of AI, probably due to their greater capacity to invest in technology and training. This trend could widen the technology gap between large and small companies in the sector, posing challenges for the competitiveness of smaller organizations in an increasingly digitized market. On the other hand, freelancers are turning more intensively to AI for specific tasks such as content writing. This phenomenon could be redefining the role of the *freelancer* in the industry, boosting their productivity and competitiveness by enabling them to offer more efficient and higher quality services. The change in content creation processes is more evident for professionals with longer track records, indicating a significant contrast with traditional practices. This observation suggests a profound transformation in the way the industry works, where accumulated experience allows for a better appreciation of how AI is modifying workflows established over the years. These findings underscore the multifaceted nature of AI adoption in the sector, where factors such as professional experience, company size and work model significantly influence how these new technologies are implemented and leveraged.

ChatGPT has positioned itself as the dominant tool in the industry, being used by the vast majority of professionals. This preference reflects the rapid integration of AI technologies into digital communication processes. In parallel, there is a trend towards visual optimization of content, with tools such as Canva gaining popularity among industry professionals.

In conclusion, the research reveals a significant transformation in content creation and management strategies by communication agencies, with AI tools taking center stage. The landscape is characterized by customization and experimentation, with professionals combining new tools and developing strategies tailored to the specific needs of each client or brand. The future challenge for communication agencies lies in developing the ability to harness the power of AI, while maintaining a commitment to intellectual property and privacy, seeking a balance that defines the reputation and trust of the communication agencies of the future. In conclusion, it is important to note that issues related to data privacy and ethical challenges in the use of AI have become topics of growing concern for communication agencies and the industry in general that would be amenable for future scientific research on their scope.

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From literature to cinema. The adaptation of the novel Dune to the big screen

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Introduction

In film adaptations, should fidelity to the original work or the cinema's own narrative take precedence? What formula ensures the success of a film that attempts to transfer a novel to the big screen? These complex and fundamental questions lead us to examine an emblematic case in science fiction cinema: David Lynch's adaptation of Dune (1984), based on Frank Herbert's work of the same name (1965). This case is crucial to understand the challenges inherent in the adaptation process, especially when dealing with dense and complex literary works.

The aim of this chapter is to analyze how the decisions made during the making of Dune not only affected the director's vision, but also the final result in terms of critical and commercial reception. Through a detailed examination of the tensions between fidelity to the original text and the need for an effective audiovisual narrative, we seek to explore the impact of these dynamics on the creativity and success of the film. By focusing on the influence of producers Dino and Raffaella de Laurentiis, who prioritized commercial and footage aspects over artistic freedom, we can understand how economic interests and market pressure have historically conditioned the adaptation of great literary works to film.

This analysis will contribute to scholarship in the field of film studies and literary adaptation by providing a critical perspective on how limitations imposed by producers can affect the integrity of the director's creative vision and, consequently, the quality of the final product. In addition, the implications of this case for future adaptations of complex novels will be addressed and how the search for balance between fidelity to the text and the demands of the film medium remains a crucial challenge.

Ultimately, the chapter will conclude that, although the producers' intervention may have limited Lynch's creative freedom, Dune (1984) remains a relevant film for its visual elements and its particular interpretation of Herbert's work. Despite its narrative flaws, this adaptation represents a point of reflection on the difficulties inherent in the process of transposing a novel to the big screen, and on what aspects, whether faithful to the original text or innovative in terms of cinema, should predominate in order to achieve a successful adaptation.

Herbert and Lynch. The struggle of two geniuses

The year 1984 marked a turning point both for the literary universe of Dune and for its incursion into the seventh art. Coinciding with the publication of Heretics of Dune (Herbert, 1984), the fourth book in the saga, fans were immersed in the rich expansion of the universe created by Frank Herbert. This author, who had already published three previous works in the saga-The Messiah of Dune (1971), Sons of Dune (1976) and God Emperor of Dune (1981)-had consolidated his position as one of the most influential writers in science fiction (Herbert, 1984). Through his novels, Herbert explored innovative themes, such as the complexity of political systems, power dynamics and the ecological fragility of the environment, establishing a legacy that marked a whole generation of readers (Herbert, 1971; Herbert, 1976; Herbert, 1981).

However, the film adaptation of Dune, led by David Lynch, faced inherent challenges in attempting to translate this dense literary universe into audiovisual language. Lynch, recognized for his surrealist style and his emphasis on the exploration of human emotions (Rodley, 1997), took on the direction of the project with the task of condensing a deeply philosophical and symbolic text into a format more accessible to the general public. This creative decision generated tensions from the beginning, as the saga's followers considered Herbert's works as "sacred" and untouchable, a common phenomenon in adaptations of literary works with a devoted audience (Hutcheon, 2006).

The reception of the film, released in 1984, was marked by suspicion from both fans and critics. The commercial pressures imposed by the producers, together with the technical limitations of the time, had a significant influence on the final result, which led Lynch to publicly distance himself from the film (Rodley, 1997). This struggle between Herbert and Lynch illustrates the difficulties of adapting complex works to visual formats, where expectations of fidelity to the original text often clash with the limitations and freedoms of the film medium (Stam, 2000).

The symbolic breadth of Dune is based on Frank Herbert's ideological concerns, influenced by the American counterculture movement of the 1960s, characterized by the search for cultural, political and environmental alternatives to the dominant system (Herbert, 1987). In this context, the work explores multiple themes of great transcendence, such as ecology, drugs and the dynamics of the established political powers. Herbert, deeply concerned with the relationship between humanity and the environment, developed a universe where the interaction between man and his environment acquires a determining character. According to the author, the narrative of Dune reflects his concern for the "aggression of mankind towards the planet", making an implicit call for the preservation of the ecological balance (Herbert, 1987).

One of the most iconic and significant elements in Dune is the *melange* spice, an essential resource extracted from the sands of the planet Arrakis. This material, which possesses hallucinogenic properties, expands consciousness, prolongs life and allows space to fold, thus acquiring a multifaceted symbolism. Herbert used the spice to criticize the social context of hallucinogenic drug abuse in contemporary societies, reflecting the complexity of the dependency relationships created by such substances (Perez, 2022). Beyond its fantastic properties, the spice functions as an allegory of natural resources exploited without measure in a global capitalist system. For Herbert, spice represents how material and ideological addictions can perpetuate a cycle of oppression and exploitation (Vera Vega, 2024). In his own words, drugs "enable people to endure an otherwise intolerable existence" and consequently "remain on the hamster wheel of production and consumption" (Herbert, 1987, pp. 50-52).

"The mystery of life is not a problem to be solved, but a reality to be experienced", (...) "You will not know fear. Fear kills the mind. Fear is the little death that leads to total destruction. I will face my fear. I will allow it to pass over me and through me. And when it has passed I will turn my inner eye to scrutinize its path. Where fear has passed there will no longer be anything. There will be only me." (Herbert, 1965, p. 508).

Furthermore, the relationship between spice and the socio-political context of Dune offers a broader critique of the economic system. As a scarce and valuable resource, spice becomes a symbol of absolute power, a representation of corporate greed and resource monopolies. In this sense, Herbert, with his anti-capitalist stance, denounces how the control of an essential resource can consolidate hierarchies and inequalities, as occurs in modern socioeconomic structures (Herbert, 1987). Through this symbolism, Dune transcends its genre to offer a critical analysis of the ecological and social dilemmas facing the world at the time of its creation, many of which are still relevant today.

His incentive for working on Dune was the novel's metaphors: "Dune was different; it has believable characterizations and depth. In many ways, Herbert had created an internal adventure, one with many emotional and physical textures" (Rodley 1997, p. 16).

Dune - fantasy or science fiction?

At first glance, we can affirm that Dune belongs to the science fiction genre (Cabrera Zlotnick, 2023). Set in the year 10,191, the plot revolves around the dispute between two interplanetary castes, House *Atreides* and House *Harkonnen*, for control of the desert planet Arrakis, also known as Rakis or Dune, home of the *Fremen*. This planet is of incalculable strategic value due to the abundance of the spice *melange*, an extraordinary resource harvested from the sands, which possesses the ability to extend life, expand consciousness and facilitate interstellar travel by folding space. The spice, therefore, becomes a central element of the narrative and a commodity coveted by all the inhabitants of the known universe, establishing an evident connection with the paradigms of power and resources characteristic of the genre (Carrasco, 2005).

However, the classification of Dune is not so simple. Some authors suggest that Frank Herbert's work is a modern hybrid between science fiction and fantasy. According to Carrasco (2005), Dune fits the definition of "uncompromising" science fiction proposed by Robert Scholes (1977), as it deals with themes of technical exploration, scientific speculation and socio-political analysis. Nevertheless, Palacios (2001) argues that certain elements of the novel, such as the mystical traditions of the *Fremen* or the messianic prophecies revolving around Paul Atreides, evoke characteristics of the fantasy genre. Beyond these dichotomies, Allen Roberts (1990) introduces a new perspective by calling the work an example of "medieval-science fiction," noting that the low technological sophistication compared to other stories in the genre is combined with a feudalistic structure reminiscent of medieval Europe. This particular blend contributes to Dune's standing as a unique work that defies traditional categories.

The historical context in which Dune was published also helps to understand its relevance within the genre. The 1960s witnessed the appearance of important science fiction films, such as 2001: A Space Odyssey (Kubrick, 1967) and Planet of the Apes (Schaffner, 1968), which transformed the perception of the genre. These films marked a before and after by addressing philosophical themes and exploring new forms of cinematic language, moving away from the simple technical experiments of the first decades of the 20th century. For example, Kubrick, by adapting Arthur C. Clarke's short story, The Sentinel (1951), not only created a visually revolutionary work, but also imbued the narrative with a deep philosophical charge, making the genre transcend its mere classical narrative dimension of presentation, knot and denouement (Alonso and Fernández, 2006).

In this sense, Dune shares certain characteristics with these film productions by including characters with a complex philosophical background and a narrative that transcends traditional conventions. As Todd (2009) states, Herbert's work not only focuses on science and technology, but also addresses ethical, social and spiritual issues, placing it at the intersection of multiple genres. Although the filmmaker David Lynch made a film adaptation in 1984, this will be neither the first nor the last approach to the vast universe of Dune, as the work remains an inexhaustible source of analysis and reinterpretations. Thus, as Barthes points out (Alonso and Fernández, 2006), complex narratives such as Dune or 2001: A Space Odyssey manage to transcend their original medium by structuring stories that invite reflection beyond the obvious.

Reconstructing Jodorowsky's Broken Dream

Before David Lynch took the reins of the film adaptation of Dune, several renowned artists, including H.R. Giger, designer of Alien (Scott, 1979), and legendary filmmaker Orson Welles, joined visionary Alejandro Jodorowsky in an ambitious attempt to bring Frank Herbert's work to the big screen. This project was characterized by its avant-garde and experimental approach, reflecting the uniqueness of Jodorowsky's style. For more than five years, Jodorowsky worked intensely to shape a monumental project, recruiting an impressive cast that included Chris Foss, Pink Floyd, Mick Jagger and Salvador Dalí. The latter was destined to become the highest paid actor of his time, demanding an exorbitant per-minute screen fee (Pavich, 2013). However, the titanic project eventually collapsed due to his overweening ambition and insurmountable financial problems, ending in bankruptcy before shooting even a single shot.

Despite the failure, Jodorowsky's effort was not in vain, as he left behind an important artistic legacy. The storyboard, or art book for the project, masterfully illustrated by Jean Giraud, better known as Moebius, not only documents the director's unique aesthetic vision, but also served as the basis for the iconic comic book El Incal (1980-1988). This comic, created by Jodorowsky and Giraud, became a seminal work within the science fiction genre and an enduring testament to what could have been his adaptation of Dune (Pavich, 2013). The influence of this unfinished project is palpable, marking a before and after in the visual and conceptual design of many subsequent science fiction works.

After the fall of Jodorowsky's golden dream, the film rights to Dune went through a series of complex renegotiations. Dino De Laurentiis, a prolific producer at the time managed to acquire the rights to Herbert's work, wresting them from Jodorowsky and laying the groundwork for a new adaptation (Pavich, 2013). This transfer of rights marked the beginning of a new stage for Dune, moving it away from Jodorowsky's experimental approach towards a more conventional but equally ambitious vision. Dino De Laurentiis, together with his daughter Raffaella, went for a different approach, choosing filmmaker David Lynch to direct the film. The choice of Lynch was not fortuitous; his debut feature, Eraserhead (1976), had attracted attention for its surrealist style and his ability to create disturbing atmospheres, characteristics that aligned with the aesthetic and narrative demands of a work like Dune.

Raffaella De Laurentiis was convinced that Lynch was the right person after observing his work in The Elephant Man (1980), a film that received eight Oscar nominations, including Best Director. In this work, Lynch demonstrated a great ability to explore the psychology of the characters and an overflowing creativity in the use of special effects. According to Raffaella, Lynch was not only a technical director, but a visionary artist capable of transcending conventional narrative limitations to create an innovative cinematic language (Pavich, 2013). During the filming of The Elephant Man, Raffaella observed that Lynch possessed a unique ability to look beyond the surface story, connecting with the philosophical and emotional dimensions of the narrative. This insight led her to propose to him the adaptation of Herbert's work, convinced that Lynch could bring a fresh and artistic perspective to Dune.

Although Lynch's approach was radically different from Jodorowsky's, both shared a similar ambition: to transform Dune into a cinematic experience that would challenge audience expectations and transcend genre boundaries. However, while Jodorowsky focused on a more eclectic and avant-garde vision, Lynch sought to capture the philosophical and emotional essence of the work, introducing his own surrealist style in the process. Thus, the legacy of both filmmakers contributes to enriching the history of Dune adaptations, showing how different artistic perspectives can reinterpret the same work in radically different ways.

De Laurentiss saving the wallet and the billboard

Although the making of Dune received a significant boost from the success of The Elephant Man (1980), critics and audiences quickly turned their backs on the film adaptation directed by David Lynch. The film, which had a high budget and high expectations, failed to connect with viewers and critics. The linear and conventional script failed to capture the Dadaist and surrealist virtues that were characteristic of Lynch's style, who had gained recognition for his ability to create disturbing atmospheres and non-linear narratives. The specialized critics and several biographers of the filmmaker, such as Martha P. Nochimson, expressed a general feeling of failure towards the film, summarized in a blunt manner in her work The Passion of David Lynch, Wild at Heart in Hollywood (1999): "Dune is the only Lynch film about which there is a valid general agreement that it does not work". This judgment reflects the disenchantment the film provoked, especially when compared to the innovative and experimental approach of his earlier works. Moreover, at Dune's release, the film was not prominently promoted as "a David Lynch film," revealing the producers' effort to disassociate the work from the figure of the director, given the growing disillusionment of the public (Nochimson, 1999).

The failure of Dune was not only a matter of critical reception, but also of strategic decisions that affected the film's development. The enormous financial investment involved in the production, along with the constant pressure to avoid bankruptcy, forced the producers, led by Dino De Laurentiis, to impose a series of cuts and creative limitations to ensure the film's commercial success. The main objective was to ensure that Dune was a film suitable for all audiences, which greatly expanded its box-office potential. In this context, a requirement was introduced to reduce the length of the film to a maximum of two hours and seventeen minutes. This limitation was particularly painful for Lynch, who was adamantly opposed to the idea of eliminating footage. Herbert's novel is vast in scope and complexity, which meant that the cuts negatively impacted the narrative cohesion of the film. As Rodley (1997, p.16) observes, these cuts "deepened the subsequent lack of narrative cohesion," which contributed to the disconnect between the story and the audience. It is interesting to note that Jodorowsky's version of Dune, which never materialized, would have been over 10 hours long, indicating how ambitious the filmmaker's vision for adapting Herbert's work was (Jodorowsky and Neustadt, 1996). The reduction of content to suit a more commercial format, rather than offering a complete and faithful adaptation to the novel, was a key factor in the negative perception of the film.

Another aesthetic challenge faced by Dune was the treatment of color. Being Lynch's first film shot in color, he decided to experiment with a desaturated visual palette, in contrast to the bright colors that characterized many other science fiction productions of the time. This aesthetic proposal was rejected by the producers, who insisted on a more conventional and vibrant approach. Freddie Francis, the cinematographer, aligned himself with the producers' stance and made adjustments to the color grading, considerably reducing the color saturation, as requested. In an interview with American Cinematographer, Francis explained, "We reduced the color a lot, as much as David was asked to do" and added, "but one has to think of other people who have to sell the film" (Mandell, 1984, p.51). This statement highlights the tension between Lynch's artistic vision and the commercial considerations that dominated the production. While Lynch attempted to convey a unique and distinctive atmosphere through the use of color, the producers and technical team prioritized a visual approach that would be more accessible to a wider audience in order to maximize the chances of box office success. Thus, the film was caught between two visions: that of the director, who sought a more personal and experimental style, and that of the producers, who wanted to ensure a commercial return that would justify the expense of the blockbuster.

In short, the Lynch-directed adaptation of Dune was marked by a series of both creative and commercial difficulties, which were driven in large part by pressure from producers to make the film profitable in a highly competitive film market. Lack of cohesion in the narrative, limitations in length, and conflicts in visual aesthetics contributed to rejection by both critics and audiences. At the same time, these tensions between the director's artistic vision and commercial demands underscore the challenges inherent in adapting a literary work as complex and richly nuanced as Dune, and how the compromises made in the production process affected the film's final outcome.

In an eagerness to collect money and pressed to recover their investment, the production company De Laurentiis, premieres early Dune promoting it as a film full of special effects and a standard bearer in the incipient science fiction. According to their own publicity, the producers of Dune had chosen David Lynch to give a new twist to the ScFi genre. Coinciding with the premiere of the film, at the National Film Theatre in the UK, Raffaella de Laurentiis confesses to Chris Auty of The Guardian:

"I'm not saying everybody, but almost everybody can do special effects [...] We wanted a stranger; different movie that would take you places. People said the $40M -budget- was not the gamble but David Lynch [...] we did a very special movie; a very different movie. I think it is going to be very controversial because it is not a conventional movie [...] I think I've done something new for the industry". (Auty, 1985)

"I'm not saying everyone, but almost everyone can do special effects (...) We wanted someone unknown to direct it; it's a different film that takes you to other places. People were saying that the $40 million budget was not the real gamble, but the choice of David Lynch (...) We made something very special; a very different film. I think it's going to be very controversial because it's not a conventional film (...) I consider that I've done something new in the industry". (Auty, 1985)

David Lynch, who initially began working on the adaptation of Dune together with the co-writers of The Elephant Man, Eric Bergen and Christopher De Vore, faced a series of difficulties from the beginning that conditioned the development of the film. Although the director had a talented team with whom he had previously worked, the creative process was disrupted by the pressures imposed by Dino De Laurentiis, the film's producer. De Laurentiis, dissatisfied with the direction the script was taking, felt that it was straying too far from Frank Herbert's original novel. This disagreement with the plot led De Laurentiis to impose on Lynch the obligation to work directly with Herbert to ensure that the adaptation was more faithful to the literary work (Pawich, 2013). However, this collaboration with the author of Dune himself proved to be a factor that negatively affected Lynch's artistic vision.

Herbert's intervention in the adaptation process became one of the main frustrations for Lynch. According to several sources close to the director, this project is considered one of his least satisfying works, a sentiment that has been reiterated by biographers and film critics. The adaptation of Dune represented a turning point in Lynch's career, as his unique artistic approach and creative freedom were restricted by the need to conform to commercial expectations and the demands of the novel's author himself (Rodley, 1997). In this sense, the film became a battleground between Lynch's vision, influenced by his surreal and experimental style, and the need to do justice to the complexity and content of Herbert's work. This clash of visions not only compromised the film on a narrative and aesthetic level, but also ended up affecting Lynch's experience as a filmmaker. In fact, many consider the adaptation of Dune to be a clear example of how the tensions between creative independence and external expectations can lead to unsatisfactory results, especially when the director is forced to submit his art to the demands of others, even when these are the very creators of the literary work being adapted.

Thus, the collaboration with Frank Herbert, which in theory should have been a crucial underpinning for the fidelity of the adaptation, ended up being a burden for Lynch. The imposition of changes and adjustments to align with Herbert's vision stripped the film of the distinctive characteristics that had marked Lynch's earlier works, and left the director feeling that he had compromised too much of his personal style in favor of a more conservative adaptation faithful to the source material.

Dune and Star Wars, two parallel universes

Chris Rodley relates that, before accepting the proposal to direct Dune, David Lynch had turned down an offer from George Lucas to direct Return of the Jedi (Marquand, 1984). Lynch, known for his unique, avant-garde style, argued that he "never really liked science fiction" and that "Star Wars was totally George's thing" (Rodley, 1997). This statement reflects Lynch's attitude toward a genre that, while full of creative potential, was not as appealing to him as others more aligned with his personal vision. Lynch preferred to explore more surreal and complex narratives, moving away from the traditional approach to commercial science fiction represented by the Star Wars saga. Despite this refusal, over time, Dune's mise-en-scène has endured with surprising dignity, even though it was initially viewed as a failure by critics and audiences alike. This phenomenon highlights how a film can acquire symbolic and aesthetic value over the years, even when the special effects and film technology of its time do not stand the test of time so well.

In fact, the science fiction genre has historically been characterized by the use of innovative special effects, but these do not always manage to stay relevant over the decades. In this sense, the good aging of films like Dune is an interesting example. The same is true of the Star Wars saga, whose early films, despite their advanced special effects for their time, are still appreciated for their narrative and philosophical value. Gary K. Wolfe (1983) argues that both Star Wars and Dune attempt to resolve the opposition between the character and his circumstances. Both, however, do so in different ways. In Star Wars, this is reflected in the planets of extreme climates: desert, ice, and jungle, where the rebels live and are forced to adapt to hostile and challenging environments. In a similar vein, Dune presents a constant struggle to adapt to the desert of Arrakis, but does so through a visual representation that goes beyond the simplicity of the landscape.

Lynch's film creates a visually rich atmosphere thanks to the work of production designer Anthony Masters. The interiors of the planet Caladan, for example, incorporate rich wood finishes that contrast with the ostentatious and majestic architecture of Kaitain, which is inspired by the ornamentation and curvature typical of Moorish architecture from the 8th-16th centuries. This visual contrast not only adds aesthetic richness, but also reflects the political and social complexities of the different planets in the Dune universe. In addition, the decision to design the spaceships and navigators in a more organic way, rather than relying on a technological aesthetic, also brings a distinctive character to the film that differs from the technological saturation present in other science fiction films such as Star Wars (Nana, 1984).

Both films, however, share certain common elements: an evil Empire, gigantic spaceships and superweapons, and an epic fantasy set on worlds other than our own. However, the futuristic approach of Star Wars, with its abundance of special effects and advanced technology, is in stark contrast to the medieval worlds inspired by the past that appear in Dune. As Allen (1990) points out, Star Wars takes place in a universe with an explicitly futuristic focus, while Dune focuses on a more retro-futuristic vision, where medieval elements are mixed with science fiction. This combination of the ancient and the futuristic contributes to Dune's unique tone, setting it apart from other productions of the time and giving it a timeless quality that continues to be studied and appreciated today.

The connection between Dune and Star Wars is by no means arbitrary. It is clear that Dune incorporates many of the successful commercial formulas that made the Star Wars cycle successful. However, despite these similarities, Dune also had to be perceived as a distinct work, a film that, while belonging to the science fiction genre, was a departure from the conventional narrative and aesthetic structures prevalent at the time. In her book The Making of Dune, Nana (1984) discusses how Dune differs from other science fiction productions, especially in terms of its visual design and special effects. According to Nana, the film presented itself as a deeper and more conceptual film project, moving away from the digital effects and simplistic formulas of other franchises. The creative difference lies, to a large extent, in the peculiar interpretation of David Lynch, who imbues the film with his unique, surreal and philosophical style, which does not follow the rules of traditional commercial cinema.

Costume designer Bob Ringwood played a crucial role in the visual adaptation of the Dune houses, making each social group clearly distinct through their costumes. For the *Harkonnen*, the costumes had a grim, industrial design, reflecting their ruthless and oppressive nature. For the court of the *Capitular* house, the costumes were presented in a more imperial style, symbolizing their authority and power. The *Atreides* were depicted with a military design, highlighting their discipline and fighting spirit, while the *Fremen* of Arrakis were characterized by an Arabian aesthetic, evoking their deep connection to the desert and their nomadic ways (Nana, 1984). This diversity in costume design not only served an aesthetic function, but also a narrative one, helping to build the visual identity of each faction within the Dune universe.

In terms of special effects, Dune is distinguished by its use of analog techniques rather than relying on electronic or digital effects, which at the time were in the early stages of development. Special effects supervisor Kit West relied on traditional light filters and optical effects to create the film's visual universe, giving it a unique and more organic texture. In addition, *stop-motion* animation was used for the famous sandworms, creating a tangible, physical feel that would not have been achieved with digital methods. Added to this was the use of chroma key and rotoscoping to depict the force shields, a visual innovation that, although simple in conception, was instrumental in bringing to life the science fiction elements present in the film. According to Nana (1984), the physical effects used in Dune were "an almost mathematical endeavor," requiring not only great technical expertise, but also a considerable amount of imagination and ingenuity to be effective within the visually complex universe of the film. Another highlight of Dune's special effects was the work of Carlo Rambaldi, renowned for his creation of the mechanical head in the film Alien (Scott, 1979) and the character in E.T. the Extra-Terrestrial (Spielberg, 1982). On Dune, Rambaldi contributed to the design of some of the mechanical effects used to bring to life the fantastic creatures and other elements of the film's universe. His *expertise* in the design of large-scale mechanical effects and his ability to create realistic figures from mechanisms was an essential component of the film's visual success, despite the technological limitations of the time.

An ending, not at all surreal

In his article entitled The End of Science Fiction, Hoberman (1991) notes that David Lynch was faced with a film that challenged his own expectations within the science fiction genre. Throughout his career, Lynch had been known for his surreal and deeply subjective style, characteristics that did not quite align with the conventions of traditional science fiction cinema. It could be argued that, with Dune, Lynch's signature surrealist narrative is displaced in favor of a more traditional, linear structure, which allowed the film to delve deeper into the themes and vision laid out by writer Frank Herbert in the original novel. In this way, Dune not only escaped from Lynch's typical narrative mold, but, in its quest to remain faithful to the core elements of the literary work, offered an approach closer to the conventions of science fiction cinema in general (Hoberman, 1991). Nevertheless, we must recognize that Dune is not just another run-of-the-mill science fiction film. Although the structure of Herbert's novel prevails, Lynch manages to put his stamp on the mise-en-scène, which is distinguished by its careful and meticulous art direction. However, it is undeniable that the novel's narrative, with its complex political, ecological and philosophical dilemmas, takes precedence over the visual and stylistic elements Lynch normally explores. In this sense, De Laurentiis, both Dino and Raffaella, had a major influence on the final form of the film, prioritizing fidelity to Herbert's text over the artistic liberties Lynch would have wanted to take (Rodley, 1997). Lynch publicly complained about the pressure the producers exerted on him, subordinating the creative aspects to the commercial requirements of the film. However, we must recognize that, without De Laurentiis' intervention, the film would probably have been another failure like Jodorowsky's, whose vision never materialized (Pavich, 2013).

We must accept that Dune is Lynch's least characteristic film, overshadowed by his later masterpieces. Despite this, it is possible to find glimpses of his artistic genius, particularly in the interpretation of the characters, which reflect his deep psychological concerns and complex motivations. Examples are the performances of Kenneth McMillan as the villainous Baron Vladimir Harkonnen and Kyle MacLachlan as the hero protagonist Paul Atreides. MacLachlan, who became Lynch's fetish actor, would repeat his collaboration with the director in Blue Velvet (1986) and in the celebrated television series Twin Peaks (Lynch and Frost, 1990-1991). This relationship of trust between director and actor is indicative of Lynch's marked creative imprint, which continued to develop beyond Dune (Rodley, 1997).

Despite the initial lack of recognition by fans and critics, Lynch managed to recover and regain the favor of both the public and the academy. After the failure of Dune, Lynch shot Blue Velvet (1986), a work that allowed him to regain the Oscar nomination for best director. He repeated this milestone more than a decade later with Mulholland Drive (2001), another of his most emblematic successes (Nochimson, 1999). However, it is important to note that Lynch never won the golden statuette, despite being nominated on three occasions. It was finally in 2019 when he received an honorary Oscar in recognition of his prolific career, which closed a circle that seemed unfinished for years (Pawich, 2013). In subsequent years, several television adaptations of Herbert's work have been made, such as the miniseries Dune (Harrison, 2000) and its sequel Sons of Dune (Yaitanes, 2003). However, Peter Berg's attempt in 2008, with Paramount, ended in frustration, similar to that of Jodorowsky. More successful was Denis Villeneuve (Rodriguez, 2021), known for his remakes, such as Blade Runner 2049 (2017), who offered a new film adaptation of Dune (Villeneuve, 2021), Dune part 2 (Villeneuve, 2024). However, as Nana (1984) rightly points out, this is "another story", which deserves its own analysis, as it introduces new visual and narrative approaches, marking a different era in the genre.

Conclusion

Throughout this chapter, we have addressed the complex challenges inherent in the film adaptation of a dense and complex literary work such as Frank Herbert's Dune, and we have analyzed how the version directed by David Lynch in 1984 reflects the tensions between fidelity to the original text and the demands of the cinematic medium. Through this analysis, we have come to several key conclusions that not only provide a deeper understanding of this particular adaptation, but also have important implications for future adaptations of literary works to film.

First, it has become clear that the intervention of the producers, Dino and Raffaella de Laurentiis, played a crucial role in the direction the film took. The constant pressure to keep costs under control and ensure the commercial profitability of the production resulted in a series of decisions that limited Lynch's creative freedom. These cutbacks and demands on footage length negatively affected narrative cohesion and the film's ability to capture the complexity and tone of the original work. This situation clearly illustrates how the economics of commercial filmmaking can have a direct impact on the artistic quality of an adaptation, and how commercial interests can override the creative ambitions of filmmakers.

Another important aspect that has been highlighted is the question of fidelity to the novel. While Lynch's Dune is presented as a reasonably faithful adaptation to the fundamental elements of Herbert's book, it is also true that the film departs from several key aspects of the literary work. The imposition of narrative constraints, such as the need to make the film suitable for all audiences, resulted in the simplification of the plot, which impaired the film's ability to convey the philosophical depth and social critique that are central to the book. In this sense, we have been able to conclude that fidelity to the original text, while important, does not always guarantee the success of a film adaptation, especially when the demands of the medium require certain modifications to make the story more accessible to a wide audience.

In addition, the surreal and experimental vision that characterizes Lynch's other works is diluted in Dune due to the limitations imposed by the producers and narrative restrictions. Despite this, the film still shows flashes of the director's visual talent and creativity, particularly in the depiction of Herbert's worlds and characters. Although this adaptation is probably the least representative of Lynch's work, it is undeniable that Dune contains visual and design elements that reflect his unique style, such as the interpretation of the characters and the use of analog special effects.

In terms of implications for future adaptations, this case highlights the difficult balance between fidelity to the novel and the need to create a cinematic work that works on its own in the language of film. Filmmakers must deal with the expectations of fans of the original work, while at the same time adjusting the narrative to make it understandable and appealing to a wider audience. This dilemma continues to present itself in recent adaptations, such as those of The Lord of the Rings or Game of Thrones, where changes to the plot or the omission of important details have generated debates about the fidelity and effectiveness of the adaptation.

The case of Dune demonstrates that film adaptations of great novels can be successful even if they do not strictly follow the narrative of the original text. While Lynch's work was not an immediate success, over time it has gained cult status, underscoring that films, even if they are not always completely faithful to the novels they adapt, can acquire their own artistic and cultural value. This phenomenon is an example of how adaptations can transcend the limitations of their literary origin and become a new work, which, although derived from another art form, has an impact of its own within cinema.

From the above, it is concluded that the analysis of Lynch's adaptation of Dune demonstrates the complex interactions between commercial interests, creative decisions and audience expectations. Through this study, it is concluded that film adaptations of successful literary works need not always be completely faithful to the original text. However, it is critical for filmmakers to strike a balance between fidelity to the work and the demands of film as a narrative medium, a challenge that remains relevant today in creating quality adaptations.

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Documentary film as a didactic tool in education

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Introduction

Cinema is one of the most important cultural manifestations in society, therefore, it is of special interest to know how it can be used in education as a teaching-learning tool. In the cultural world, cinema has a lot to say, the predominant one is the North American one, which has huge budgets to be able to make big productions and huge media campaigns, on the other hand, the Latin American cinema does not have those huge amounts of money and publicity. Consequently, Latin American productions are not as well known as they should be, and they stand out for having a great social content, very focused on national and continental issues, where social class, economic issues, etc. are brought to light.

This work pays special attention to conceptualizing the application of documentary film as a tool for social transformation, especially academic, with the proposal of a content analysis sheet that covers the narrative and technical aspects of audiovisual production.

Identifying the educational tools that can be used through documentary film, involves a process to which social research methods and techniques are applied, since "qualitative techniques offer us the possibility to analyze in depth and to obtain, as objectively as possible, sketches of images that allow us to initiate a dialogue with the research participants" (Medina & Busquet, 2017, p.186).

The methodological route to be used is the qualitative multi method. The research tools to be used are:

Content analysis sheets: It is important to work on an analysis sheet that homogenizes, structures and orders the relevant elements that occur in a film documentary, which is composed of themes, characters, symbolic objects, spaces and times that are related to each other.

In the construction of the film content analysis sheets, a schematic structure of the documentary, common identity signs, film genre, subject matter, authorship and nationality are outlined.

Semi-structured interviews: to Educommunication experts working with this tool. This tool is characterized by the previous elaboration of a group of questions to guide the interviewer, which can be left aside at times, if new questions arise during the meeting with the expert.

The research is divided into four sections, the first one, makes a journey through the history of Ecuadorian cinema, from its first records in the port of Guayaquil, through the indigenist cinema of Jorge Sanjinés, renowned Bolivian director, his main proposal "a cinema with the people" (Dajes, 2023, p.98).

The second part focuses on theorizing the core of the research, documentary film as a resource in education through Hegel's triad and the bases of the director and theorist Sergei Eisenstein.

Section three describes the methodology with its tools and the last section analyzes the results.

The collective imaginary relates cinema with fiction, without considering that it is possible to observe works closer to reality with a high identity and cultural value of the country. The importance of including documentary film works in the classroom lies in showing through the audiovisual personal stories that have repercussions in the public sphere, such as the State.

According to the authors Seeber et al. (2010), a major percentage of our perception level is concentrated in the audiovisual; so that cinema becomes a very powerful tool to achieve meaningful learning.

The history of documentary filmmaking in Ecuador

To begin to define what documentary film is, it is important to know when the term "documentary" began to be used to identify a film with specific aesthetic, technical and narrative characteristics, and it was John Grierson, pioneer and director of *Drifters* (1929) during the 1930s, who coined it to identify film production dedicated to showing the public an image of reality, whether it be routine activities or travel films with an ethnographic theme (Murray-Brown, 2003).

"The documentary in its multiple forms, of essay, observation, experimentation, is still ahead of fiction in the role of presenting itself as the most faithful reflection of reality" (Basile, 2024, p.16). It is associated with document and documentar, from the French word documentaire, attributed until then to refer to travel films.

For Nichols (1997), the documentary can be conceptualized from three points of view, that of the filmmaker who considers that reality is in front of him and that he has no control over it, that of the text that refers to the script and the way the story will be told and finally that of the spectator who differentiates between the real and the fictitious, he presents a classification of the documentary, which we will develop later on is "The modality of reflexive representation".

In Ecuador, since its beginnings, cinema has been documentary, with the arrival of Valenti to the port of Guayaquil, the camera recorded fragments of reality that were later reproduced and accepted with great curiosity among the inhabitants of the country. As mentioned by Serrano, (2001):

> Documentaries in Ecuador are a mixture of realism and denunciation. The relationship between cinema and realism is close. The very invention of cinema is an expression of the development of realism...Cinema is a more developed aspect of the plastic realism that began with the Renaissance, and found its limit expression in Baroque painting. (p.43)

The history of the Ecuadorian documentary can be developed in three significant key moments that determine what is produced in terms of audiovisual material.

The first in the 1920s and 1930s, when more than fifty documentaries were made.

One of the first Ecuadorian productions that pretends to be something more than a record of images is a hesitant and advanced "documentary", Los Funerales del General Alfaro, produced by Ambos Mundos and Rivas Films, which would be released with great impact on December 26, 1921, nine years after the dragging and burning of the liberal leader in Quito, announcing the documentary vocation of our cinema (Serrano, 2001, pp.32-33). This film announces the documentary vocation of our cinema (Serrano, 2001, pp.32-33).

Those attending this historical screening were amazed with the fidelity of the images and beyond the technical aspects, they were able to recognize an orderly narration of events, which was easy to understand, and that somehow leaves them in a position of what is "truth". In order to understand this first sensation of the spectator, we present the synopsis of the incipient documentary.

Some important documentaries in the 1920s were those made by Augusto San Miguel, *Panoramas of Ecuador*. They are images of great aesthetic value, showing the capital Quito and the port of Ecuador Guayaquil, *Actualidades Quiteñas* and *El desastre de la vía férrea*. The three documentaries have social and political overtones, showing the exploitation of indigenous people and peasants by the caudillo. Another important figure is the Salesian priest of Italian origin, Carlos Crespi, who arrived in the country in 1923 and filmed the first ethnographic documentary on the indigenous people of eastern Ecuador, which in its final version was entitled *Los Invincibles Shuaras del Alto Amazonas (The*

Invincible Shuaras of the Upper Amazon) in 1926. It consisted of four parts and was premiered at the Eden Theater in the city of Guayaquil in 1927.

According to León (2005):

> This film poorly documents facets of the life of the indigenous nationalities in the first decades of the century. But they say a lot about the white man's gaze and about the mestizo project within which it is inscribed. They say more about who filmed them than about what was filmed (p.211).

This documentary directed by Father Crespi, was designed from its conception to be disseminated with a very particular interest to colonialize the Ecuadorian East, Amazon region, with a mostly indigenous population. The images of the documentary showed the Shuaras customs, which differed from the customs of the white or mestizo, the film is constructed from a look of power and portrays the Shuar people as the "others" that must be transformed. In addition to the ethnographic documentary, other types of work were done, especially documentaries commissioned by governmental institutions.

After these years there was a long pause of almost fifty years, in which no film work was made in the country, at least not a significant work in the documentary or fictional genre, one of the main causes for this event is the political instability of the country, which had a direct impact on a serious economic crisis.

From the 1940s to the 1970s, more documentaries with social or ethnographic overtones were shot in Ecuador than fiction films. Gustavo and Igor Guayasamín made the short films *Guangaje, día de los muertos* and *El cielo para la Cunshi*, while the Kino Group premiered the documentary *Minga*. Gustavo Corral and the KINO Group produce *Asentamientos humanos, desarrollo y hábitat* (Mite-Basurto, 2022).

A second important moment occurred with the return to democracy in the 1980s, when cultural issues began to be discussed and artistic manifestations proliferated, including audiovisuals. In the cinematographic field, the Central Bank of Ecuador became an "institute also issuing culture, which sponsors from the Center for Cultural Diffusion, a policy of democratization and popularization of culture" (Alemán et al., 2021, p.18), financing and producing a series of documentaries.

In addition, the National Union of Journalists and the House of Ecuadorian Culture, thanks to tax exoneration, became film producers between 1980 and 1983. Of these institutions, we can mention *Boca de Lobo* (1982) by Raúl Khalifé and Susana Andrade, which deals with the life of the inhabitants of a small town in the Ecuadorian Andes.

Other topics covered in the 1980s documentary include:

> The pamphlet cinema, didactic cinema, report cinema, essay cinema and testimonial cinema are the multiple militant dimensions of expression, combined in the political intervention documentaries of the nineties, which establish a dialogue with the experiences of struggle of previous decades, and with current resistance practices. (Campo and Dodaro 2007, p. 34).

The documentary portrays, above all, the conflict that exists between mestizos and indigenous people. *Los Hieleros del Chimborazo (*1980) by Igor and Gustavo Guayasamín, is about indigenous people from the Sierra, who climb the snowy mountain every day to collect and transport large blocks of ice on their backs. Both works had an important international recognition for their indigenist discourse.

In 1981 the National Cinematheque of the Casa de la Cultura Ecuatoriana was founded, which promotes the participation of filmmakers in international festivals, shows their work and is an important window for the national and international diffusion of cinematographic products.

And a third moment, with the approval of the first Law for the Promotion of National Cinema, in 2006, which establishes the creation of a National Cinema Council (CNCine), with the purpose of stimulating the activities of this productive sector of the country. The CNCine promotes a Film Development Fund, with state monetary support for the creation of stories in the country. At present, it is the documentary, the cinema of the real, which has had a more visible development, with a constant flow of works over the years, which has contributed to create a strong public that supports it.

Documentary cinema is the genre that has the greatest opportunity for experimentation and for inventing new languages. Thus, in our environment and with the arrival of new filmmakers graduated from film schools, we reached the 90s.

In the nineties, cinema was conditioned by a new cinematographic current that developed in most of Latin America, the so-called Dirty Realism, whose stories deal with themes of social criticism and whose protagonists come from the most dangerous and marginal sectors. Serrano (2001) comments: "The nineties have seen a contemporary audiovisual culture take definitive roots in Ecuador, which has formed more cosmopolitan or worldly generations, but at the same time, more strongly inclined to fungible and banal goods" (p.66). In the documentary field, there are very few titles in this decade and the cinematographic boom is more in the field of fiction. We can mention only one, found in the catalog of the National Cinematheque *Chaupi Mundo*, by Antje Starost and Helmut Grotjahn in 1995.

In the same way as with national fiction and the enactment of the Film Law (2006), documentaries have regained their strength, now with more personal and intimate stories, but without abandoning social and political overtones.

In April 2002, Cinememoria organized the First International Documentary Film Festival "Encuentros del Otro Cine" in the main cities of Quito, Guayaquil and Cuenca, which in the year 2025 continues to be a great success.

The Festival allows independent Ecuadorian documentaries to be exhibited and offers the public interested in cinema a panorama of the trends in contemporary creative documentaries.

A sample of the work produced in these years are the documentaries: *Con mi corazón en Yambo* by María Fernanda Restrepo in 2011, and *La Muerte de Jaime Roldós* by Manolo Sarmiento and Lisandra Rivera in 2013. Both were exhibited at the EDOC Festival - Encounters of the Other Cinema.

With these two emblematic works, the documentary in Ecuador is consolidating, not only for its more careful, more cinematographic aesthetics, far from the television format of its beginnings, but also for the way it presents its stories, which evolve and introduce new forms, new narratives and turn the genre into a tool for political reflection, denunciation, history and to see ourselves as we Ecuadorians are.

Documentary film in education

From its beginnings, cinema is of the documentary genre, it projects through the cinematograph of the Lumière brothers, a representation of reality, his first work *The workers leaving the factory* (1895), shows us in a single black and white shot a group of people leaving the photographic apparatus factory in the city of Lyon, France.

In other words, the first records of the film camera are realistic, the operators or technicians went out to experiment with this new technological invention and what did they manage to capture? Fragments of less than a minute's duration of common, everyday events of society, the same ones that lacked a previous context.

Robert Flaherty is one of the pioneers of the documentary genre, "his work raises questions about the nature of truth, the relationship of the documentary filmmaker with the reality he creatively appropriates and the politics of representing the other" (Jayasankar & Monteiro, 2015, p.621). It is Flaherty himself, who directs *Nanook of the North* (1922), a historical reference for documentary cinema since it allows the viewer to make other cultures visible.

It is difficult, but not impossible, to conceptualize exactly what documentary film is. The pioneers of the genre, John Grierson, Robert Flaherty and Dziga Vertov, agree that it is an aesthetic, creative way of seeing or interpreting reality. Film theorist and critic Nichols (1997), further argues that the documentary "retains a residual responsibility to describe and interpret the world of collective experience" (p.40).

Diga Vertov, one of the founders of Soviet documentary cinema, founded the group Kinoks (cine-eye), the cine-eye goes beyond the name of a group of filmmakers, according to Vertov is the explanation of the visible world, which is often invisible to the eye of the people.

The main characteristic of this type of cinema is to transmit knowledge about a specific culture, the documentary in essence is educational and as such an effective tool to be used in education, of the variety of audiovisual media and genres is the one that has the best chances of generating an analysis and interpretation of reality. Since its use and application goes back even to its origins with the aforementioned surgical cinema.

The didactic potential that the cinematographic documentary has is vertiginous, taking into account that it has been built in the course of more than a century, documentary filmmakers enrich the narrative with creative images and picturesque characters that arouse the interest of the viewer, "the importance of the conservation of the audiovisual heritage of a people derives from the conservation of the collective memory"(Caldera-Serrano, 2015, p.80). The cinematographic reality is constituted as one of the most effective means to understand one's own reality. The way we are seen and how we see ourselves is materialized when we consume this type of content.

Although it is true that the concept of the documentary originated and developed first in Europe, other parts of the world also began to experiment with the camera. In Latin America, for example, the first film camera arrived in Mexico and, as in France, the first images recorded were incipient manifestations of a fragmented reality. As the years went by, the documentary became the maximum expression of Latin American filmmakers and was used as a tool for social denunciation.

John Grierson is one of the founders of the English documentary school, the first organic movement of the documentary genre that left an important mark, as he made significant contributions to the development of the social documentary. He considered that the primary task of the documentary filmmaker was to show the problems faced by human beings and he saw cinema as an instrument of denunciation and persuasion.

Grierson's main interest was to promote education for democracy with the help of documentary film, which for him was one of the most powerful artistic manifestations, since it showed close realities that encouraged critical analysis on the part of the viewer.

In a more Latin American context we mention the Colombian documentary *La Negociación (*2018) by Margarita Martínez, it tells the story of the peace negotiations between the Colombian government and the FARC guerrillas, all through interviews that had never before come to light, this work is used in educational institutions to tell that milestone of history in Colombia, which has relevance and pertinence in the social and political life of that country.

Dialectics in cinema, from Hegel to Sergei Eisenstein

In this cinematographic field we want to talk about the advantages and disadvantages of dialectics, to review through a theoretical journey the conceptual contributions that the audiovisual has in the teaching and learning process.

We will start with the concept, the precise and strict definition of the word Dialectic, which is the catalyst of the present study. According to Marín (2021) "Dialectics is an argumentative technique by which truth is sought through the manifestation of contradictions in the arguments put forward by the adversary" (para.1).

Dialectics then is a process that tries to discover the truth through arguments that oppose each other, etymologically comes from the Greek dialectikós which translates into English as conversation. Its concept was discussed by various philosophers over the years, the pioneers were Socrates, Plato and Aristotle, also years later by Hegel and Karl Marx, all trying to reach the truth of the concept, the knowledge that explains the historical evolution of man.

The Soviet filmmaker Sergei Eisenstein, director, editor and important film theorist, in his book *The Form of Cinema* (1949) presents "A dialectical approach to the form of cinema". As mentioned by Bedoya (2009):

Eisenstein's cinematographic dialectic specifically approaches Hegel's approach. An approach with which Marx later made a profound analysis of the real world, of the system and of the human being himself; Dialectical Materialism. A formula with which, besides allowing an analysis of the spiritual world (Hegel) or the material world (Marx), it is also possible to propose at the cinematographic level. A "cinematographic dialectic". (p.9)

To begin to understand this proposal we must first mention Hegel's Dialectic, which is based on three phases, a thesis, an antithesis and a synthesis, also called the dialectical triad, the thinking is done from philosophy as a way of interpreting and analyzing the reality of people. In other words, as a reflective thinking.

Figure 1. Hegelian Dialectical Triad

Note: Adapted from Dialectica Cinematográfica.

Thesis: We define this concept as the development of an idea, it is the affirmative phase, considered as the original and true state. For the Hegelian theory the thesis begins in the subjectivity and reason of people.

Antithesis: Everything is true, until a concept or idea is confronted with negation, this is Hegel's proposal, it contradicts the truth of the thesis, thus expanding a thought process, in which absolute truths do not exist.

Synthesis: An idea is presented, it is contradicted and the result of that discussion is the synthesis. A process in which we have a new truth product of the contradiction.

Eisenstein takes up Hegel's ideas and applies them to the moving image he works with, to his political ideologies. The cinematographic narrative at the service of the Soviet revolution, with the sole objective of influencing the viewer by formally theorizing some aesthetic possibilities of cinema, especially the importance of the montage in the construction of a story as if it were a work of art.

Eisenstein's cinematic narrative establishes this theoretical and practical philosophy on two primary foundations: Being and synthesis.

The Self - as a constant evolution of the interaction of two contradictory opposites.

Synthesis - arising from the opposition between thesis and antithesis. A dynamic understanding of things is also basic to the same degree for a correct understanding of art and all forms of art (Eisenstein, 2006, p.48-49).

The being is the spectator and the synthesis is the approach that stimulates a mental process in the spectator through various elements of cinematographic language, from the smallest, the shot, to the way of ordering the images with the montage, other important elements are lighting, color and sound.

The dialectic in cinema acquires meaning through the three types of dialectical contradictions in art, which are mentioned by Eisenstein and developed below:

According to its social mission, cinema should forge deeper concepts in the viewer, this would undoubtedly be a positive feature, we see it as an advantage if we use cinema as a tool for the education of human beings. However, Eisenstein's proposal was to capture his own ideologies without having to say them himself, a look that can be dangerous if we consider the character and the speech.

We focus on this unique dialectical dynamic of art as it relates directly to film and to the purpose of this study as a didactic tool in education.

The conceptualized by the aforementioned experts, has already several decades even centuries since its initial premises, and still remain in full force today, for the research that precedes us the dialectics of cinema is a theory that supports the use of film in the classroom as a teaching tool. The films are connected and related to the social environment, seeking to make the viewer reflect and react to an event that is told through image and sound, these stories can be fictional or documentary with less or more fragments of reality.

We will support the current research with the precepts of Hegel and Eisenstein to relate it to the world of cinematographic art. Even another theorist of the film scene who was motivated by and drew ideas from Eisenstein's dialectical cinema was the documentary filmmaker Dziga Vertov founder of Cinema-Eye, a genre that tries to show the truth through the images captured by the film camera. "Cinema-Eye is not limited to the direct perception of the camera, but involves a process that goes from filming to its projection in the theater through studio editing" (Paz-Agras, 2017, p.153).

To close this section, we contextualize the importance of making philosophical theories visible, which since ancient times have been of great importance for the understanding of the world and the people who inhabit it. Nowadays we have the conditions to retake these ideas and thoughts and turn them into novel proposals that link education with analytical and reflective processes within a universal audiovisual culture.

Qualitative analysis

Determining whether documentary film can be used as a didactic tool in the classroom involves a process to which social research methods and techniques are applied since qualitative research processes are multicyclical in nature and obey a flexible design modality (Medina & Busquet, 2017).

Content analysis

Our intention is to work intensively in the construction of a methodology of analysis of film content in this specific case "documentary film", in which the nuclear theme of the story (identity and memory) and the skeleton or narrative structure in which the characters and actions (educational approach) of the documentaries made in Ecuador are reflected.

Content analysis is a valid tool in the field of research for the objective interpretation of communicative contents. It presupposes a previous content of information (of any kind) stored in a communicational archive; videos, audio recordings, press, books, etc. They are the primary tool of this type of analysis.

Fiori et al. (2013) comment that the most commonly used communication research techniques are the survey and content analysis, these can be applied to speeches, text, images among others, in this specific case to the Ecuadorian documentary.

Historical and thematic analysis sheet of the documentaries

In order to create a documentary analysis method, it is important to work on an analysis sheet that homogenizes, structures and orders the relevant elements that occur in a film documentary, which is made up of themes, characters, symbolic objects, spaces and times that are related to each other.

In the construction of the film content analysis cards, a schematic structure of the documentary, common identity signs, film genre, subject matter, authorship, nationality are traced. With the construction of the 2 methodological cards we respond to the specific objectives one and two.

The analysis sheet was composed of two complementary parts, which are:

1. Technical file: Consists of data on the production of the documentary.

Table1 *Technical data*

1.- Title of the work
2.- Director's name
3.- Name of the production company
Format (Production system)
5.- Year
6.- Duration
7.- Subtitles: yes/no
Province (Country)
9.- Modality: fiction/documentary/animation/experimental
10.- Genre: comedy/suspense/adventures/biographical...
11.- Theme: What are the main themes of the documentary? for example: if it talks about love, war or the country's economy, etc.
12.- Subtopic:
13.- Availability: yes/no (possibility to access copy)
14. Relation to the thesis topic

2. Analysis sheet: Documentary content, image and narration

Table2 . *Content analysis sheet*

Title	Name of the film
Director	Who directs the film?
Country and Year	In which country and year is the film set
Synopsis	An excerpt from the film is written
Main characters	Name of the main characters in the documentary.
Before watching the film	Mention the general context of the story, some contents/topics covered, according to the interests of the group of students.

After watching the movie	First ideas and sensations.
Film analysis	Film codes
Visual and sound perception	What emotions does the visual and sound perception of the film convey (shots, angles, camera movements, soundtrack)?
Narrative aspects	In what form is the story told? Classical or experimental structure.
Historical, Political, Social and Cultural Context	What is the context in which the film is set? Explain your answer.
Link with the educational curriculum	Depends on the contents of the subject
Communicative intent. Denotative value. Connotative value	What is the director's intention or message to the viewer? In this section the denotative value is taken into account, but the symbolic aspect that represents the social and political aspects of the film is mentioned.
Remarks	It is stated if there were any curious facts or if anything interesting was noticed in the film.

Universe and Sample (Historical and technical classification of documentaries in Ecuador)

The Universe of the exhibition is obtained from the section "How They See Us, How We See Ourselves", which groups Ecuadorian documentaries within the EDOC (Encounters of the Other Cinema) documentary film festival that has been held in the country since 2002 with approximately 253 documentaries in its video library.

In the specific case of this research process, the thematic field is documentaries produced in Ecuador by national or foreign filmmakers/documentary makers that tell the story of political, social or cultural events in the country.

Sample selection

Most media content analysis involves a multistage sampling process, in which at least two typical phases, and sometimes three, must be applied. The first phase involves sampling the sources of the material. After determining the sources, the selection of dates or titles of the documentaries can be made, depending in many cases on the purpose of the study. The criteria are: recognition and subject matter according to the unit of study.

From the universe presented, two documentaries were chosen to validate the proposed file for the content analysis, it should be clarified that as mentioned in chapter two, the documentary can be widely applied to various topics in the field of education, in this case those mentioned below were chosen because of their thematic diversity and their transcendence.

Table3 . *Documentary selection / sample*

Title	Director	Year
GRANDPARENTS	Carla Valencia Dávila	2010
WITH MY HEART IN YAMBO	María Fernanda Restrepo	2011

Semi-structured interview with experts in educational pedagogy.

For the present research, it was considered important to carry out an expert appraisal of the subject under study.

For Escobar-Pérez and Cueva-Martínez (2008):

> The expert judgment is defined as an informed one of people with a track record in the subject matter, who are recognized by others as qualified experts in the subject matter, and who can provide information, evidence, judgments, and assessments. The identification of the people who will be part of the expert judgment is a critical part of this process. (p.29)

The semi-structured interview as a qualitative research tool is characterized by the previous elaboration of a group of questions that guide the interviewer in obtaining data, in the semi-structured interview a guide questionnaire is used that can be left aside at times, if new questions arise at the time of the interview itself.

The qualitative approach with which we will assume the interview will generate the possibility of opening other questions not included in the questionnaire, depending on the answers of the interviewees.

The selection of these experts was based on two factors: reputation in the community and experience in the educational field, with the interviews we respond to the general objective.

Table 4 . *List of experts*

Name	Professional Experience
Enrique Martínez -	Teacher, pedagogue, anthropologist and educational technologist, educommunicator, writer and cartoonist. Co-founder of Comunicar Magazine.
Valerio Fuenzalida Fernández	Researcher, television producer and professor at the School of Communications of the Pontificia Universidad Católica de Chile.
Federico Sabana Veja	Professor at the Universidad Privada Antenor Orrego in Peru, audiovisual researcher, member of the Ibero-American Network for Research in Audiovisual Narratives - INAV.
Yamile Sandoval	Expert in educational television, researcher in the field of communication, program designer for the Complutense University of Madrid, in collaboration with Radio y Televisión Española.

The in-depth interviews were conducted with the help of a questionnaire and were carried out through zoom (due to the fact that they were outside the researcher's country).

The interview questionnaire was developed around three major themes:

- State of the art of film as an educational tool
- New teaching methods
- Documentary films in education

The results collected were analyzed through qualitative methodology. A triangulation was made between the documentary files, the didactic tools and the interviews.

Documentary as an educational resource

This research was conducted through a qualitative methodology, which first proposes to conceptualize documentary film as a tool or teaching resource in the classroom, as mentioned in the first section, Ecuador has a long and important history of stories told through a film camera specifically with the non-fiction or documentary genre, from the first records of the Italian Carlos Valenti in the port of Guayaquil, to the work recently premiered at the prestigious Guadalajara Festival in June 2023, *Ciudad a la espalda* by director Paola Rodas, which was awarded as the best socio-environmental documentary.

The country continues to realize that its stories can connect beyond borders, and it is for this reason that the proposal of this research has more to do with the documentary than with fiction. "The documentary is rather to record audio visually a reality that is happening and about which there is a lot of background and topics can talk about science, health, social issues such as poverty among many others, there is an important difference between a documentary and fictional audiovisual". (Fuenzalida, V., personal communication, May 15, 2023).

The ethnographic documentary "is a tool that analyzes, criticizes and produces and/or reproduces models of identity" (Camas, 2016, p. 304). It is the premise of this work, to connect with students close, local realities in which they can see themselves reflected, establishing in them a sense of identity.

The documentary offers veracity and accuracy, in narrative terms, without forgetting the key factor of entertainment, which can be provided by the cinematographic image with a soundtrack that harmoniously accompanies the narration. "The audiovisual in the classroom has certain advantages that are very important in education because it is possible to carry out a constructivist activity with the work that is being watched and therefore talk about what young people are actively capturing about the audiovisual message they are seeing" (Fuenzalida, V.). (Fuenzalida, V., personal communication, May 15, 2023).

It is key to mention that since its beginnings, cinema has been used as a tool for education, at the beginning with medicine to record and learn from surgeries until it has moved to practically all branches of education, "cinema is essential to educate and cinema has filmed everything or almost everything, with better or worse quality so any teacher who wants to show something needs to use cinema, whether a documentary or fiction cinema, because fiction is often documentary, it is necessary as if we had to resort to a historical document that is in a library". (Martínez, E., personal communication, June 6, 2023).

This tool works so well precisely because of its playful nature, which leads to reflection and learning through entertainment, images and sound are the key elements to produce representations and meanings, which, when properly analyzed, build the collective imaginary of a society.

When we talk about representations, we mention the messages, signs, meanings that images have on a reality, this can be portraying a social group, or describing or narrating an event. The truth is that in Ecuador each stage or historical period (social, political or cultural) has been told by a documentary film director. And we mentioned it in chapter one of this research.

The documentaries collected address different topics ranging from biographies, politics, culture, identity, family, economics, migration, etc. All of them are of public interest since they contribute to the formation of a critical citizen conscience, which is not far from its reality. The transcendent aspect of this type of narrations is the look that is given to the subject to the person, therefore to the society where he/she develops.

Educational methodology sheet

The research proposes a content analysis card, based on the text *Analysis of Film* (1990) by Jacques-Aumont and Michelle Miller, which states that:

The film is considered as an autonomous artistic work, capable of generating a text (textual analysis) that bases its meanings on narrative structures (narratological analysis) and on visual and sound bases (iconic analysis), thus producing a particular effect on the viewer (psychoanalytical analysis). (p.18).

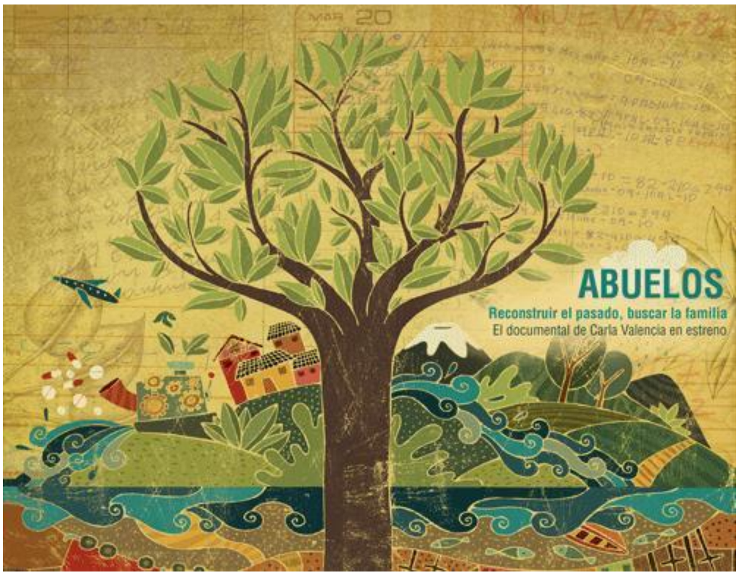
It should be clarified that there is no universal method for film analysis, everything will depend on the sample, the genre and the object of study, maintaining the three elements mentioned above by the author, the narration seen as the form or structure of telling a story, the image, the sound and what the spectator understands.

After viewing the documentary, we proceed with the analysis of it, first the technical file of the documentary, which describes in an orderly manner the technical data of the film production. Table 1 of the methodology. It is essential that the teacher provides these first data, title of the work, year and director, in case there is a work with the same or a similar title, once this sheet, which is more informative in nature, is filled out, we proceed to work with the content analysis sheet. According to the experts interviewed, Fuenzalida, Sandoval, Martínez and Sabana, agree that there are two ways of doing this work, by work groups, delivering a written document and individually with an oral presentation. For this research we have opted for the first form, group work and a written paper, understanding that this requires a more detailed process of analysis.

We can observe that the first parameters are informative, title, director, country and year, they are important since they give us an account of the social moment in which the story takes place. The synopsis is a brief summary of the plot, the main characters are those represented in the images and are the point of view from which the story is told. The cinematographic analysis combines narrative and technical aspects within the same document.

The following are 2 examples of analysis.

Figure 2. *Grandparents Documentary Poster*



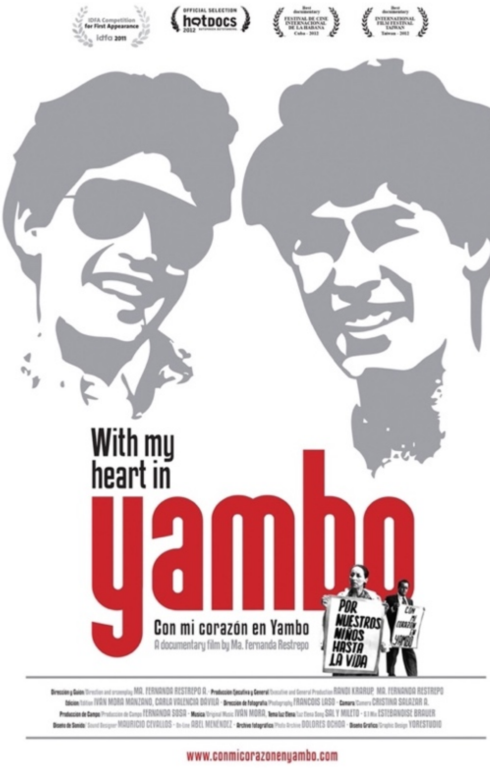
Note: Promotional poster of the film.

Technical Data

Title of the work: Grandparents
Director's name: Carla Valencia Dávila
Name of production company: None
Format: HDV digital video
Year: 2010
Length: 93 min
Subtitles: yes, English, French and Portuguese
Country: Ecuador, Chile
Type: Documentary
Genre: Biographical
Subject: Family anecdotes.
Subtopic: Search for the past.
Availability: yes, DVD copy, digital platforms Cholo+ and Zine.ec
Relation to the research topic: Emblematic documentary, with great acceptance among the Ecuadorian public, it analyzes from a personal perspective the Chilean dictatorship and its direct consequences with his family in Ecuador. Content analysis Synopsis: A personal journey in search of two grandfathers. Remo, a self-taught Ecuadorian doctor who wants to discover immortality. Juan, a communist militant murdered during the Chilean military dictatorship of 1973. Main characters: Carla Valencia - Narrator Lily Valencia Campos

Bruna Dávila Falconí
Carolina Dávila Falconí
Margarita Dávila Falconí
Jaime Muñoz
Rowing Valencia
Juan Davila
Before watching the movie:
The teacher should have a conversation with the students before watching the documentary and comment on some important aspects of the audiovisual work, especially the context in which the story takes place. For this specific work, talk about the director of the documentary, Karla Valencia, since she is the narrator and a main character in the documentary. It is suggested to talk with the students about the dictatorship in Latin America about the period of dictatorship in Chile. The following questions can be posed:
Do you know how many years the dictatorship lasted in Chile?
Have you heard any personal accounts of government repression of citizens?
What is your opinion of private narratives that become public when told through a documentary?
After watching the movie:
It is suggested that the forum be held in a suitable place for the visualization of an audiovisual product with cinematographic characteristics, good image and sound quality. After finishing the documentary, the teacher should begin the content analysis of what they have just seen, some questions can be posed as follows:
Film analysis
Visual and sound perception:
It is explained through a couple of specific questions how to develop this section, at this point of the analysis focuses on what the student sees, his first impressions, how the images are connected with the story.
Do the image and sound in the documentary succeed in conveying the main ideas of the story?
Does the soundtrack support the narrative?
Narrative aspects:
Historical, Political, Social and Cultural Context:
What aspects of the historical context do you recognize in the documentary?
Does the narrator succeed in communicating the story of his two grandparents?
Link with the educational curriculum:
Students taking the subject of film at the university, some topics considered are:
Cinematographic language
Documentary film genre and its characteristics
History of Ecuadorian cinema
Film analysis
Communicative intent. Denotative value. Connotative value:
When talking about the denotative value of the documentary we first conceptualize what is evident, the subject of the story, the student could start with the synopsis of the story and the connotative value is the figurative sense, the one that requires the context of the narration.
Remarks:
The proposed worksheet can be worked in two ways, one oral and the other written, as mentioned by the experts interviewed. "The redesigned film forum, giving it a little more collaborative construction, leaving not only oral but also written spaces, is very valuable. There are people who do not necessarily handle oral discourse in the best way, but they can visually give an account of what they are seeing and re-signifying." (Sandoval, Y., personal communication, July 12, 2023).

Figure 3. *Documentary poster Con mi Corazón en Yambo*



Note: Promotional poster of the film

Title of the work: Con mi corazón en Yambo (With my heart in Yambo)
Director's Name: María Fernanda Restrepo
Name of production company: None
Format: HDV digital video
Year: 2011
Length: 137 min
Subtitles: yes, English
Country: Ecuador
Type: Documentary
Genre: Biographical
Subject: Missing persons
Subtopic: Search for justice
Availability: yes, DVD copy, Cholo+ digital platforms https://choloplus.com/,
Relation to the research topic: Documentary with great potential to be analyzed in the classroom, it relates important moments in the history of the country, the first-person narration connects with the audience and manages to empathize with the audience.

Content analysis

Synopsis:

In Ecuador in the late 1980s, the brothers Santiago, 17, and Andres Restrepo, 14, disappeared at the hands of the Ecuadorian police under unclear circumstances, 35 years later their family is still looking for them.

Main characters:

María Fernanda Restrepo - Narrator

Pedro José Restrepo

Luz Elena Arismendi

Martha Cecilia Arismendi

Carlos Santiago Restrepo Arismendi

Pedro Andrés Restrepo Arismendi

Before watching the movie:

It is a case that has had a lot of media coverage over the years. The forced disappearance of the Restrepo brothers is an event that stirs up in society the crimes against humanity that have been committed in Ecuador. Before watching the documentary, the student can be presented with a journalistic chronology of the facts.

Do you know the case of the Restrepo brothers? Mention the most important facts.

What do you understand by crimes against humanity?

After watching the movie:

They are asked some questions to relate what they read in the news portals and the story they have just observed.

After watching the documentary, has your perception of the Ecuadorian police changed?

Is the written story in the news genre different from the documentary film narrative?

Mention some characteristics?

Film analysis

Visual and sound perception:

As Fuenzalida mentions "the child, young person and any adult has an active brain, he is not a passive receiver of anything, he makes active readings of what cinema and television present to him". (Fuenzalida, V., personal communication, May 15, 2023).

Do the image and sound in the documentary manage to convey the main ideas of the story?

Does the soundtrack support the narrative?

Narrative aspects:

Historical, Political, Social and Cultural Context:

What aspects of the historical context do you recognize in the documentary?

Does the narrator succeed in communicating his story?

Link with the educational curriculum:

Students taking the subject of film at the university, some topics considered are:

Cinematographic language

Documentary film genre and its characteristics

History of Ecuadorian cinema

Film analysis

Communicative intent. Denotative value. Connotative value:

When talking about the denotative value of the documentary we first conceptualize that it is the obvious, the subject of the story, the real events, the student could start with the synopsis of the story and the connotative value is the figurative sense, the one that requires a context of the narration.

Remarks:

In this case, it is a work that when it was premiered was very well received by the audience in commercial movie theaters. In addition, it is one of the few Ecuadorian documentaries that was shown on national open signal TV channels.

Conclusions

Ecuadorian cinema has had an important development of the documentary genre since its beginnings, more documentaries are produced than fiction films. The subject matter is varied, in the early years more institutional or journalistic, the commissioned documentary and over the years it has built its own identity in which its directors can experiment with their more personal narratives, which have to do with their environment. The contemporary documentary is influenced by the digital transformation that lowers production costs and favors distribution through multiple screens.

Education and documentary film have a lot of potential in the teaching-learning process, the use of audiovisual technologies in the classroom helps to consolidate knowledge in students and encourages participatory learning, it is a teaching tool from its inception, it shows the power of the moving image.

Choosing the ideal documentary is part of the methodology, it is the first thing the teacher must do, the audiovisual works can cover different topics, it will depend on the learning results that the subject needs to achieve.

The file presents a proposal of analysis from the cinematographic dialectics of Eisenstein (film director), which is based on being and synthesis. The being, as the interaction of two contradictory opposites and the synthesis as the opposition between thesis and antithesis.

The Ecuadorian documentary film collects chronologically through its narratives the film history of the country, watching a documentary transports us to the events that marked an important milestone, viewing it with an educational approach, causes in the viewer a change that favors their way of understanding it, from the more technical parts (image, sound, text) that the student also learns to recognize to those that have to do with the values and the critical point of view of the audiovisual filmmaker. We must continue learning about documentaries; it is a genre in constant evolution, both in its narrative and in its themes. The stories do not end, they are just beginning.

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New audiences: the challenges for podcast content developers

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Introduction

Technological changes and the variety of platforms for consuming different audiovisual products have impacted the media, but also provide a wide range of new resources. In turn, connecting with audiences and adapting to the new ways of consuming these contents has become fundamental. For this reason, various strategies have been implemented to maintain and attract audiences by offering new and varied content.

Radio, in particular, has been influenced by the proliferation of podcasts on different platforms. This does not mean that radio is going to disappear, but rather raises the need and the challenge of deepening this format where there are new listeners, this with a view to responding to the consumption trends of different audiences.

The Podcast does not propose the end of radio, but it undoubtedly takes radio resources from traditional radio to create a new product, which has its own characteristics and ways of coexisting with other formats.

When talking about a new product, several questions can be raised about the phenomenon, from the ideation, production, recording and post-production of this Podcast format to its final consumption.

By means of a Pódcast audience survey, we will address the way in which these contents should be worked. The data from this survey will provide relevant information to lay the foundations for a better design of these sound products. From this, and other internal and external factors, will depend the realization of products in this format, their eventual success, acceptance and penetration of the contents in these new audiences that seek different sound experiences, according to their needs of time and moments of listening and other characteristics that will be made known throughout the development of the research.

Radio has already expanded its content beyond sound and traditional electromagnetic waves, diversifying its offer and coverage with a new product that, not being radio, appropriates its structure and resources to create a new sound experience.

The creation of new platforms and content, together with the new ways of listening and consumption habits of new audiences, provide starting points for content producers, so that they are more familiar with the ways of consumption and the type of content demanded by each segment, and it will be easier to design products the more the audience is known.

What we seek is to answer some questions about what factors are relevant when different audiences are faced with the decision to listen to a podcast. Do we know what time they have time, do we know how they like stories to be told, do we know how they like to be told? Not only that, do we know what content they consume the most in a given context and place?

It is important to know where the audience can find the podcast they are looking for, and how to reach them. What are the channels and/or broadcasting strategies we can use to achieve this objective?

These questions guided our study, which sought to understand the listening habits of young people and young adults between 18 and 45 years of age. Along with establishing some characteristics that a narrator should have for the production of Podcast format content. And, finally, to detect what are the topics or contents that should be addressed in the development and production of these podcasts. In addition, it will be necessary to outline a dissemination strategy for these new contents.

These questions served as the basis for designing a survey with 23 questions, which was applied to the target audience.

Podcasting as an extension of traditional radio

We should understand Radio and Podcast as a kind of "first cousins". That is to say, they are similar, they share many characteristics, but they are not the same, they have important differences in the way they are consumed, but not so much in the elaboration of their contents.

According to Riaño (2024) "the Podcast represents a radical innovation that implies changes in lifestyles, it is not an incremental improvement" (p.12), it is a change, not an improvement in the way of making radio.

According to the same author, it also has other characteristics, such as the use of new technologies, that it is not instantaneous and therefore has another temporality, as well as other types of content. Its access is through other means and not through the dial. The contents are given a different use and the language can be varied.

As stated by Parlatore et al. (2020), it should be added that the Podcast breaks classic structures and schemes of content production and modes of circulation and consumption. And a very relevant fact is that "the available technology allows whoever wishes to tell a story to do so by using tools -many of them free- for recording, editing and distribution of content. Therefore, the limit is the imagination" (p. 9). This greatly facilitates the proliferation of filmmakers and the variety of content.

"Traditional radio if we have the habit of saying and listening to people commenting that "they listen to the radio to listen to something", "because they have something on", "because it keeps me company", etc. The podcast goes a little further, it is a firm and voluntary choice of a listener to your content" says Gómez (2020, p. 56).

Hence, the change and adaptation of radio has allowed it to still occupy a relevant place among audiences, especially for those who love live, daily company and real time. However, it has been proven through several surveys that in some segments it is losing listeners, such is the case of youth audiences.

The changes affecting radio, through various sound content platforms, encourage the trend to implement new products created to be consumed on demand in podcast format, so that traditional radio as we know it (AM and FM) no longer has the exclusive right to produce and distribute programs (Galán, 2021).

> Research, in relation to the consumption of traditional media, has shown that "despite the fact that a high percentage of 14 to 25 year olds continue to consume traditional media, there is a stagnation in their consumption" (López and Gómez, 2021, p. 544). And this is becoming more accentuated, since "those under 21 years of age, however, report very little use and sometimes are even unaware of its existence" (López and Gómez, 2021, p. 550).

The audience's needs and requests for entertainment change over the years. A 30 year old didn't ask for the same thing in the 90's as they do now. Are they more demanding as an audience? Maybe they are. Perhaps the basis of it all is that there are many more entertainment possibilities than a couple of decades ago and that means that the viewer, reader or listener wants to be entertained more and better. And, of course, to do it in a different way than their parents did at their age (Iznaloa, 2022, p.119).

Audiences change and with them the contents and their audible forms through podcasts.

Mariano Cebrián, more than 20 years ago, announced that we were already witnessing a transcendental technological change in the radio medium, even more important than the one experienced with the incorporation of transistors, FM and stereophony (Cebrián, 2001). The changing requirements of audiences, in turn, configured new and varied ways of creating content in other formats, in this case the podcast.

Years later, from the same thought of Cebrián, a new concept emerged, the podcast, which was born on February 12, 2004 almost by chance. This was used by journalist Ben Hammersley in an article published in 'The Guardian' (Izuzquiza, 2019).

It was not so massive in its beginnings, however, after twenty years, the podcast is becoming more and more known. Therefore, the current challenges for radio broadcasters are becoming greater and they must attend to their most loyal audience, which is being incorporated into the network, and pay attention to the new digital native listeners, who have made the cell phone the dominant device (Rodríguez et al., 2020). It is these same trends and habits of people's daily lives that should guide the design of new content.

It is estimated that in 2023 there were about 400 million podcast listeners and although North America is the most auspicious market, it is likely that Latin America will take that place in 2025 (Statista, 2024). Therefore, the boom and increase in the production of content in podcast format cannot be ignored, especially in Spanish, which has led to the promotion of the format and interest on the part of the platforms to encourage its consumption.

Radio does its own thing and so does the podcast, so it is clear that new possibilities are opening up in other platforms and content needs. It is advisable to pay attention to what Meco (2020) points out regarding the podcast, as he states that time no longer limits the content as it happened with the programming grids of traditional radio, where each space had a set time. The same author indicates that this type of format is designed more for niche markets than for the masses. These two characteristics give the podcast a differentiating condition that should be considered and applied.

Along the same lines as above, there is a trend related to the age of podcast listeners that indicates that younger people consume more of this format. "A quarter of Internet users aged 16 to 34 say they listen to this audio format on a weekly basis, among those over 55 the percentage drops by almost ten points" (Statista, 2024). In other words, there is a trend related to the age of the listeners of the Podcast. Young people are the ones who consume this format the most.

López et al. (2014) stated that young people could be interested in "diverse news on different topics that allude to their immediate environment, ranging from information on video games, technology or music concerts, to anecdotes, curiosities or leisure agenda" (p. 57).

It is therefore evident that it is not enough to replicate or make available traditional radio content; it must be designed in relation to the specific preferences of the audience. Therefore, it is necessary to probe into the consumption habits of potential listeners.

There are studies on Spanish television that warn of the need to maintain the relationship with audiences. The benefit of the social networks of these media is also analyzed, which contributes to "learn from the concerns and preferences of their audiences and approach the usual scenarios of young users to offer more personalized and relevant services for them" (Fieiras et al., 2023, p.355). The same can be applied to the needs posed today by audiences in different latitudes, whether in the Latin American context or in Chile.

Different communicators seek to open a path with interesting stories and contents to tell, but they do not have the opportunity to make their productions in traditional media, either because of the high cost, for not knowing the medium or for not having previous experience, and this, far from closing doors, can open them. "Today we are talking about prosumers (once only consumers) who have the ability to share communicational roles in the networks as opposed to the protagonism and discursive hegemony that radio once held" (Ríos, 2022, p. 64). It is important for the media to be open to these new proposals and assume an active role in the new content offer.

As Orrantia (2019) notes if media want to succeed they must go where the audiences are. Access their mobile. Capture their attention. "Exercise a relevant role in that economy of trust with good stories, also in podcast format, linked to current affairs or entertainment" (p.41).

The above logic of attending to audiences and responding in a better way to their requirements goes hand in hand with an approach to their nature, their complexity, their interests, their habits and preferences. "One way to start an inquiry is through the reflections of the symbolic content that can be glimpsed in the social fabric: behaviors, consumptions or interactions in which a media influence is seen" (González et al. 2018, p. 25).

And although the challenge involves multiple variables, any progress in this direction acquires value for those involved in the design of new content.

As pointed out by López et al. (2014), once again radio has this opportunity before it and must take advantage of the use of the Internet and the listening possibilities offered by different media and technologies. "Hand in hand with content, probably with mixed formulas in tune with the current hybridization of formats in television competition, radio could recover its communicative strength" (p. 50).

Before embarking on the adventure of Podcasting it is essential to know who is going to be on the other side listening to you and, above all, who you want to be listening to you. That is, before you stop to think about a strategy to get people to listen to your program, you have to think about who will be listening to you (Iznaloa, 2022. p34).

In other words, it is always necessary to know the audiences, their needs, ways of listening and characteristics, in order to begin the production and creation of new content.

Pay attention to the design of the sound product

Traditional media have lost ground to media that until a few years ago were rather alternative or outsiders, many of them via streaming and that with the passing of time and with the help of the covid 19 pandemic have expanded exponentially.

Hence, knowing the behavior of audiences regarding media consumption has been of concern for some years and the disinterest of young people in this regard is increasingly being confirmed (Gutiérrez et al., 2011; Giordanengo, C. 2013; Perona et al., 2014; López et al., 2014).

Radio has adapted to the digital context and has "benefited from the multiplication of new listening media that have reinforced its ubiquity".

It is no longer enough to offer different ways of listening, but there must also coexist an auditory narrative parallel to the common interests of the media, it is as if every traditional sound product could have its "spin off", but with unsuspected details and almost a la carte content, where the audience no longer only consumes, but also participates. "Mutations cannot be only technological, offering the same programming through different channels: the real adaptation has to be signed off with new approaches in the contents" (López. et al. 2014, p. 47).

Streaming applications have made access to cyberspace mandatory and technological development has made the transmission of files faster and faster and in everyone's pockets through phones, not only mobile, but now also with Artificial Intelligence.

A relevant factor in the changes experienced by radio has to do precisely with the Internet and in this sense they can be classified "into four types as they relate to: forms of distribution; contents and their formats; contact with audiences; and marketing models" (Espada, 2018, p. 246).

This forces us to rethink the programmatic offer for the requirements of the public. And this must also consider the new platforms that offer diverse content for all types of audiences.

Tune in to audience preferences

In November 2023, we conducted a survey of 442 people, whose ages ranged from 18 to 45 years old. This was based on a statistical calculation that considered a confidence level of 95% and a sampling error of 5%.

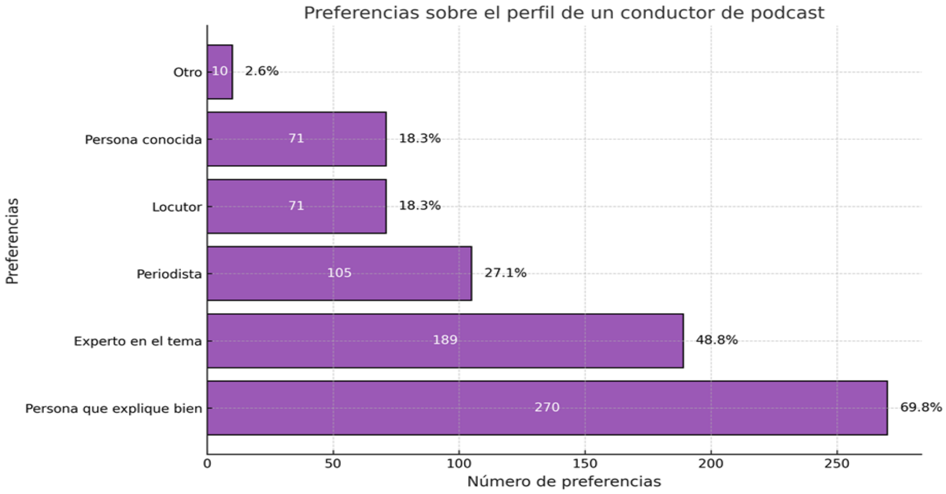
The survey, with 23 questions, was aimed at finding out respondents' media consumption habits, preferred content and the most valued message conditions.

We are going to present part of the results of this research with the purpose of providing valuable background information for the better design of sound products in podcast format.

Searching for the profile of the podcast host

The qualities of the person who should be in charge of hosting a podcast are very relevant, since it is the main sound element when it comes to captivating the audience's attention. Regarding the profile of a possible podcast host, respondents expressed the following preferences: 69.8% (270) prefer a person who explains well; 48.8% (189) that the narrator be an expert on the subject and, in third place, 27.1% (105) would prefer a Journalist. This is shown in the following graph.

Figure 1. Audience preferences regarding who hosts the Podcast



Anyone who can explain well is not necessarily an expert. It can be someone who knows or has studied the subject and knows how to explain it. To do so, he/she must have some specific qualities and have prepared the presentation of the topic.

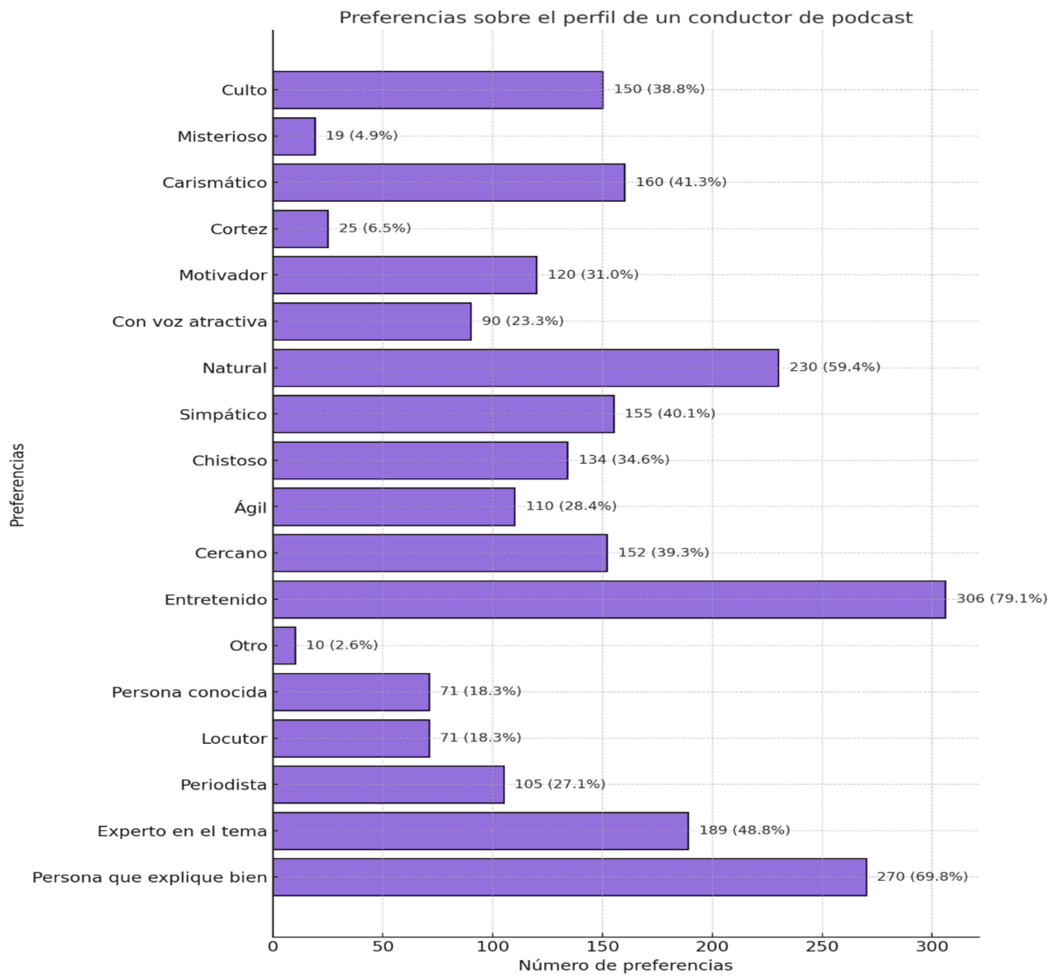
A subject matter expert may know very well what he or she wants to talk about, but may have trouble explaining it clearly, as there is a possibility of overuse of technical terms.

A Journalist is a professional trained to explain issues and tell stories. In addition, he/she has technical preparation to elaborate scripts and genres in the area.

Therefore, it is acceptable that a communications professional, together with various experts, should be accepted by listeners when dealing with topics in podcast format.

With respect to the qualities and/or characteristics that the host or announcer should have under this format, a result presented in graph 2, the five options chosen by the respondents are: in first place, a person who is entertaining with 79.1% (306). Secondly, they are looking for a storyteller who is natural with 59.4% (230). In third place, they opt for someone who is charismatic. Here the choices in favor are 41.3%, (160). In fourth place, respondents prefer a driver who is likeable with 40.1% (155). In fifth place, 39.3% (152) of those surveyed valued a person who is approachable.

Figure 2. *Characteristics that a Podcast host should have*



The results of graph 2 are related to those of graph 1. That is, a person who explains well, the expert or the journalist in charge of the story must also have other qualities for the acceptance of the Podcast listeners, i.e., entertaining, natural, well-documented, charismatic, friendly and approachable. Qualities that should also apply to experts on a given topic.

Continuing with user preferences, with respect to the narrator, 53.7% (208) of those consulted believe that the gender of the speaker is not relevant, 29.5% (114) prefer that both voices narrate a Podcast, 10.3% (40) opted for a male voice, while only 6.5% (25) of those consulted prefer a female voice.

Aspects related to production and realization

Regarding the potential auditors' assessment of podcast production and production, 63% (244) of those consulted believe that it is important that the production and production of a podcast be carried out by a communications professional, while 37% (143) do not consider it relevant.

In this case, the role of the Journalist to elaborate the content or the scripts of a Podcast is valued. However, the work of editors or compilers of the material is also valued.

How to access the podcast

The electronic device most used for listening to the podcast is the cell phone, with 87.3% of the preferences. In this regard, the use of social networks by the respondents was explored in depth and the result is shown in the following table:

Table 1. *Device most used to listen to Pódcast.*

Social Network	I do not use it (%)	I use it very little (%)	I use it sometimes (%)	I use it a lot (%)	I use it a lot (%)	Total
Whatsapp	0.0	1.55	3.88	22.48	72.09	100
Instagram	1.29	1.03	6.2	26.36	65.12	100
Facebook	21.96	14.47	32.3	19.9	11.37	100
Tik Tok	35.4	13.18	13.95	15.76	21.71	100
X (ex twitter)	38.24	18.6	16.54	14.21	12.4	100
Telegram	67.96	18.09	9.56	2.84	1.55	100
Twich	71.58	10.59	11.89	3.1	2.84	100
Discord	67.96	11.89	10.34	4.65	5.17	100

The use of social networks is closely intertwined with the use of mobile devices. According to the results shown in Table 1, WhatsApp and Instagram are the most used. If the percentages of "I use it quite a lot" and "I use it a lot" are added together, each comes to 94.57% and 91.48%, respectively.

WhatsApp is a messaging application that allows you to communicate with other people, send images, links, audios and videos. However, as it belongs to the META group, it facilitates sharing content with Instagram.

Instagram is mainly used to share photographs or videos, in addition to the so-called "reels", which are small video stories that can be edited. It also enables communication through its chat channels and allows media content to be found more easily.

In general, WhatsApp has a more transversal use in the age group studied, as does Instagram. Even so, there are some applications that are more associated with younger people such as Tik Tok, which achieved a sum of 37.47% between "I use it quite a lot" and "I use it a lot".

In the case of Facebook, it is associated with the use of more adult people and the sum of the same rating scale reaches 31.27%. In the case of X (ex-Twitter) there is a notorious drop in use, reaching 26.61%. It should be taken into account that previous studies:

> Given the increasing multiplication of channels and devices for accessing podcasting, and in order to meet the objectives of discovery and consumption, most of the network's resort to multiple distribution channels for their podcasts, i.e. their own platforms and those of third parties (Spotify, iTunes and Google Podcast, among others), in addition to exploiting the reach of their profiles on the various social networks. Only Convoy and Sybel exclusively distribute their offer through their own channels, that is, through their platform and app (Terol et al., 2021. P.481).

Therefore, it is very relevant to know the preferences of respondents when sharing content through social networks. A total of 92.8% (359) share content through the Instagram application. 73.6% (285) recognize that they share content via WhatsApp. These data coincide with those in graph 3, i.e., people use more frequently the same applications through which they share content, which can be cross-referenced.

Facebook is added as one of the applications through which users share content, with 27.9% (108). Tik Tok is also used to share content with 27.4% (106).

As detailed in specialized studies, Instagram is the network that contributes the most when it comes to generating community, at the moment, which coincides with the responses of those surveyed. It is not ruled out that with the passage of time new networks may emerge or existing ones may be consolidated, generating a change in the social network model.

> Instagram, as pointed out in the report on social networks prepared by Iab. Spain, is one of the social networks most used by young people as well as the one with the highest growth. Therefore, not generating a community derived from this social network prevents the creation of new listeners, who also have a lower average age than those of Twitter, which could generate a more lasting community over time. (Caballero et al., 2021. P.103).

It is the social networks themselves that encourage the curiosity of those who consume content. In addition, they motivate participation and content sharing.

> Podcast platforms generate a relationship of interest, empathy and complicity with their users, stimulating curiosity, increasing engagement, encouraging participation through social networks, complementing the sound offer with other pieces of context (texts, videos, complementary audios...) and improving the willingness to listen; in short, promoting a greater reach of the podcast and its commercial profitability, as they facilitate brands and advertisers to identify efficient windows and spaces to reach the increasingly segmented profiles that are sought in the market (Terol et al...) (Terol et al., 2021. P. 477)

The three virtual places where respondents would look for a Podcast of interest are, in first place, some audio platform with 72.6% (281). This is followed, in second place, by social networks, with 62.3% (241). In third place, users said they would look for a Podcast of interest on video platforms, with 37.5% (145%).

In this case there is a different behavior in people, since there are specialized sites to find Podcast, such as Spotify or Google Podcast. However, consumption habits also lead users to search for this type of content on social networks.

According to graphs 19 and 20, which explain the use of social networks, they show that, in case of searching for a Podcast, they would resort to the most ranked applications, that is, they would search on Instagram and WhatsApp, as their first preference.

Drawing on previous research, they show that social networks, in addition to emails, special events, newsletters, and even the personal accounts of those in charge of conducting podcasts, and other channels, allow content to be shared in applications, in the case of media outlets their web pages.

> Social networks are also used as a channel for frequent and direct communication between the platforms and their user communities... email and the web are also used as ways of interacting with listeners. Almost half of the analyzed networks -Parque Podcast, Convoy, Podium Podcast, Podimo and Himalaya- bet on the organization of events, contests and activities to strengthen the link of their followers with the contents of their catalog; those that use their own app as a means of content distribution (except Convoy), also use it to send notifications and interact with users. (Terol et al., 2021. P. 481).

The topics preferred by the public

Regarding the topics to be covered in a Podcast, it will be considered that "the versatility of the podcast, previously mentioned, opens the door to the production of contents using all kinds of topics and genres, mainly those that allow to deal with information in depth: All topics and genres are favorable to the podcast". This quote is taken up by García-Marín (2023) when consulting young journalists on the topics covered in this format.

In order to know the respondents' preferences regarding the topics of interest when listening to a podcast, a table was prepared with suggested contents and/or topics for the respondents to evaluate.

Table 2 shows the results of issues that respondents ranked from least to most relevant.

Table 2. *Users' preferences regarding topics and/or contents to listen to podcasts.*

Thematic	I am not interested in	I have little interest	Moderately interesting	I am very interested in	I am very interested in
News	47	70	**112**	79	79
Research	22	43	98	**121**	103
History	41	51	94	**116**	85
Interviews	25	49	95	**123**	95
Fiction	87	79	**94**	70	57
Health	46	79	**107**	73	82
Woman	50	63	95	82	**97**
Man	91	91	**115**	55	35
Science	44	54	96	**103**	90
Technology	45	48	98	**111**	85
Music	22	35	84	107	**139**
Humor	32	26	70	110	**149**
Magazine	**95**	73	93	77	49
Psychology	56	60	83	68	**120**
Economy	**97**	68	86	79	57
Sports	**100**	76	76	67	68
Couple	71	82	**98**	77	59
Sexology	73	73	**94**	87	60
Animals	71	90	**93**	81	52
Art	69	93	**98**	73	54
Cinema	64	62	81	89	**101**
Series	45	57	87	93	**105**
Decoration	**136**	85	86	37	43
Gardening	**157**	87	76	39	28
Maternity	**135**	62	72	57	61
Breeding	**134**	64	72	50	67
Astrology	**167**	69	64	41	46

Culture	34	49	92	101	**111**
Gastronomy	76	**83**	79	80	69
Paranormal	**124**	70	63	57	73
Crimes	**112**	67	63	61	84
Biographies	88	72	**92**	72	63
Traditions	**102**	99	94	52	40
Religion	**204**	77	51	32	23
Policy	**116**	56	78	69	68

Of the total number of respondents (442), 387 people reached this point related to the evaluation of the suggested topics. The missing 55 were not able to complete this part, because they stated that they were not interested in listening to podcasts or because they did not meet the age range requirement on which the study is focused.

In order to better interpret the results, a simple statistical study was carried out by means of a table (3) of percentages, identifying the content and/or subject matter with the greatest preference. These are presented below.

Table 3. *Users' preferences regarding topics and/or contents to listen to podcasts expressed in percentages.*

Thematic	Not interested (%)	I am not very interested (%)	Moderately interesting (%)	I am very interested (%)	I am very interested (%)	(%) Total
News	12.1	18.1	28.9	20.4	20.4	100.0
Research	5.7	11.1	25.3	31.3	26.6	100.0
History	10.6	13.2	24.3	30.0	22.0	100.0
Interviews	6.5	12.7	24.5	31.8	24.5	100.0
Fiction	22.5	20.4	24.3	18.1	14.7	100.0
Health	11.9	20.4	27.6	18.9	21.2	100.0
Woman	12.9	16.3	24.5	21.2	25.1	100.0
Man	23.5	23.5	29.7	14.2	9.0	100.0
Science	11.4	14.0	24.8	26.6	23.3	100.0
Technology	11.6	12.4	25.3	28.7	22.0	100.0
Music	5.7	9.0	21.7	27.6	35.9	100.0
Humor	8.3	6.7	18.1	28.4	38.5	100.0
Magazine	24.5	18.9	24.0	19.9	12.7	100.0
Psychology	14.5	15.5	21.4	17.6	31.0	100.0
Economy	25.1	17.6	22.2	20.4	14.7	100.0
Sports	25.8	19.6	19.6	17.3	17.6	100.0
Couple	18.3	21.2	25.3	19.9	15.2	100.0

Sexology	18.9	18.9	24.3	22.5	15.5	100.0
Animals	18.3	23.3	24.0	20.9	13.4	100.0
Art	17.8	24.0	25.3	18.9	14.0	100.0
Cinema	14.0	16.0	20.9	23.0	26.1	100.0
Series	11.6	14.7	22.5	24.0	27.1	100.0
Decoration	35.1	22.0	22.2	9.6	11.1	100.0
Gardening	40.6	22.5	19.6	10.1	7.2	100.0
Maternity	34.9	16.0	18.6	14.7	15.8	100.0
Breeding	34.6	16.5	18.6	12.9	17.3	100.0
Astrology	43.2	17.8	16.5	10.6	11.9	100.0
Culture	8.8	12.7	23.8	26.1	28.7	100.0
Gastronomy	19.6	21.4	20.4	20.7	17.8	100.0
Paranormal	32.0	18.1	16.3	14.7	18.9	100.0
Crimes	28.9	17.3	16.3	15.8	21.7	100.0
Biographies	22.7	18.6	23.8	18.6	16.3	100.0

Each of the results will be presented according to the rating column and the topics of least interest to the respondents will be shown.

Regarding the option "I am not interested", the subject of least interest is religion, with 52.7%, followed by astrology with 43.2% and then gardening with 40.6%.

In the option "I am not very interested" only gastronomy achieves the majority in this category with 21.4%.

In the "moderately interesting", in descending order are men, with 29.7%, followed by news with 28.9% and health with 27.6%.

In the "I'm quite interested" five can be highlighted with the highest acceptance: interviews with 31.8%, research with 31.3%, history with 30%, technology with 28.7% and science with 26.6%.

With respect to "I am very interested in", seven can be highlighted: humor with 38.5%, music with 35.9%, psychology with 31%, culture with 28.7%, series with 27.1%, cinema with 26.1% and women with 25.1%.

Taking these results into consideration, it can be inferred that there is a trend between the topics that most interest the respondents and those that interest them the least, so it would be pertinent to pay attention to this trend in order to adequately respond to this type of public.

The "media interested" column will depend on other factors to make the product attractive to these users. This is where other characteristics expressed by the interviewees come in, including the role of the storyteller and his or her consumption habits.

As a way of facilitating the analysis, the trends can be synthesized. For this reason, the data were regrouped into three groups that combine the trends: Group 1 includes those who are not willing to listen to any of the topics, in addition to those "I am not interested" and those "I am not very interested".

In group 2, the "moderately interesting" will remain unchanged, because in order to be interesting they should meet some special characteristics.

In group 3, "I am quite interested" and "I am very interested" were added, because they are the ones who have a real interest in consuming this content. This is explained in table 4, which leads to table 5.

Table 4. *Explanatory legend referring to table 7. Grouping of criteria.*

1	Grouping Criterion 1 "I am not interested" + Criterion 2 "I am not very interested".
2	Criterion 3 "Moderately interesting".
3	Grouping Criterion 4 "I am quite interested" + Criterion 5 "I am very interested".
Total sample	387 people

Table 5. Presentation of thematic preferences based on evaluation criteria grouped in percentages.

Thematic	1 (%)	2 (%)	3 (%)	Total (%)
News	30,23	**28,94**	40,83	100
Research	16,80	25,32	**57,88**	100
History	23,77	24,29	**51,94**	100
Interviews	19,12	24,55	**56,33**	100
Fiction	42,89	24,29	32,82	100
Health	32,30	**27,65**	40,05	100
Woman	29,20	**24,55**	46,25	100
Man	47,03	**29,72**	23,26	100
Science	25,32	**24,81**	49,87	100
Technology	24,03	25,32	**50,65**	100
Music	14,73	21,71	**63,57**	100
Humor	14,99	18,09	**66,93**	100
Magazine	43,41	24,03	32,56	100

Psychology	29,97	21,45	48,58	100
Economy	42,64	22,22	35,14	100
Sports	45,48	19,64	34,88	100
Couple	39,53	**25,32**	35,14	100
Sexology	37,73	**24,29**	37,98	100
Animals	41,60	24,03	34,37	100
Art	41,86	**25,32**	32,82	100
Cinema	29,97	20,93	49,10	100
Series	26,36	22,48	**51,16**	100
Decoration	**57,11**	22,22	20,67	100
Gardening	**63,05**	19,64	17,31	100
Maternity	**50,90**	18,60	30,49	100
Breeding	**51,16**	18,60	30,23	100
Astrology	**60,98**	16,54	22,48	100
Culture	21,45	23,77	**54,78**	100
Gastronomy	41,09	20,41	38,50	100
Paranormal	**50,13**	16,28	33,59	100
Crimes	46,25	16,28	37,47	100
Biographies	41,34	23,77	34,88	100
Traditions	**51,94**	24,29	23,77	100
Religion	**72,61**	13,18	14,21	100
Policy	44,44	20,16	35,40	100

The data in Table 5 highlights the data in bold to account for trends in each preference group.

According to García-Marín's research (2023), in one of his interviews regarding the ways of dealing with Podcast topics, he states that "Any genre and/or format, if they are done well. Although I think that you can get much more out of the rested genres that require more of a good script than a news event". This involves interviews, documentaries, talk shows and non-fiction genres.

The most valued group 3 topics, which are research, history, interviews, technology, music, humor, series and culture, could ensure a good audience according to the opinion of the respondents in this study. On the other hand, those in group 1 are less likely to be massively successful, as only a minimal part of the respondents would be interested in listening to them.

The topics that have an intermediate preference can be worked on and may be able to attract the audience as long as they consider other key factors such as the type of driver, schedules and the way in which the content is delivered.

Regarding the topics discussed, the interviewees of García - Marín (2023) say the following:

> I really think they are all appropriate. Perhaps the least appropriate is immediate news, since the podcast does not have the immediacy of radio. But, on the other hand, it does offer the space for in-depth information. When it comes to choosing a specific genre, especially suitable for the podcast, the main one is the report and the conversational genres such as the interview or the talk show: Report because you can tell a story with more space than, for example, on television because you have more time. (García-Marín, 2023. P. 217).

Having said all of the above, according to García-Marín (2023), any genre and subject matter can be adapted to the podcast, since the freedom of the format allows it. Fortunately, there is nothing stipulated. That's the exciting thing about this medium, you don't have to follow the patterns established by traditional journalism. That's how it's described in one of his interviews.

As a summary of the data analysis, it is necessary to include a new quote that provides a view that seeks to gather part of the results obtained from the survey that was applied.

> The podcast is an audio file that reaches different parts of the world since it is uploaded to a digital platform and uses a language similar to radio but not the same. The combination of words, music, sound effects and even silence have an aesthetic function that gives a sound image to the information. This is why traditional media are adapting to these new communication technologies. With this we conclude that the podcast is being welcomed both globally and nationally (Chuquipoma, 2019. P.13).

The data analyzed here coincide in part with the ranking of the most listened Podcast in Chile, where humor takes the lead. Here, some stand out, such as "Cómo están los Weones", "Tomás va a morir" and "Expertas en nada".

There are also podcasts on a variety of topics, including sexuality and psychology, including some podcasts such as "Haberlo sabido antes", "Encuentra tu persona vitamina" and "Tu desarrollo personal".

There is also a wide range of podcasts that help to learn languages. In any case, the top ten is influenced by the conversational storytelling and humor around various topics covered in the different programs. These statistics have been created through Spotify Chile, 2023.

Terol developed a description that has varied over time:

> The most popular topics are Culture, History and Cinema and Series - appearing in 11 and 10 cases out of the twelve analyzed-, followed by Technology, Music and Gender, present in eight of the twelve platforms. Sports, Fiction and Education podcasts are repeated in seven cases. The least frequent are Humor (3), Self-help and Gastronomy (4). In the "other" category, podcasts on Sexuality, Religion, Lifestyles or Ecology were detected. This shows the different criteria and taxonomies of cataloging in platforms and aggregators, a heterogeneity that tends to hinder their location, their scope and even their commercial efficiency (Terol - Bolinches, 2021. P. 480).

Conclusion

They should be written in an extensive and clear way without using bullets or numbering, it is important to establish that the conclusions should frame the contributions expected to be achieved with the research.

The survey of 442 people was used to gather valuable information that will be applicable to the design of a podcast focused on people between the ages of 18 and 45, who are highly qualified, with technical and university undergraduate and postgraduate studies. In addition, they have a defined occupation, the vast majority of them in dependent activity, i.e., contract workers.

It can also be concluded that there is a marked willingness to listen, i.e., there is a strong attraction to the format. This was revealed by the difference in percentage between the question "Have you listened to a Podcast?" and "Would you listen to a Podcast?". In the former, 88.5% said they were familiar with the format, which does not necessarily indicate active and regular listening. Even so, in the second, there is an expression of interest, since 93% say they are willing to listen to a podcast.

Due to the above, a plan of action can be defined for the development of Podcast and certain characteristics that the product must meet for its complete execution, from its pre-production stage to the broadcasting stage.

The results showed that, in terms of time spent listening to a podcast, respondents preferred listening time ranged from 15 minutes to one hour, with most respondents preferring to listen to episodes of up to 30 minutes.

On the other hand, the surveyed audience showed that they preferred to listen to a podcast during leisure time, transfers, breaks or downtime.

We will now review some of the background information gathered in the study that may be useful for those designing a podcast.

Some characteristics to define the podcast host

Regarding the need to outline the characteristics of the host for the development and production of content in Podcast format, aimed at young people and young adults between 18 and 45 years of age, 70% of respondents prefer that the person in charge of narrating or, eventually, hosting a Podcast, be someone who explains well.

Another characteristic that they value is that the host should be an expert in the subject, with almost 50% of the preferences, and they also consider that a journalist could do it well, with just over 27%. These are the main alternatives that those consulted expressed.

However, in addition to the above data, there are other aspects that are highly valued by the audience: they are interested in the person who hosts the podcast being entertaining, natural, approachable, friendly and funny. It is also expected to be cultured, agile and motivating.

For the interviewees it is not relevant whether the Podcast host is a male or female voice, what is important is that he/she meets the characteristics described above.

That is to say, for the Podcast design and production plan, experienced, spontaneous, lexically rich and with a wide range of topics narrators and/or hosts must be available.

This allows us to affirm that the narrator / host of the podcast must have the ability to work under a dynamic and flexible narrative. Therefore, it will be necessary that he/she also has a great capacity for improvisation.

The topics of most interest to the public

Another objective was oriented to know the topics of interest for youth and young adults between 18 and 45 years old, which is reflected in table number 7 of this chapter, where there are eight topics that exceed 50% of interest on the part of the respondents, they are research, history, interviews, technology, music, humor, series and culture.

There are also eight topics that exceed 50% of rejection by those consulted, they are, paranormal, astrology, parenting, motherhood / parenthood, gardening, decoration, traditions and religion.

However, eight topics were identified that could have a potential audience and that would have to be addressed with the characteristics already studied and analyzed.

The detected topics are news, health, women, men, science, couple, sexology and art. These should be addressed by people who are entertaining, possibly experts, cultured, funny or nice, in order to generate interest from users.

These "intermediate interest" topics will pose a challenge, since in addition to requiring some special characteristics from the narrator, they also require the good use of elements of radio language that make the content agile and attractive to listeners.

There are seven other topics, which show less interest on the part of the respondents. In this case, it is clear that if someone wants to deal with these topics, they should know that their audience is very limited.

In any case, it should be made clear that any Podcast is feasible, since it is specialized or possibly niche content.

It is also necessary to take into consideration the form of financing of each of them. A sponsor or a brand could ask for the development of a specific product, which will be aimed at an audience with the same characteristics, with an "a la carte" content. This is an advantage because it allows to define more precisely the target audience and potential sponsors.

How to promote podcasts

Finally, it is appropriate to consider strategies for the dissemination of content in Podcast format aimed at young people and young adults between 18 and 45 years of age.

The results indicate that respondents are informed about current events through digital media, where the use of social networks plays an important role in the search for news.

Further behind are television channels and radio. The print media are clearly the least used to search for current information.

Another question included in the survey was related to the applications most used when listening to a Podcast. The majority associated the Spotify application with listening to this type of material.

However, he also highlighted the YouTube alternative as a second option, so there would be an opening to an audiovisual story, which could help improve the listener's experience, associating the spoken word with elements such as non-verbal communication, the context of the recording and the personalization of the actors in the podcast.

Regarding the applications most used by those consulted, Whatsapp leads the way. It was followed by Instagram, which is also the most preferred for sharing content by users. Social networks are also important for those who responded to the survey, when looking for a Podcast of interest.

Based on these results, the strategy for sharing content in podcast format is to use mainly YouTube and Spotify platforms, along with promoting the content through Instagram and under these guidelines to make the Podcast known, shared or viralized.

This can be complemented with other types of dissemination activities, such as e-mails, advertising on the media's web pages or other available media, such as radio or television channels.

It is also possible to use media such as subscriptions, WhatsApp channels, newsletters and the personal social networks of those who are in charge of conducting and/or producing the Podcast.

There is the option of making live launches through other social networks, such as YouTube or Twitch, which generate events for the younger people in this study.

It is important to point out that broadcasting does not necessarily guarantee the success of a Podcast. The acceptance by the audience can be supported with a good design and this in accordance with the needs detected in this study.

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Historical memory of disability reflected in four images of the twentieth century, survival of the paradigms of medical and social dispensation

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Introduction

After centuries of a utilitarian perception of disability based on prejudices that have little to do with its reality, today more than ever and from a phenomenological dimension *crip* people show themselves - *put their bodies* - in social networks and in the streets as never before. This window into the unknown is serving to lay the foundations of a disability culture (Peters, 2008; Parra-Gomez, 2022; 2023) that not only ensures the achievement of equality, but at the same time ensures *recognizability* (Butler, 2010) towards the collective. There have been and continue to be numerous examples of discrimination, direct, cultural and structural violence, so that through this culture we advocate to present a memory so that not only, as Jelin and Vinyes (2021) say "what happened will never be repeated" (p.35), but they are seen as what they are: a natural part of humanity.

In this paper, which seeks to identify the prejudices of the view towards disability, four images of the twentieth century are analyzed to point out the paradigms that have involved it throughout history. The four photographs refer to four different and significant moments of that century, such as: a Nazi propaganda poster, a photograph of a Special Education class in Mexico in 1952, another of Judy Heumann giving a speech in 1973, and another of the famous "Capitol Crawl" in the United States in 1990. In order to be able to carry out the present work, some key aspects of it are presented below, which will facilitate its understanding.

Historical memory of disability

Following one of the definitions of the Royal Academy of the Spanish Language: memory is the "relation of some particular events, which are written to illustrate history" (RAE). More deeply, as Jelin and Vinyes (2021) indicate, "memory is a condensation of past, present and future" (p.35), that is, that now and thanks to memory, a horizon is projected. In this sense, in order to make visible and give value to the collective, a common narrative has been traced, within what Pierre Nora would call a "domestic memory" (Merchán, 2012). However, to think of a history of disability was to think of something that did not exist until recently. It is a complex and poorly worked story, in which, in addition to involving a very heterogeneous group of people, it offers few primary sources (at the academic level due to lack of interest, and at the personal level due to the absence of first-person narratives by members of the group). Studies in this regard are recent, and according to Turner (2016) there is no primary source in the past: "*studying disability [...] raises a number of conceptual and methological problems. The absence of first-hand accounts written by disabled people in the past acts as a barrier to understanding their feelings and how they were expressed*" (p.3).

Although there are some works on the subject (Aguado-Díaz, 1995; Vergara-Ciordia, 2002; Muñiz, 2019), it has not been the subject of study in the academic world until recently. However, it is worth noting that the review of this common past has been focusing on a type of discourse that is more testimonial than proper to the historical discipline (Todorov, 2023). That is to say, although more and more voices have questioned the official histories and have been calling for the visibility of the group, the inquiries about it have originated more from private interests than from a collective desire to redeem and respond to the debt that society owes to people with disabilities. In fact, it would be paradoxical to unravel the damage of a past that has not ended, something like the aporia mentioned by Levín (2020) on "the knowledge of what is not yet while it continues to be" (p-327). To settle this justification of the need for a history of disability we rescue the following quote from Merchán (2012) around the pedagogy of memory that.

> The project must nurture by evoking the recognition of the traces of hope in history, through a process of reflection on the human meaning, that is to say, orienting its work to rescue and make explicit the forgotten in order to remember that which has been submerged but is latent in history, and, without ignoring the investigative rigor, to be able, from a critique of memory, to listen to the voice and give a voice to the silenced and make them the evoked word in a time, the time of the witnesses, of those who tell, of those who testify, of those who narrate and also of those who also narrate, listen to the voice and give the word to the silenced and make them the evoked word in a time, the time of the witnesses, of those who tell, of those who testify, of those who narrate and also of those who are silent, to make them visible and public, them, their experiences, their stories, their contexts, to recover them from the imposed oblivion (Merchán, 2012, p.6).

In short, and turning now to the words written by Jean Vanier (2019), what attests to the need to give value to *crip* memory is that in all cultures there are people who are discriminated against, excluded for various reasons, but that always "below" them "is the disabled person, who is often thought to have no human value, who is authorized to be killed before birth or who is locked up" (p. 57).

The paradigms of disability

Thanks to the works in the historical field mentioned in the previous subsection and others in other fields (Barton, 1998; Allué-Martínez, 2003; Romañach-Cabrero, 2009; Menéndez & Armas, 2019; Arnau-Ripollés, 2019), at least three paradigms of disability in the treatment of disability have a greater or lesser consensus, namely:

- *Paradigm of dispensation*, also called "demonological model" (Arnaiz-Sánchez, 2003) or "traditional" (Senent-Ramos, 2017), corresponds to eugenic and euthanasic practices to dispense with the different person, as well as institutionalization (confinement and admission to hospitals and other specialized centers). In many cases, the justification was based on superstition, considering that there is an evil caused by divine mandate. Some historical examples of this practice are: the throwing of babies on Mount Taigeto in Sparta, the abandonment of "different" children in the Lactaria Column in Ancient Rome (Muñiz, 2019); the confinement of "pauper" in hospitals, poorhouses, asylums, hospices, shelters, etc. (Palacios, 2003), the extermination of people with disabilities in Nazi Germany (Soutullo, 2010); and the rise of forced sterilization in the USA, where some 70,000 people were forced to be sterilized between 1905 and 1972 (Pfeiffer, 2008).
- *Medical paradigm*, also known as "rehabilitative model" (Toboso & Arnau, 2008; Palacios & Romañach, 2008), or "clinical" (Palacios, 2003; Arnaiz-Sánchez, 2003) or "intervention" (Palacios, 2003), arises with scientific advances and, although it also carries out eugenic practices and confinements, it does so in order to offer therapy and rehabilitation to the sick person so that he/she can approach the standard as far as possible. Therein lies the problem, and, therefore, therein lies the solution. Darwin's well-known work *The Origin of Species* spread the belief that the weak, inferior beings, destroyed the vigor of the human species, something that Darwin himself reinforced by affirming that their existence was terribly harmful to humanity, a key point of your theory of natural selection (Arnaiz-Sánchez, 2003), something that caused two similar consequences under the medical model to those of the previous paradigm (but under the umbrella of scientific and rehabilitative progress): the rise of confinement in specialized centers and the emergence of Special Education (Arnaiz-Sánchez, 2003). Finally, and from the pedagogical

aspect, in the context that will be addressed later on about Mexico, Trujillo (2020) states that the medical model was characterized by cataloging the difference not as a special educational need, but as a "biological condition that merited medical treatment, for which the school was only responsible for providing the basic tools to achieve the student's reintegration into society" (p.20).

- *Social paradigm*. It appeared at the end of the 20th century, as a result of the demands of the collective, especially in the United Kingdom and the U.S.A. Its approach shifts the problem from the supposedly ill person to the "disabled" society in order to be accessible. Its origin is marked by protests such as the one led by Ed Roberts and his creation of the Independent Living Movement (ILM), which continues and spread to several countries; and the 504 sit-in in 1977 (Muñiz, 2019), among others.

For all that has been exposed so far, it can be pointed out that the main objective of this work is to review the paradigms in which disability has been inserted through the four media images of the twentieth century already mentioned. To achieve this goal, we have followed, on the one hand, an interpretative-comprehensive methodology (Ortiz-Ocaña, 2015), typical of a bibliographic review which, as Larrosa (1995) said, is nothing more than: "reorganizing the library, placing some texts next to others, with which they apparently have nothing to do, and thus producing a new effect of meaning" (p.259).

On the other hand, and as will be seen below, we offer a photographic analysis based on and in synthesis with the works of Barthes (1999) and Marzal-Felici (2007), which delves into the images at two levels: denotative and connotative. In the two levels of analysis, the theories of the aforementioned works have been merged, so that at the denotative level we investigate their context, morphology, composition and enunciation, pointing out what for Barthes (1999) was the *studium* (a cultural and social meaning, a reading by a viewer who knows the language or code used). And at the connotative level, *punctum* is essentially sought, about which the author says that "it is not me who goes looking for it, it is he who comes out of the scene like an arrow and comes to aim at me" (p.64), it is something that stands out, that punctures the spectator. In this sense, the *punctum* is that which is seen in the photographs given the *emic-etic* perspective (O'Regan et al., 2019) of the author of this work, who already has years of experience in the field of disability, both professionally and personally.

The portrait of disability in the twentieth century

Next, the four images are analyzed individually, attending, as has been said, to the two levels, the denotative and the connotative. Following the chronological order, we begin with the Nazi propaganda poster, followed by the group photograph of a Special Education center in Mexico, then the photograph of Judy Heumann in 1977 and, finally, one of the photographs taken in 1990 at the "*Capitol Crawl*".

Nazi propaganda

The first image to be analyzed (Figure 1) is a Nazi propaganda poster in which, in black and ochre tones, a text in German is accompanied on the right-hand side by the figures of two men, one standing (wearing a white coat) and one seated (wearing a suit). The message conveyed by this poster was informative, since, in a large size, on the left-hand side, the figure of 60,000 Reichsmark (imperial mark), which was the cost of supporting an institutionalized disabled person, was visible. It was nothing new for a totalitarian state to use this type of support, as Sánchez-Biosca (2021) points out, it is something that has been repeated throughout history by governments of this type.

It is necessary to pay attention to its context, as well as to what happened after its dissemination. In 1920, a senior public health advisor, sensing what future policies would be like, Ewald Meltzer, conducted surveys among patients' families, convinced that the majority would blindly defend their children's lives. However, the results were devastating: only 10% did not want their children to die. Before the Nazi persecution began, the nuns in a nursing home warned the parents, and only 4% rescued their children. That is, there was little (if any) resistance from relatives to their loved ones being treated differently, which was also an indication to the government that, if they showed such detachment from their own relatives, they would care less about other groups targeted for extermination. For authors like Gotz Aly, says Soutullo (2010), the 1920 law we have mentioned sowed in the Germans the seed of self-mutilation, and this ended up making them aggressive, focusing on the outside, and making them lose their scruples.

As early as 1933, the German government enacted the eugenic law that ordered the sterilization of 350,000 carriers of hereditary diseases. During Adolf Hitler's government, specifically from 1939 to 1945, Nazi euthanasia took place, taking the lives of 200,000 disabled people, whose average age was 45 years. It could be said that the first wave of deaths (with speed) took place in the first three years (from 1939 to 1941), when 70,273 people were gassed. The second phase focused on the care centers and the modus operandi was more varied: injections of phenobarbital - used above all among children and the mentally ill, whose brains were extracted for study -, use of other drugs, starvation, induced pneumonia, and forced labor, ordered precisely to put them to death. It should be noted that the euthanasia practiced, unlike eugenics, was not supported by law. It was Hitler who commissioned his personal physician, Theo Morell, to draft what was entitled *Extermination of life unworthy of being lived*, in which he prescribed death for the sake of the "affected" person (Soutullo, 2010).

Figure 1. *Nazi propaganda*

Source: De Prada Pérez (2021).

There are three reasons why it is refuted that this extermination was only about ethnic cleansing: first, there is a report by Morell himself (in total parallelism with the propaganda analyzed here), of a utilitarian nature, in which he calculated the expenses that these people - "idiots" he called them - caused to the country; secondly, during the war years, he urged freeing beds and reconverting the care centers into war hospitals; and the third argument is that in the clinical reports of the time, instead of data on the patients' illnesses, there is only data related to the length of their stay and their working capacity (Soutullo, 2010).

Once the context has been analyzed, it is important to point out some aspects of the poster's composition. The colors, for example, are very meaningful. Ochre tones, as is the case with red, symbolize aggressiveness and power. There is no doubt that the phrases accompanying the poster, which appeal to the viewer, are brutal, are aggressive. The value of a life is being quantified. For its part, the black that is limited to that of the disabled person, and although in other patterns it can be seen as the color of elegance, as far as this illustration is concerned, it seems to be closer to death, suffering, and the terror of the unknown.

The expressions of the two men are also something to consider. The health personnel, who actually remains in the background, is presented as a handsome, friendly (he smiles), helpful man (he places his hand on the other's shoulder). It is not necessary to go deeper into the role of the professionals of the institutional centers, because this character - and so we move on to the full connotative analysis - does not represent anything other than an ideal. He is the healthy one, he is the one who can rest his hand on the other man's shoulder as a sign of superiority and oppression. He smiles, as has already been said, and it is sinister, because it is a utilitarian poster that is quantifying the value of a life, of the life of that man whom he touches with supposed kindness, legitimizing his death, in short, *dehumanizing him*.

And there is the man with a disability. Paradoxically, he is dressed in an elegant suit, he appears seated and one can barely see the physical stigma that denotes his pathology, his difference, in his legs and the tilted gesture of his body. However, his face is also contracted, his eyebrows are furrowed. Is it a coincidence or is it an express desire to show this being as the villain? The sense of submission is insisted upon as he sits under the burly, kindly man, he, the sick man, is little more than a decorative accessory. According to this gesture he does not move, he remains impassive, he does nothing, he is nobody.

In short, the *studium* of illustration, from a totally contemporary point of view, is that of a poster whose information is utilitarian and turns a collective into a burden. The *punctum* that runs through the researcher is the dehumanization it conveys, the legitimization to let die and even to murder.

EE Class Mexico

Secondly, a photograph from 1952 in Chihuahua, Mexico (Figure 2) is selected, showing a class of six girls and boys in Special Education with their teacher, Alicia Gómez A. It is a period portrait in black and white, in which we see the group (three girls, three boys and a woman) seated on a wooden bench, all of them on the seat, and the three boys placed behind the girls, leaning on the back rest.

Figure 2. *Group portrait of a Special Education class.*

Source: Trujillo (2020).

Both the background and the bench itself are white, that is, of light tones. The shadows are shown by the figures and their clothes. As it is in black and white, the image offers no clues as to the colors of their clothes, whether they are cheerful or dull. It can be seen that it is the cold season because of their coats and jackets.

The faces of the protagonists are serene. The teacher shows a shy smile, as do some of her students. Practically all of them look at the camera, aware of being photographed. Those who are not smiling also offer a friendly, calm gesture.

The origin of the first "special" schools limited their student body to deaf and blind people, something that happened in the 17th century thanks to teachers such as Ponce de León, Juan de Bonet, etc. During the 18th and 19th centuries, a series of doctors and pedagogues followed one another, shaping what is known today as Special Education. Thus, we can point to: Esquirol (1772-1840), Arnold (1742-1816), Howe (1801- 1876), Decroly (1871-1922), Montessori (1870-1952), Binet (1857-1911) and Simon (1872-1961), although the list is more extensive. Even so, we should highlight, on the one hand, Séguin (1812-1880), since he demonstrated that the "mentally retarded" improved after receiving adequate training for them; and, especially, Jean Itard (1774- 1838), considered the "father of Special Education", and whose contributions followed three paths: social inheritance over genetics, highlighting the power of education for the human being; motivation as the driving force; and the relevance of language as a vehicle (Arnaiz-Sánchez, 2003).

Specifically in Mexico, where the photograph was taken in 1952, the emergence and evolution of special schools has not had the same milestones as, for example, in Spain. Thus, the Aztec country did not see its first school for the deaf until 1867, thanks to the French teacher Eduardo Huet. In 1910 there was a revolutionary movement calling for literacy and for elementary education to reach the majority of the population, from which it follows that, if the general population could hardly access education, much less could the group of people with disabilities. In fact, at one point in time, legislation even excused families with "different" children from the obligation to provide them with education. However, Special Education appeared in 1939, thanks to the Education Law of the same date, and by 1942 a reform not only continued to call for segregation, but also advocated exclusive spaces for each type of need. In the 1940s, progress was made, especially in teacher training, with the emergence of the career of Specialist Teacher for the Mentally Abnormal and Juvenile Offenders. The following decades made more specialized centers flourish, but it was not until the Federal Law of Education until November 29, 1973 that derogatory terminology was suppressed and only the words "disability" and "special educational needs" were embraced. In 1990, "integration" in regular schools began to move, being already an immovable fact that everyone has the right to receive education. In parallel with Spain, in recent years "inclusion" has been promoted (Trujillo, 2020).

Moving on to a connotative examination, the photograph bears witness to two significant facts: the rehabilitation and/or beginning of education for people with disabilities, and their effective segregation from the regular education system (educational *apartheid*) (Romañach-Cabrero, 2009).

Unlike the first image analyzed above, this photograph is from a private sphere, that is, it was not disseminated (now it has been disseminated for academic purposes), not only because it belongs to an everyday and private space, but also because disability has been hidden until very recently. Moreover, even if the photograph had ended up in the media, it does not show people with disabilities doing anything; it places them where they have always been: segregated, among their peers, receiving rehabilitation (not education).

However, the daily life that emanates from the scene speaks of the necessary story that is built towards peace and inclusion "from the individual consideration of people" (Casassas, 2010). We do not know the children in the image, but their experiences are the history of special education, of how it has evolved and has been losing that rehabilitative tinge, to focus on going where ordinary education cannot, to make inclusion from segregation and to develop people to the maximum in their personal project, without enabling cuts.

To finish with the analysis of this image, it is specified that the *studium* is the triviality or ordinariness of a particular photograph, in this case that of a school group; while the *punctum*, what not everyone would see at first sight, is segregation, as a beautiful image of an "everyday" student body, what it shows is a group of girls and boys who go to a school apart from the ordinary system, only relating to those who are like themselves.

Speech by Judy Heumann

The third photograph (Figure 3) in this paper dates, as announced, from 1977 in the U.S. Specifically, it shows a dark-skinned, white-skinned, bespectacled woman sitting in her wheelchair and speaking into a microphone. She is wearing a thick black jacket with a sticker that reads "SIGN 504" on it.

To understand the message of the sticker worn by the woman, who is none other than Judy Heumann, it must be said that, two days after the inauguration of President Jimmy Carter in the U.S. in January 1977, about fifteen people went to see the new secretary, Joseph Califano, to advocate for a rapid distribution of regulations, as there had been a demand for some time for the removal of architectural barriers throughout the country in compliance with 504 regulations. Califano resisted for some of the same reasons Nixon originally vetoed the entire act, fearing that both the actual and administrative cost would be impossible to meet.

In response, ten cities across the country mobilized. The most successful action occurred in San Francisco, where more than 150 people took over the federal building and stayed for twenty-eight days. Judy Heumann crossed the bay from Berkeley to become one of the leaders of the struggle. At the beginning of the action, Heumann, in a statement probably the one in the image itself to be analyzed, declared that "we will no longer allow the government to oppress disabled people...we will no longer accept discussions of segregation" (Brown, 1994).

There is a significant change between this image and the previous ones, and it is that here, at last, the disabled person appears "doing something". Far away is the passive, submissive subject, who is at the expense of the will of others. Heumann appears speaking, giving a speech. This act is a symbol, not only because it announces the beginning of *crip* activism, but also because it stages the fact of having a voice, of no longer being silenced.

Figure 3. Judy Heumann giving a speech during 1977.

Source: The New York Times.

Another aspect to highlight, going beyond the image, is the latent machismo and erasure of women. There is talk of the "double discrimination" of the *Crip* woman, excluded for being a woman and for having a disability, as an aggravating factor. And it is undoubtedly a constable fact that in those scarce accounts of disability history the fathers of the birth of activism were always Ed Roberts and Paul Hunt (Muñoz, 2019), no woman was mentioned until the documentary *Crip Camp* was released in 2020 to, at last, give Heumann the recognition she deserved.

In short, and again transcending photography, what this represents is a historical milestone in which, for once, the history of disability ceases to be passive, in which the story is no longer about how standard people see it, but now it is the people with disabilities who are the owners of their actions, who put their bodies, narrate and claim.

Judy Heumann, who passed away in 2024, has dedicated her life to tirelessly defend the rights of people with disabilities, and even at the age of 76, she was still very active in her social networks and meetings with other people in the movement, taking into account an intersectional perspective. She has become a reference for the world of disability, that is to say, she has become a representation of it, of which the movement was in need.

In this case, to conclude, the *studium* is the crip rebellion, what is socially seen is a struggle of a collective for their rights. Now, the *punctum* is the aforementioned machismo and erasure of women. The role of Heumann and that of many other women that went unnoticed, leaving the merit to men, should be praised.

Capitol Crawl

The last of the images just dates from the beginning of the last decade of the 20th century, 1990. Again, in the USA (and although there are many photographs taken at the same scene, as there were 60 people climbing the stairs) a photograph is selected (Figure 4) in which three people are seen, two male protesters (with disabilities) and a journalist with his camera photographing one of them in front of the Capitol in Washington D.C. The two protesters are crawling up the stairs, one forward, and one with his back turned. In the background is the neoclassical Capitol building, with its imposing dome commanding attention behind the scene.

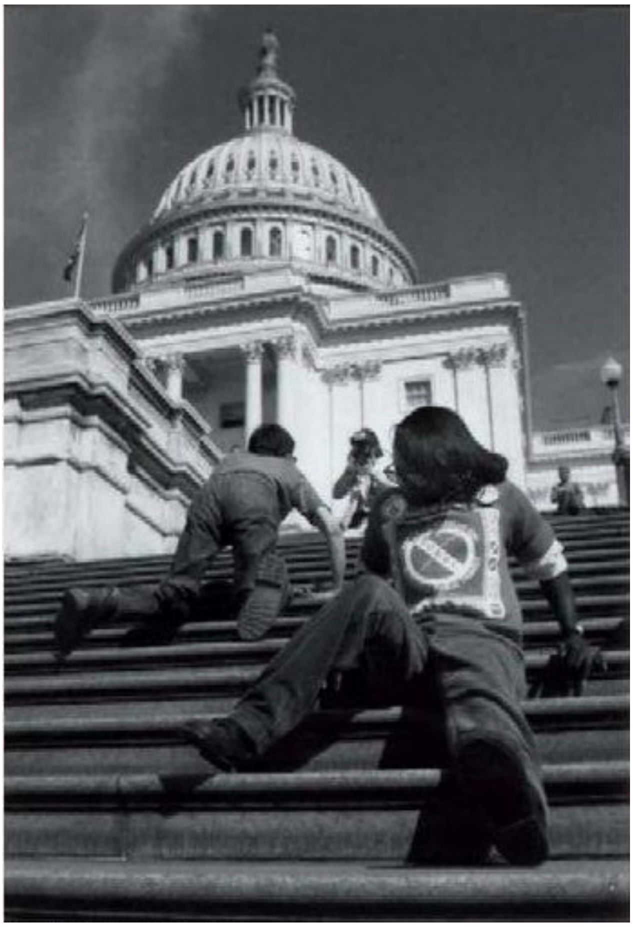
The photograph is in black and white, which on this occasion is curious, since in the nineties the photographs were already in color. One might wonder if the photographer (whom we cannot identify) or the medium that launched the images wanted to give the black and white effect a dramatic touch. It is also a scene that inspires dynamism, one can perceive the movement of the two men moving, struggling to climb, after having left their wheelchairs at the bottom.

The 504 regulations mentioned in Heumann's image were followed in the United States by a series of initiatives that culminated in 1990 with the well-known *Americans with Disabilities Act*, better known by its abbreviation ADA. Its full title is "An Act to Establish a Clear and Complete Prohibition on Disability Discrimination," and it was signed into law on July 26, 1990 by President George H. W. Bush. However, it took actions such as the Gallaudet student protest, and the one in the image analyzed here, to achieve this.

As for the latter, in March 1990 the ADA stalled in the House Public Works and Transportation Committee, which alarmed the collective and caused some 475 people, many in wheelchairs, to gather in front of the White House to launch the

"Wheels of Justice Campaign." From there, sixty protesters were the ones who ended up climbing the stairs without their chairs, crutches or prosthetic limbs in protest. It is believed that the action encouraged the government to sign the law. So, the *studium* is simple: it is a political protest in which people with disabilities, in an unprecedented act, have decided to crawl up the stairs to claim their rights, their equality.

Figure 4. The Capitol Crawl



Source: Minnesota.gov

As already noted with the color aspect, the image exemplifies a dramatization that was carried out to give visibility to the barriers and difficulties encountered by people with disabilities everywhere. It is significant that the name given to the protest in the media is "*crawl*" and not some other term that resembles crawling, since there is still a connotation in the action of humiliating oneself, carrying something painfully and being on the ground (a symbol of lowliness). In this sense, crawling gives the image a more dignified meaning, thus becoming a symbol of moving forward, upward in this case, and above all of struggling.

On the other hand, and given the silence and invisibilization suffered by the collective, the media interest shown by the journalists covering the protest, as seen in this same photograph, is somewhat surprising. Undoubtedly, their contribution was important to give the protest the power to transcend and change views, to become a historical milestone in *crip* activism. Once again, the fact has an impact on that turn of disability, in which, at last, the protagonists have taken the reins of their lives and are moving to eliminate their discrimination. We are no longer talking about those other protests, the first ones, which already attracted attention because they cut streets and paraded through them as never before, but in this one they dared to do without their orthopedic objects (essential for them) and climb 78 stairs, showing that yes, they exist, and that they can do things, albeit with social barriers, with much greater difficulty. The Capitol Crawl marked the transition from a paternalistic system, to seeing disability as a civil rights issue, that is, that step of seeing disability in society, not in individuals. The ADA became an example for the whole world, in fact, Cordero-Gordillo (2011) went so far as to state that its influence caused more impact outside U.S. borders than it did within. This demonstrates what Renkl (2020) said about "the power of photographs to affect the course of history". In conclusion, the *studium* of this media image is the protest, as with Heumann from the outside, from the social, it is the stamp of a protest, a particularly "daring" one, but that's it. As far as the *punctum* is concerned, this is the empathy aroused, the possibility of bringing their reality closer to the standard population, showing without any consideration what a barrier is, one of those that people *crip* never stop encountering.

The paradigms of disability in images

Once the images have been analyzed, we proceed to unravel their link with the different paradigms mentioned above. From the outset, the very definition of each one already provides clues as to how each image corresponds to it. However, other aspects of this same analysis are also noteworthy.

Paradigm of independence

First of all, the paradigm of dispensation was the one that governed the image of Nazi propaganda. It presented the person with a disability as a fault, as a burden, as something unnatural that, in addition, meant a high cost for the state. Such a perspective and its dissemination was conducive to the dehumanization of this person. By attending only to their utilitarian vision, boasting about how expensive it is to keep them alive, what it provoked was an instrumentalization of the person. The person loses his humanity, his worth, and is seen as little more than an object on which any opinion can be expressed, on which any decision can be taken, since he lacks his own project and direction.

In turn, not finding the causes of pathologies and looking at them from a superstitious point of view, provokes a second effect: demonization, something that goes a little further than dehumanization, because in addition to implying the reification of the "other", it can also lead to his or her physical destruction. "In such cases the "other" appears to us as a mere non-human, but as a danger. The fact that it exists is a threat [...]Here, the "other" is not there for us to use but for us to destroy" (Santos, 1992, p.38). What is implicit in the Nazi poster is nothing other than a legitimization to make the cause of this loss of public money disappear. It is propaganda to kill the "unnecessary" citizenry. This demonological vision, in which eugenics and euthanasia are the norm, in addition to absolute exclusion, is still in force to a greater or lesser extent as attested by some medical practices (which would also fall into the next paradigm). And the fact is that, of the two legal reasons for abortion in our country, one is for psychological damage to the mother (in which case, at the most, abortion can be performed up to the 12th week of gestation) and the other is if the fetus presents anomalies - disability - (in which case it can be up to the 22nd week). The problem is not the abortion itself, but this differentiation when it comes to "abnormality". The law, in this way, gives a different value to the life of the fetus and this is what the ethics of diversity do not find in harmony with human rights (Palacios & Romañach, 2008; Romañach-Cabrero, 2012). Barnes (1998), already said that both these abortions and prenatal medical check-ups, among other things, oppress people with functional diversity. Among these "other things" we should mention again forced sterilizations, which, for example, have remained legal in Spain until two years ago. Likewise, the selection of this poster is justified by its great contribution of meaning. Sánchez-Biosca (2021), speaking of the photographs of the perpetrators, emphasizes the historical source that these a priori inconsequential images represent. Indeed, all of them must be contrasted, but also all of them somehow "condense something of the essence of the crime" (p.113). In fact, something similar happens to what, in turn, Tranche (2019) mentions about expressing more than what the image contains, for all that one can read from it.

In short, it is clear that the paradigm of dispensation, as its name suggests, has disseminated an image of disability as dehumanized, useless and worthy of being eliminated. It may seem that the Nazi example is already outdated, but there have been media examples such as Ramon Sampredro, who put on the table the debate on euthanasia and about whom there was no doubt that he was worthy of it (Romañach-Cabrero, 2009). More recently, the film *Me before you* (2016) spread again that image of life not worth living, when (although it is obviously something that the person decides) cases flourish in social networks of people living with the same pathologies and clinging to their existence tooth and nail.

Medical Paradigm

Although its perception is sometimes confused with the previous one (as has just been pointed out when speaking of some medical practices such as prenatal tests), the medical model is characterized, according to the example given, by searching (now yes) for the causes of the pathology, investigating for the "cure" and offering the "sick" person a treatment, as well as a specific education. The difference with the previous paradigm is obvious, because now the person is no longer instrumentalized or destroyed, but now we try to "help" him/her to "improve" or, at least, to bring him/her as close as possible to the desired and supposed "normality". When we speak of "cure", the media example of Sampedro in the paradigm of dispensation is accompanied in the clinical paradigm by that of Christopher Reeve, who tirelessly defended stem cell research for a salvation that did not come to him (Romañach-Cabrero, 2009).

On the other hand, as we have seen, the inclusion of this group in the educational system brought with it the so-called educational *apartheid* (Romañach-Cabrero, 2012), since, although the main intention was to offer these people an education, it was not possible to avoid normalizing their segregation, their distance from standard society. Gradually, as mentioned above, this evolved to the point of being able to speak of inclusion. However, it is a topic still in vogue, faced with a scenario in which Special Education tends to disappear, the debate is between those who believe that there should only be one line within the system, and those other people who defend Special Education centers as essential (Fortunati & Vallejos, 2017).

Social Paradigm

Thirdly and lastly, and through the last two photographs analyzed, the social paradigm has been reached. As seen at the beginning, this model is characterized by shifting the focus to the center of the "problem", so that instead of looking only at the person with the disability, the focus is placed on the barriers of the environment and society. Thanks to the example of Heumann and the "*Capitol Crawl*" protesters, empowerment is seen for the first time. The person, seen until then as useless and passive, takes control of his or her life and allies with others to start a strong activism, which expands to unsuspected limits and reaches the present day. Of course, much remains to be done to rid ourselves of prejudice and dehumanization, but the achievement since then has been overwhelming.

There is no doubt that both images had an echo and a transforming power, however, it could be asked if this dramatism that was mentioned today has the danger of ending up being an example of the "emotional capitalism" that Tranche (2019) mentions quoting Eva Illouz, because undoubtedly the action generates a sensation in the public, but it would be necessary to discover if it also makes them change and/or act. Other aspects such as intersectionality are added to the debt owed by society to the collective. The achievement of rights and openness towards difference cannot remain only in the stale discourse, but must, in addition to being carried away by a pedagogy of memory, do so by the pedagogy against dispossession (Carr et al, 2018) that does not stagnate before women, indigenous people, queer collective, etc. In this line, and now following Jelin and Vinyes (2021), something necessary within this paradigm, as has been pointed out in the figure of Judy Heumann, are the referents. It is a matter of making "other actors in history visible" and although it may have been late, at least Heumann achieved her recognition, even if it is the Nelson Mandela to the *crip* movement, this is no less visible. Now that the paradigms have been contrasted with the images, it is important to make it clear that, as mentioned at the beginning, these three models are the ones that enjoy the greatest consensus, but they are accompanied by others; for example, some authors consider that, at present, a bio-psycho-social paradigm predominates (Aguado-Díaz, 1995; Barnes, 2011; Seoane, 2011; Canimas, 2015), which, in short, could be defined as a mixture of the medical and social models. However, there are other theories such as the one mentioned with the "divertad" characteristic of the MVID, and whose ideas are more radical, as we have been able to see when discussing abortion.

Obviously, the present work presents the limitations of a brief work, because the more analysis we had analyzed, the more nuances of these paradigms we would have found, as well as other parallel models. All in all, it is vital to transfer this type of project to the historical discipline, since it is the historian's duty to reconstruct the ethics of discourse, to give meaning to the silenced facts and voices and to give a voice precisely to those people. Merchán (2012) states:

> The horizon for the construction or consolidation of democracy is cleared when societies are strengthened and reconstructed by knowing and recognizing their histories, and, as has already been pointed out, living history, narrated, felt and testified, is memory; to understand it this way is to favor the consolidation of this memorial and therefore democratic citizenship, since societies capable of telling truths, applying justice, repairing damages and agreeing to "Never Again", will be prepared to

> assume forgetting, not imposed but consensual and necessary to continue living (p.9).

Following Todorov (2023) and his three stages, no doubt, this work of History still resides in the process of selecting the facts of the history of disability, which must be accompanied by an endowment of meaning (as it is a field still little explored, it is rich in interpretations), only then can it reach the third point which supposes its putting at the service of the pedagogy of *the crip* memory, one of the branches of a democratic, supportive and peaceful society.

Conclusions

Finally, we must emphasize the evolution of the historical perception of people with disabilities. We have seen how it went from passive to active subject, from threat to wonder, and from something to be eliminated to something to be valued and protected (like all life). This journey has not been the result of chance, but, as we have seen, especially since the 70s of the last century, the group itself has fought hard to reverse concepts. The pedagogy of memory, whether from schools, from the mass media or from academia, must continue to weave this story, must seek the collective in the individual, in order to (as has been said so much) not to repeat the same mistakes, but, in this case, also to continue contributing to the breaking of stereotypes, to knowledge about disability itself, and to its enhancement. In this sense, as Casassas (2010) points out, it is no longer a problem of memory, but of communication, and fortunately, social networks are making it possible to break with the hegemonic discourse on disability, showing its other side.

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The paradigm shift in immersive journalism through the British media BBC

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Introduction

The chapter is based on a series of questions that will be answered throughout the chapter. On the one hand, one of the main questions, and one that is given priority, is whether the media significantly create immersive content to efficiently disseminate the journalistic message.

On the other hand, we also reflect on the existence of practical cases that could be taken as an example or starting point for those previously established, so this question is also linked to the example of the chapter itself with the English Channel *BBC* as one of the possible references to be taken into account in this area. In this case, the aim is to review which media apply immersion in a virtuous way on a frequent or regular basis.

Likewise, the main objective of the chapter follows a very even line in which it seeks to identify one or several media that can be taken as a strong example of the application of immersion in the field of journalism and studying in what way and through what trends and environments it does it.

These two issues serve as a starting point for the topics to be addressed in the chapter, since *BBC* was one of the first broadcasters to join the trend of immersive content development. And it is, together with the American *CNN* (Lavilla and Sánchez, 2024), one of the most outstanding examples within the global media landscape in offering a different narrative alternative to what had been developed until then by conventional audiovisual media. All this bet revolved around a clear, direct and ambitious business objective: to offer the prosumer, from its multiplatform, a new audiovisual alternative to try to interact with the content in a more gamified (Teixes, 2014) and interactive way (Teixes, 2014).

It is true that before the beginning of the pandemic, a new paradigm shift based on gamification was already underway, but the media were not the most suitable to undertake this new challenge, mainly for purely operational and economic reasons, and users were not equipped with sufficient technology to support this new change of era when it came to viewing content.

Huizinga (2007) was one of the first to study the importance of gamification (Caillois, 1997) when it comes to expressing oneself in order to better understand the human environment in a more varied, pedagogical and entertaining way. But this proposal has taken almost eighty years to be installed in a more consistent and reflexive way in the information society now also called infocracy (Han, 2022), which is nothing but the way to propose everything that surrounds the new digital media as information despite not being so, using gamified techniques to wrap the receiver of the message in a kind of wrapping in which the main thing is not going to be the content of the message but the way to cover it with subterfuges more based on the visual impact than in the strictly informative one. It could be renewed in a more accelerated way in the world of journalism thanks to the application of immersive techniques in stories. Fundamentally, because the world of video games (Belli and Raventós, 2008) and leisure have strongly penetrated among users and now they could request a more gamified content (Teixes, 2014) to enter into the reading or viewing of journalistic content.

This process is not recent and arises from the user's motivation when approaching stories and the different ways of telling them. From classic stories (Piglia, 2000) to the most contemporary immersive stories, they have been and will continue to be a model for the information company (Pérez Serrano et al., 2004) since, through them, new patterns can be discovered to try to attract the interactive consumer. For this reason, this research will focus on recognizing the most relevant immersive trends from the specific case of the BBC to recognize if there is an appropriate return on investment, especially in the way of developing this type of information product.

Web platforms that host audiovisual content represented a significant progress that still lingers in the journalistic message. However, they have not yet managed to solve the enormous challenge of provoking the prosumer to become fully involved in the narrative. Therefore, it is crucial to highlight that immersive journalism will seek to be the main core of this research in order to find an answer about the future of the new informative narrative.

In order to remain in the context of the Spanish media, it is necessary to take into account that some television channels have incorporated immersive formats.

Of interest for the development of this text is the use of augmented reality (Cadavieco et al., 2012) in certain Spanish news programs, which even managed to create at the time simulated scenarios of the Congress of Deputies or representations of the creators of the vaccine against COVID-19 -at the most critical point of the pandemic- with the aim of providing the public with a more informative and educational content on an issue of great relevance among the population.

To address immersive communication, it is crucial to discuss three fundamental concepts: the metaverse, gamification and the information enterprise (Park and Kim, 2022). And although the three concepts are totally distinct, they are linked in a number of essential areas that make up the present immersive environment.

On the one hand, the news company can incorporate into its current state of affairs the media that generate news content at a global or local level with the aim of showing the latest news. The way in which these events have been reported throughout history has changed considerably depending on the technological progress implemented in the company itself. Although decades ago it was very common to find newspapers in broadsheet format and radio and television programs, nowadays more sophisticated immersive techniques are already on the market and are gradually becoming commonplace in the content disseminated by the news company itself. One of the fundamental changes in the new era of communication is the entry of the Internet into the communication universe.

This is where the information enterprise, the metaverse and gamification intertwine. A triple trio that constitutes what we could call immersive communication. This event has transformed the receiver of information from a passive subject into a proactive subject and main actor of the information environment: the prosumer (Toffler, 1980). Companies such as PlayStation have already promoted the concept of a metaverse on a reduced scale and without the current idea of audiovisual immersion. The PlayStation Home project, originated by the video game company itself, was based on a small metaverse where users had the possibility of interacting with other PlayStation users in a virtual universe, exchanging objects, playing mini-games and acquiring clothes for their virtual character. The purpose of this project was to create something more social among users than simply focusing on recreation. Therefore, the idea of gamification is presented here and is linked to the metaverse as one of the essential components in its growth. The rationale for gamification lies in simply obtaining rewards for participation through play, which companies have sought to employ as a competitive benefit to carry out these activities; and the content company also benefits from this type of playful environment when creating their immersive content in order to increase participation and promote dissemination.

The use of games can be a great attraction for users, who perceive the final reward as an incentive to get involved in the metaverse. This reward can be economic or material, such as clothing for the character, complements or points. If we interpret immersion as becoming immersed in the content of stories or events, we could consider storytelling as one of the first forms of immersive communication. This occurs because the main objective of immersion is to enter into a plot (in this case fictional). Naturally, immersion in a narrative differs from immersion in communication through virtual reality goggles and other forms of immersive journalism that we are familiar with today. "Stories represent, at a historical level, mythical conceptions prior to these: they represent the transformation and, sometimes, the rejection of conceptions, rituals and traditions" (Domínguez, 2010).

In more contemporary terms, cinema can also be mentioned as a means of immersive communication, whether it is the classic cinema or the more contemporary 3D or even 4D based cinema. This is because this medium of communication has not only been employed for the propagation of propaganda, but has also played a significant role in its history. However, immersion is not only present in the purely visual context, but also in the sound realm. For example, the ATMOS system (Wright, 2015) is another milestone in the progress of immersive communication, both in entertainment and in the information enterprise. This system is based on the concept of incorporating audio channels, where each sound has its own channel for distribution, being able to move through these channels to create a sense of movement in the environment.

ATMOS works in conjunction with 360 video in the production of multiple documentaries and is increasingly present in the everyday life of Internet users and the general audience. "The majority of Internet users represent the potential audience of 360° web-doc" (Nugaeva and Mira-Pastor, 2021). It is clear that limits can be set to the circulation of different formats in the information company, and there is undoubtedly an extensive way to go; especially in terms of the strictly financial, given that. what can be a driver, can sometimes become an obstacle if the economic environment is not completely conducive to the implementation of innovation projects in the company. It is clear that the impact of ludic and fictional content in the field of immersive journalism and the contemporary information company is being considered, as will be observed in the case that concerns us in this text, that of the BBC.

In terms of video games, Pokémon GO is one of the most recognized video games worldwide and finds its main driver in augmented reality. Following its triumph, a milestone has been set in the information industry, especially with regard to the notion of "self-exploitation", formulated by the Korean philosopher Byung-Chul Han. In one of his works, he even argues that the members of these online communities end up dominating themselves in order to achieve the goals they set for themselves (Han, 2010). Because of this simple argument, which transforms the prosumer into the main character of immersive environments, augmented reality, through a carry-over effect to other types of digital and audiovisual environments, has been gaining presence among the usual media content such as television news.

There are significant advances in recent years. "Augmented Reality (AR) is growing and is used in varied fields such as education, medicine, business, the video game industry, and also the television universe" (Caldera-Serrano, 2014). Emphasizing this trend, it is noticeable that political content has more regularly used augmented reality to communicate details of a news story.

For example, in Spain, it is common for the television news programs of the Atresmedia group (La Sexta and Antena 3) to show the representation of parliamentary positions. The case of Antena 3 is the most emblematic and has recently been studied by several researchers, who have highlighted that the nightly newscast is the one that shows the most augmented reality content in the network: "in general terms, it can be argued that the edition of Noticias 2 includes the largest amount of news with AR" (Azkunaga et al., 2019). However, as previously mentioned, the cost involved in the implementation of augmented reality systems is another debate present in the implementation of new immersive trends. According to current research, although the initial cost is high, the investment in these systems has proven to be lucrative for information companies (Cardona et al., 2020). In this sense, it also applies to the case of The Weather Channel, who has employed augmented reality in its television broadcast to highlight different weather events. The Weather Channel goes beyond mere temporal simulation by recreating an authentic three-dimensional environment. For example, this channel, among other productions, has managed to simulate floods and tornadoes on the set so that the audience can perceive more clearly the example that emerges within the content.

Therefore, and given that several examples of possible future obstacles or progress have been provided, it is crucial to underline that, although augmented reality has often represented progress in terms of its informative role in the media, it has sometimes failed to provide the information required or, to a lesser extent, anticipated by the general public. Its representation has sometimes been more ornamental. That is why, at this point, it is worth examining in detail the specific case study of the BBC in case it could serve as an integrating example of this new investment trend within journalistic companies.

Immersive journalism and gamification as backbones

A couple of hypotheses are established as a starting point to which a series of objectives that will be pursued throughout the research are associated.

The first of them revolves around whether the gamification of immersive content creates greater *engagement* with the user and increases their understanding of the facts, being something frequently used by large media as a lure to encourage the consumption of immersive trends.

Two main objectives were linked to this approach. On the one hand, to get to know the immersive products of a highly relevant news media such as *BBC* and, on the other hand, to understand the immersive gamified elements of the entertainment company and their application in the news company.

As a second hypothetical approach, it is proposed whether the paradigm shift regarding the publication of immersive content in recent years is due to the reorganization of trends due in turn to the arrival of new ones and the socio-economic crisis created after the pandemic.

Again, this approach has related objectives that we seek to achieve. Firstly, the aim is to study the change of trend before and after 2020, continuing by delving into the causes and economic consequences of the health crisis and ending by studying the most used journalistic genres within immersive journalism.

In order to answer all of the above, the scientific method based on a theoretical framework supported by relevant authors in the field and the practical framework based on field work with data collection and curation is used.

In the case of fieldwork, we have reviewed the different social research techniques proposed by various authors, with Sierra Bravo (1995) standing out as a reference in this aspect. For this research, a quantitative content analysis of the British media *BBC* was selected.

Although other media with international impact could also have been chosen, we opted for this one to get to know the immersive information market in the English-speaking world. Other networks such as *CNN*, *New York Times* or *Al Jazeera* have a varied repertoire of immersive products and also generate a prestigious international impact with which *the BBC* can be compared.

A quantitative analysis was chosen because of its objectivity in absolute and numerical terms, leaving aside the sensations or emotions that could be analyzed. As some experts point out, the use of qualitative content analysis would be more subject to these emotions, so it was considered to separate information from opinion or subjectivity.

It is an interesting field of study for future research, which could be approached from another prism closer to the user, such as the focus group as a representative technique that seeks to delve into the perception of these viewers about immersive products and the impact, they have on them (Krippendorff, 1990).

The content analysis has allowed the individualized study of the immersive pieces of the media positioned on the *YouTube* platform by means of a table generated with the most relevant or representative aspects found in immersive journalism.

The mere fact of analyzing the contents in this way has allowed us to go deeper and unravel the audiovisual narrative elements used to better understand how the English Channel has worked in the field of immersive journalism.

The selection criteria to provide the lower table with a series of key concepts in the analysis is due to the frequency with which they can be seen in the almost absolute majority of immersive journalism content. The pieces have recurring elements that have been detected and that have been specifically applied here because of their reiteration in the news business landscape.

Table 1. *Content analysis.*

CONCEPT	CONTENTS
Immersive content category	
Genre	
Domestic (1) / International (2)	
Gamified (1) / Not gamified (2)	
Real (1) / Recreated (2)	
Text in image (1) / No text (2)	
There is music (1) / There is no music (2)	
Video quality or format	

It is important to emphasize that the data observed and analyzed largely correspond to the years 2016 and 2017, especially the first of both. This is explained with the coincidence of the great explosion of immersive content that took place between those years. In turn, the difficulty in finding immersive *BBC* content on *YouTube* at later dates is related to a change in the way trends are reorganized in many of the media.

News companies such as *BBC* bet on the first trends that emerged in immersive journalism: virtual reality, augmented reality and 360 video. Later, these trends were eclipsed by new ones such as hologram or mixed reality and environments/trends such as the metaverse.

The challenge for large media to reorganize their content, according to the available platforms, coupled with a health and economic crisis brought by the COVID-19 pandemic in 2020 caused the production to be resented and redirected with another strategy. In order to economize media, trends were limited to each space (television, multimedia platforms, apps...), which explains why 360 video content gradually disappeared from platforms such as *YouTube*. In other cases, some companies opted to create their own immersive projects with their own platforms where they could host the content without relying on third parties (Peinado and Mateos, 2016). The pandemic crisis also greatly affected this type of initiatives.

Hologram, metaverse and mixed reality as new actors in immersive journalism

For the analysis of BBC immersive content, ten audiovisual pieces published by the British channel through the YouTube platform were selected and analyzed from a quantitative perspective. Based on the table shown above, some of the most important elements that have been analyzed are highlighted. The origin of the content is highly representative, as it combines national (British) and international content in a balanced way. Although it does not represent the totality of the immersive content published by this medium, it represents a high percentage of it and a remarkable reliability as a sample. The latter clashes quite a lot with what can be seen in studies of other media, these betting more on international content. In fact, based on this, the BBC's national content is related to institutional and patriotic events that were recorded with immersive technology. It is more about content focused on disseminating the image of the British crown and its culture than political or current affairs content. On the one hand, the media seeks to focus on international content, but on the other hand, it seeks to disseminate its events and traditions to the rest of the world. In a way, many media have used this option as a gap to transmit customs, rituals and classic events through an international prism.

In addition, one of the major balancing points found in the research is the ability of the British chain to produce and disseminate national and international products in equal parts, so it does not veto any of its options. Combining globalization with glocalization is a risky tactic that can be seen in the following graph. Another aspect to be addressed was the genres used in each of the audiovisual pieces. A distinction was made between informative, interpretative and opinion genres. By delving into each of them, we have determined the most frequent or recurrent ones in the immersive *BBC* contents analyzed.

In this case, there is a high percentage of content that is committed to informative genres, focusing on informing rather than interpreting or giving opinions. Interviews have not been used for the moment within their immersive production, as well as other genres more linked to the subjective margin of the journalist. Omitting the tendency of many British tabloids or tabloid press, *BBC* has fervently opted for information in its immersive products, either through genres such as news or others such as reportage.

It is the degree of informative depth that varies from one genre to another, but they are always linked to the informative intention and journalistic rigor. In none of the contents analyzed is an intention to influence the viewer detected, but merely to report the facts as reliably as possible.

Documentaries are another of the genres most used by the network and represent a relevant niche of the total. This genre has been commonly associated with non-fiction cinema, but it is also based on the transmission of facts or events, trying not to condition the user's opinion.

In short, news, news reports and documentaries are the trident of genres used by the British channel within the prism of immersive products that have been broadcasted on the network, which represents an absolute intention to bet on information before opinion. Reporting accounts for 70% of the total, with news and documentaries accounting for 20% and 10%, respectively.

Another of the concepts analyzed and which is being most closely related to immersive journalism is gamification. In this case, gamification represents an interesting percentage within *BBC* immersive products, but without being the majority.

Gamified is understood as any content that has a more or less direct play or game factor that can be appreciated. In the case of the present research, around 30% of the contents studied corresponded to gamified products, while the remaining 70% corresponded to products without any type of gamification.

The results show how even large media companies have been implementing gamification in their frequent guidelines in order to capture the attention of a relevant number of users. As in the other direction, the news company has taken the world of entertainment and immersive leisure as a model and reference to apply the best techniques and trends to its field of work.

In this sense, gamification, which has been so successful in the audiovisual immersive entertainment market, is increasingly applied by media around the world in a significant number of contents, especially immersive ones, with the aim of making the viewer even more involved in the event or that which is being narrated. Many users show their interest in gamification and its resources through what are known as "Easter *eggs*" or *easter eggs*, which are nothing more than small details or hidden winks that are positioned so that the user must find them and see a hidden message within the content. This concept, applied in a gamified environment, makes the user feel more interested in visualizing the entire immersive video environment and the information it contains.

On the other hand, it can be seen that the gamification capacity of the media also depends on the platform on which the content is hosted. In the case of the British media, the use of *YouTube* and the participation of users in comments and reactions to content allows for better feedback than through channels such as television. That is why a dispersion of immersive trends is also detected, adjusting to each platform.

In the case of *BBC*, the use of 360 video through *YouTube* is persistent, which positions other trends such as the hologram to television media that take better advantage of the potential of these trends. This reorganization of trends can be seen both in the British media and in other international media.

Another result of the research is the use or non-use of immersion recreated by computer and its mixture with real images. In this case, the contents are merely either real or recreated, but no nexus of both is detected in the same content.

A partial use of text as an audiovisual element to guide the viewer during the narration of the event is also detected. In a part of the contents, text is present as a narrative support, which serves as a complement to what the viewer can already visualize with the simple video. This being so, it does not represent a majority. Some 40% of the immersive contents published by the English media include text, while the remaining 60% do not.

Generally, text is used as a complement in reports to provide data together with infographics. In the news as such, text is not found, since it is replaced by a *voice-over* narration or by ambient sound directly. It should be noted that the use of text in videos is not a mere ornament, but is used as a support to what can be seen or heard in the scene, generally expanding the information or pulling from the newspaper library with some interesting or important data that can provide context to the story.

Another of the elements analyzed beyond the text or the narrator's voice was the use of sound or music to accompany the piece. The results of the analysis coincide exactly with what happened with the text, since more than half of the products generated do not have music, but coincide with a representative percentage that do.

Specifically, 60% of the contents did not use music, while 40% did. Adjusting this with a larger number of pieces that could be studied in the near future, it could be closer to an equality between the number of pieces that do not bet on the use of music and those that do.

The use of music to mark the rhythm or the narrative pattern is something very frequent in leisure contents, so that a certain influence can also be detected in an important percentage of contents linked to the information company.

Regarding the image quality detected in the pieces studied, it starts from a minimum of 1080p to a maximum of 4K in others, denoting the relevance of image quality in relation to the good immersion generated in the viewer. It can be affirmed that all immersive contents published by the analyzed media have a minimum of high definition when viewed, which enriches the immersive experience and maintains a high level of fidelity with respect to the real world.

As a complement to the results framework, a sample of the analysis carried out on one of the pieces published by *the BBC* is also attached below:

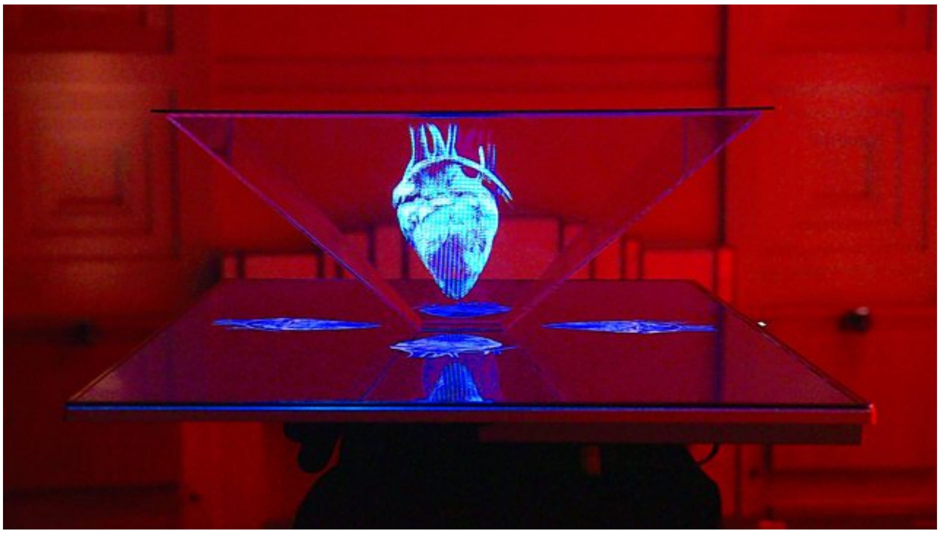
Table 2. *BBC immersive piece analyzed.*

CONCEPT	CONTENTS
Immersive content category	360° video
Genre	News
Domestic (1) / International (2)	National
Gamified (1) / Not gamified (2)	Not gamified
Real (1) / Recreated (2)	Real
Text in image (1) / No text (2)	No text
There is music (1) / There is no music (2)	No music
Video quality or format	4K and below

Figure 5. Musical show prior to sporting event. *BBC.*

On the other hand, with respect to the qualitative review, the aim was to delve deeper into the change of trends and learn more about the new ones that have been gaining importance in recent years. To this end, some of them were analyzed in order to better understand how they work and the reasons for the change of direction in the case of reorganizing them. The hologram as part of these new trends was commented on in numerous news items by the British channel, highlighting its importance in achieving greater immersive loyalty and bringing the protagonists closer to the news, interview or other formats. North American media reinforce this opinion through shows or magazines that are based on creating interviews with current affairs characters through the use of a hologram, without the need for this person to be physically located on the same set of the program.

Figure 6. Holographic television is one of the potential projects of the British media. *BBC.*



The addition of artificial intelligence is another result of the immersive evolution of this network. The development of applications with generative artificial intelligence is seen as a challenge and a risk at the same time by this media, paying special attention to potential fake news.

The close collaboration that could be generated between these new immersive trends and the use of generative artificial intelligences poses a great risk in the eyes of large media. The potential danger of misuse also makes media such as *BBC* to be reticent about the mass production of immersive content.

This, added to the media crisis and especially the economic crisis after the pandemic, makes it difficult for this type of projects to be sustained over time. Understanding the technical operation of trends such as the hologram and its possible link with artificial intelligence is a huge challenge for the media as a whole, which has also caused the paradigm of immersive journalism to fluctuate in recent years.

Mass production of immersive content as a challenge. Gamification, a plausible support

The first noteworthy aspect is the balance between patriotism and globalization with respect to the origin of the immersive content published by the BBC in recent years. A balance was observed between the amount of national and international content, which is a remarkable duality in the case of a British medium closer to promoting national content.

Moreover, the internationalization of immersive products is the main reason that explains the duality in the object of study, since the major media have made a fervent commitment to content beyond their borders in order to cover a larger part of the information market. The news company, like any other company, seeks to expand its horizons and frontiers in search of new users to whom it can offer its product. In this sense, the internationalization of immersive journalism serves to reach other countries and expand the range of users who consume these products, which in turn feeds back into the consumption of immersion and facilitates its evolution.

One of the main obstacles encountered by immersive journalism has been to reach new users and achieve a sufficient market share to reach the profitability threshold to be able to maintain the entire infrastructure and even continue developing it. For this reason, media such as BBC, CNN or Al Jazeera have opted to show international content in order to reach the whole world, spread the concepts and trends of immersive journalism and get more and more users to adhere to the new trends.

As many experts point out (López-Hidalgo et al., 2022), there is a great need for a significant number of users to consume immersive content so that companies in turn generate more and generate a significant flow that allows all this to be profitable.

Another outstanding result is the very relevant presence of informative genres over interpretative and opinion genres. The contents have been directed towards mere information and the depth of the event through formats such as reports or documentaries. This also happens in many other world-class media, leaving the interview or other genres in a secondary plane more linked to platforms such as television (Ambrosio and Fidalgo, 2019). However, the use of immersion in certain genres is somewhat more complicated, costly and less relevant, since the main objective of immersive journalism is to create that immersive environment for the viewer with which to better understand what is being narrated. It is here where genres such as news or reporting have a greater place due to their characteristics, and can give rise to include immersive elements that expand the information transmitted and help the viewer to increase the necessary degree of immersion.

Some television media have adopted the hologram as a usable trend in talk shows, but it is not something that has had as great an impact as news or reporting with virtual, augmented or mixed reality, for example.

The third major result is the use of gamification in the contents analyzed. Although it is true that only 30% corresponds to some kind of game or gamification, it is a remarkable figure in the case of a media such as BBC, which has a much more sober, formal style and is linked to mere information.

The claim used through gamification in some not so formal content is very representative of how large media are betting to a greater or lesser extent on the game as bait for the user. The importance of gaming has increased in recent years within the news business landscape, which has led to the implementation of these narrative and audiovisual models based on more or less direct rewards as a lure.

The main triumph of gamification is to generate that feeling of reward in the viewer that leads him to continue consuming the content periodically in search of new rewards and interests. Therefore, it is a factor to be taken into account whenever immersive journalism is studied, since its origins are linked to gaming, leisure and entertainment and these models have been partially adopted by the media, obtaining positive results so far.

Conclusions

Entering the section on conclusions and returning to the questions and hypotheses at the beginning, the main lines can be established.

In response to the first question, some media have made significant immersive production, which has varied over the years depending on demand and trends. This is generally limited to top-tier media with a larger budget and room for maneuver, although small, powerful projects have also been developed.

Regarding the second question, there are several first level media, such as the BBC, that have virtuously applied immersive trends, although in recent years there has been a recession due to the socioeconomic context and the arrival of new immersive trends.

In relation to the first hypothesis, gamification has played a representative role in various media of worldwide impact, including the BBC. Although this impact is not a majority for the moment, it is sufficiently representative to stand out in the research, since three out of ten contents published contain some kind of gamification element, which is high for a media such as the Anglo-Saxon entity.

Other less formal media have applied it to an even greater extent, which allows us to appreciate the interest of the information company in inserting the game as a relevant element of immersive products due to the great interest it arouses in the user. The user is rewarded for the effort made by accessing and visualizing the content with some kind of gamifying reward included in several of the contents. Here we can appreciate the *engagement* generated, since without gamification there would not be the same and the impact of immersive journalism would be much better.

Similarly, the use of immersive gamification elements increases and improves the consumer's understanding of the facts, since it allows reaching a higher degree of depth in nuances that would not be equally detectable without using an immersive method. A better understanding of the events helps to understand the news with greater clarity and professionalism, also avoiding biases and intoxication by false information, although it may in turn pose a greater risk in the level of impact of false information through immersive pieces.

It is the users who, in one way or another, have been demanding the application of gamification in these contents in order to arouse enough interest to consume them. Therefore, it can be corroborated, since the growing application of gamification by the media within the framework of immersive content denotes that there is in turn great interest on the part of the user in this being the case.

Its use as a lure feed back into the whole chain and increases the consumption of immersive journalism, which helps it to continue to develop and not fall into the background.

In turn, both objectives linked to the first hypothesis are achieved, since we have analyzed part of the immersive content published by this channel and the gamification elements that have been implemented in the content. Some elements such as the so-called Easter eggs or *easter eggs* are the most remarkable and those that in turn drink from the immersive video game company.

As for the second hypothesis, we can also corroborate what was proposed at the beginning, since the content analysis shows an abrupt halt in the production of immersive content based on virtual reality, augmented reality or 360 video. All this can be explained by the emergence of new trends such as holograms, which have forced the media to restructure content and better adapt each trend to its corresponding platform.

While years ago immersive products were published without distinction of platform, since 2019-2020 it has changed due to the arrival of these new trends and the health crisis.

On the one hand, new trends have adapted better to certain environments and platforms such as television, which has led many media to choose to disseminate them differently or focus more on them instead of the original trends that dominated the landscape between 2015 and 2019. As with any technological change, content evolves and adapts, which in this case has led some media to bet more on new trends and abandon the initial ones, or to reserve each trend its most appropriate space, limiting its visibility compared to previous years.

To all this must be added the economic context created by the pandemic and its impact on the media. Some media outlets with smaller budgets had to slow down and even abandon their immersive journalism projects due to lack of funds. Other major media reduced their visibility and production, focusing more on the classic formats that have given them the best results. This is not only seen in the case of the object of study, but also in many other first level media that have decided to minimize or slow down the progress that immersive journalism projects had at the beginning. There are cases such as *El País VR* that after only three pieces abandoned the project.

To this climate of constant technological change and the arrival of new trends was added the context of the pandemic, which had a huge impact on the future of immersive journalism globally. Therefore, the sum of the health/economic crisis together with the arrival of new trends has led to a paradigm shift within the framework of immersive journalism and the news enterprise.

Following this line, the three objectives set out in this second aspect have been achieved, since the causes and consequences of the paradigm shift have been analyzed and commented both from the scope of the new immersive trends and the pandemic. At the same time, the most representative journalistic genres have been detected and studied, highlighting the informative ones such as the news or the report above others. With all this, it is concluded that both proposals are corroborated and all their objectives are achieved after the content analysis carried out, being able to be extended in the future to other first level media and its comparison with local media that also bet on immersive journalism in recent years.

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Valorization of Peruvian cinema: identification of university students with cultural films

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Introduction

Cinema is a cultural manifestation that reflects the identity of a society through stories, images and sounds. In Peru, cultural cinema has tried to make visible the customs, traditions and ways of life of various regions, creating a space for reflection on national identity. However, its impact and appreciation among young audiences, especially university students, still present challenges in terms of dissemination and reception. For this reason, the following research question has been posed: What is the value given by Lambayeque university students to Peruvian cultural cinema?

This chapter analyzes the relationship between university students in Lambayeque and Peruvian cultural films, exploring the extent to which these productions generate identification in viewers.

The general objective of the study is to analyze the valorization of Peruvian cinema with respect to cultural films among Lambayeque university students. Specifically, it seeks to characterize the feeling of identification of university students with Peruvian cultural cinema, to describe the repercussion of identity that this cinema generates and to analyze the preference and perception of students with respect to these films.

From a methodological perspective, the research is framed within a qualitative approach with a phenomenological design, using interviews and focus groups as data collection techniques. This allowed an approach to the subjectivity of the students, understanding their experiences and evaluations of Peruvian cultural cinema.

The findings reveal that the identification of university students with Peruvian cultural cinema depends to a large extent on the representation of their immediate environment. Students feel reflected when films show the culture of the country's northern coast, but the same does not occur with productions set in other regions, suggesting a segmentation in the construction of cultural identity. In addition, there was evidence of a lack of promotion and distribution strategies, which limits access to these productions and reduces their impact on the university audience.

This chapter will contribute to the study of communication and culture by exposing the current situation of Peruvian cultural cinema at the university level. Topics such as cultural identity, self-perception in audiovisual consumption, appreciation of national cinema and factors influencing student preference will be addressed. It will be discussed how Peruvian cinema can be consolidated as an effective means of preservation and dissemination of cultural identity, highlighting the need for greater incentives and public policies to promote its development.

Finally, the importance of incorporating the study of Peruvian cinema in university education as a resource to strengthen cultural identity and encourage a more receptive public to this type of productions will be discussed.

Cinema as a tool for cultural identity

Cinema is a means of communication and artistic expression that, in addition to entertaining, plays a fundamental role in the representation and construction of cultural identities. Through images and narratives, societies project their history, traditions and values, generating a sense of belonging in viewers. In the Peruvian case, cultural cinema has positioned itself as a key tool for the valorization of national diversity, although it faces great challenges in terms of reception and dissemination.

> Throughout the twentieth century, film has been used, directly or indirectly, to represent audio visually diverse and complex problems associated with the relationships between cultural identities and historical processes. Although from the first decades of the last century historians recognized the link between cinema, as a social practice, and the processes of construction, reproduction and conflict of racial images, the use of film as a historical document was systematically ignored in research. (Goyeneche-Gómez, 2012, p. 389).

> Moreover, the current era of modernization and digital platforms have made cinema more influential worldwide. Digitalization has not only improved the penetration of films among the masses, but has also provided an alternative to the film industry in those nations that were in decline after the fall of film culture. [For example] In the case of Pakistan,

> the film production of Pakistani industry was 80 films per year, but it was reduced to 20 films per year due to certain reasons such as lack of innovative ideas and social and cultural differences of producers and audiences. Rizvi (2021, cited in Khan & Saeed, 2023, p. 99).

The Representation of Cultural Identity in Peruvian Cinema

From a theoretical perspective, Stuart Hall (cited by Heredia and Cubas, 2020) argues that cultural identity is a process in constant construction, influenced by collective experiences and symbolic representations. In this context, cinema acts as a reflection of national and regional identity, since the images projected on the screen can reinforce or modify the viewers' perception of their culture.

> Cultural identity refers to the psychological connection between an individual's self and a culture. [...] The cultural knowledge component connects an individual to a culture through the individual's direct acceptance of what are widely known to be the core characteristics of the culture. (Wan & Chew, 2013)

Peruvian cultural cinema has tried to capture this identity through productions that show the geographical and social diversity of the country. Examples such as Wiñaypacha (2017) have managed to make native traditions visible through the use of native languages, in this case, Aymara (Carbonel, 2018). However, the impact of this type of productions on university audiences varies depending on the degree of representation that viewers perceive in the film.

Regional cinema as a vehicle for local identity

Over the last two decades, Peruvian regional cinema has experienced significant growth. Bustamante (2018) highlights that, at present, film productions are no longer centralized in Lima, but initiatives have emerged in various regions of the country. However, this diversification of Peruvian cinema has mainly privileged the highlands and the jungle, leaving the northern coast with a lower representation in cultural productions.

In Lambayeque, initiatives such as the Cineclub de Lambayeque and Cortos de Vista have promoted the dissemination of regional cinema, offering exhibition and training spaces for emerging filmmakers. However, the lack of a consolidated industry and supportive public policies have hindered the expansion of this type of cinema. In addition, the lack of distribution in commercial theaters has limited access to university audiences.

Perception and consumption of cultural cinema among university students

Film preferences of university students

Film consumption habits in the university population are influenced by various factors, such as accessibility to content, advertising and perception of quality. According to the National Institute of Statistics and Informatics (INEI, 2022), 72% of Peruvians prefer to watch Hollywood productions, while only 5% choose to watch national cinema.

> [Regarding cinema on television] On the one hand, in CUValles of the UdG (Mexico), 18.6% of university students state that they never watch movies on television, the closest percentage corresponds to the students of SUV of the UdG and USAT (Peru), with 7.1%. Students at UMA (Spain), with 3.1%, are the least likely to choose the never option (Ríos et al., p. 193).

This phenomenon is replicated in the Lambayeque region, where university students prioritize genres such as suspense, comedy and horror over cultural productions (Fernández and Flores, 2019). One of the reasons is the lack of marketing and distribution strategies, which makes it difficult for Peruvian films with cultural content to reach a wide audience.

Factors influencing identification with cultural cinema

In order to integrate how people are integrated into general processes, but in this case into a cultural dynamic, the constructivist theory appears, that which allows a gradual approach.

> The neo-functionalist constructivist theory as that which allows understanding that the processes of dialogue and social participation are those that build culture, assuming a dynamic and civic vision of it, as opposed to the organic and much more conservative visions. (Orosa-Roldán and López-López, 2018, p. 39)

On the other hand, Laird's self-perception theory (2007, cited by Ramírez and Barragán, 2018) argues that individuals construct their identity from the experiences they live in their environment. Applied to cinema, this means that viewers tend to identify with narratives that reflect their daily reality.

The research findings indicate that university students from Lambayeque feel greater identification with films that represent cultural elements of the northern coast of the country. In contrast, identification with productions that portray

Andean or Amazonian culture is lower, since students perceive these representations as foreign to their experience.

Challenges and opportunities for Peruvian cultural cinema

Role of the State and barriers to the dissemination of cultural cinema

One of the main problems faced by Peruvian cultural cinema is the absence of an efficient distribution system. Bustamante (2018) highlights that many of these productions only manage to be exhibited in festivals or alternative spaces, which reduces their impact on the mass public.

In the Lambayeque region, film clubs have tried to position cultural cinema among university students, but these efforts have been insufficient due to the lack of government support and the scarce investment in the promotion of these productions.

The Ministry of Culture, through the Directorate of Audiovisual, Phonography and New Media (DAFO, 2022), has implemented economic incentive programs for film production. However, these initiatives have been insufficient to consolidate a sustainable film ecosystem. To strengthen the cultural film industry in Peru, it is necessary to implement strategies such as:

- Increased funding for the production and distribution of cultural films.
- Inclusion of Peruvian cinematography in the university curriculum.
- Creation of alternative exhibition circuits accessible to the public.

Methodological process to address the context

This research was based on the naturalistic paradigm, a study that is based on characterizing, describing and identifying how university students feel about Peruvian cultural films, from the perception of the researcher. The naturalistic paradigm raises the possibility of arriving at absolute truths to the extent that problems are approached and a significant distance is established between the researcher and the object of study (Miranda and Ortiz, 2020). In addition, the research followed a qualitative methodology: it based its analysis on the reality of the university student, collecting and identifying opinions, situations and emotions, seeking to get to the nature of the phenomenon studied.

It is of a phenomenological type, since the research aimed to analyze the valuation that university students have regarding Peruvian cultural films.

According to Montagud (2019), phenomenology seeks to know the person and the world in which he/she lives, by way of knowledge and without prejudices that lead to an interpretation.

> Husserl's Phenomenology, in an effort to transcend the dichotomy, so fertile in Kantian thought, between reality and the phenomenal data obtained from it, postulates a whole theoretical apparatus that bases its attention on the world not as a category alien to the human being but as the set of objects in direct implication with our consciousness. (Fernández Gonzalo, 2016, p. 54)

Therefore, the technique of interviewing specialists and the focus group was used, which served to socialize the questions presented with respect to cultural films. Likewise, these helped to characterize the feeling of identification, to describe and identify the self-perception and repercussion of identity in Peruvian cultural films on the part of young university students.

As for the subjects selected for this research, two groups were taken into account, one of which was university students, whose responses were used to identify their appreciation of Peruvian cultural films. Convenience sampling was used to select the students, since it was governed by the availability and accessibility, they had to facilitate the research process (Escobar, 2023)

> Convenience sampling is a non-probability sampling technique applicable to qualitative or quantitative studies, although it is more frequently used in quantitative studies. In convenience samples, subjects more accessible to the researcher are more likely to be included. (Suen, et al., 2014, p. 105).

The study was based only on Lambayeque university students who show interest in cinema, consume Peruvian cinema or have knowledge of some Peruvian cultural films. In this way it was possible to analyze the different situations that arise in people with the most similar experience in the subject. Thus excluding non-university students, students from other regions, those who do not like to consume cinema or who do not know about the subject.

Likewise, three specialists were also part of the research, who helped to characterize the feeling of identification on the part of university students with respect to Peruvian cultural films. For this reason, three university professors were considered, since their closeness to the students gives them a clearer idea of what they think. It should be noted that the specialists considered have at least five years of experience in the work field and are focused on the audiovisual area. Therefore, specialists from other professions, who do not have knowledge in the audiovisual area or who do not have the necessary experience to know the behavior of students, are excluded.

Table 1. *University students*

Focus groups	No. of students	Universities	Careers
3	17	USAT: 12 students USMP: 5 students	Communication: 10 Engineering: 3 Right: 2 Administration: 1 Psychology: 1

Note. The selection of subjects was at the discretion of the investigator according to convenience sampling.

Regarding the scenario, the research was located in the Lambayeque region, where nowadays more and more people are consuming and creating films, with the help of the spaces and incentives granted by the State. The Audiovisual, Phonography and New Media Directorate (2022) states that they are working under the slogan "Cinema represents us" and that this is what they are looking for, that the annual plan achieves that the different lines of competition allow to gather the diverse expressions and ways of approaching cinema in our country.

Likewise, film clubs and festivals in the region help more people, especially university students, to decide to make films. Many times, the screenings organized by these film clubs motivate people who have the desire and, seeing someone else doing the same thing they want, makes them want to try. However, cultural cinema is something that few university students dare to do. Therefore, knowing how much sentimentality it generates in university students would be a great impulse for those who still don't dare.

On the other hand, the focus group technique was used, with its guiding instrument of questions, to identify the value that university students from Lambayeque have regarding Peruvian cultural films. The instrument considers the categorization of the subjects and scenarios. This technique and its instrument also correspond to the phenomenological design part of the qualitative research.

In addition, Dörnyei (2007, cited by Rodas and Pachecho, 2020) argues that focus groups are a great advantage for research since they make the participating subjects feel in a pleasant context and without pressure, which allows the moderator to obtain valuable information. This is very important for the research since, what was sought is that the subjects can express their feelings and opinions in a comfortable and sincere manner.

The interview technique was also used, with its instrument, the interview guide, to characterize the feeling of identification that university students have with respect to cultural films. The interview helps to develop a conversation with a specific purpose, it is a process that involves planning and helps the researcher to gather information for his research (Fernández, 2021). The interview with the specialists helped to develop the stated objective and facilitated the understanding of the answers by the university students.

For the data collection procedure carried out in this research, after applying the instruments validated by the experts, the information obtained from the focus groups and interviews was transcribed and analyzed, then the content was organized in matrices in order to identify the opinions and assessments of each subject in a more orderly manner and allowing the different ideas of the participants to be compared. Then, with the information gathered, the results were elaborated with the most relevant aspects of the research, followed by the discussion, in which this information was contrasted with the background information and complemented with the theoretical framework. In addition, conclusions were drawn up by objective and recommendations obtained from the research.

The research "Valorization of Peruvian cinema with respect to cultural films in university students, Lambayeque" had the criteria of veracity and validity, which are indicated in the Belmont report. These were taken into account for the instruments, so that there is no manipulation of the results obtained by the subjects. Likewise, for the information provided by the university students of Lambayeque, the inalterability of the results was taken into account, since the authorship of the information provided by the subjects was maintained and everything was transcribed without any alteration. Finally, in this research, the copyright of the different quotations used was taken into account, following the APA Standards 7th edition. In addition, as indicated at the beginning, the abuse of textual quotations was avoided, predominating paraphrasing and thus avoiding similarity, all of them with their respective references.

The value given to Peruvian cultural cinema by Lambayeque university students

Characterization of the feeling of identification among university students with respect to Peruvian cultural films.

Experts say that Lambayeque students consider it important that they see themselves reflected in a film, because of their idiosyncrasy, because of the way they can identify and recognize themselves in the film. However, they also believe that they do not have the initiative or willingness to see or create, and this could be due to the fact that, somehow, the public is not used to finding this type of cinema, so it does not consume much and the proposals of films related to this topic are very few. If you contrast the south versus the coast of northern Peru, there is a big difference, the taste, the eagerness and the desire to see this type of cinema.

On the other hand, experts believe that films that show the same traditions of their region, awaken in students feelings of identity, acceptance, recognition and validation; which makes them feel proud of who they are and where they come from. This coincides with the research of Bustamante (2018), who says that, although Peruvian audiovisual production is increasing every day, there are still some problems such as distribution and exhibition, and that these could be remedied with the support of the State to national cinema. These results are supported by Chávez (2017, cited by Cuadrado, 2021) who points out, that, regarding ethnographic cinema, there are questions about the proposals and means of dissemination, since they occur only in classrooms and academic events, thus limiting the audience reached by this type of audiovisual products.

People who are more disconnected from the country may suffer a process of alienation, but these are minimal cases. In addition, it is assured that the north did not experience wars as intensely as in the south, and not having fought to achieve the independence of the people, has resulted in a consumer audience that prefers to tell stories or express issues more related to personal problems, psychological, fears, self-reflection, existentialism, rather than telling stories about Peruvian culture. It is a people that somehow never connected with their culture, so they are going to have a cinema disconnected from it.

In addition, the interviewees affirm that films are an important means for students to learn about Peru's heritage. They mention that the cinema allows them to know places without the need to be there in person, and thanks to the image and sound, they can feel the spaces, especially when talking about cultural factors of the country. They also mention that this is achieved in a film, depending on what the director wants to show and how he tells the story. Likewise, they emphasize how important it would be to include film as part of the university curriculum in order to promote this identification.

Regarding the films that show Peru's cultural heritage, the specialists consider that they generate an initiative in the students to get to know the places shown. They consider cinema as an ambassador and showcase of the country, since it works as a propaganda tool, the culture of a country can be inserted through films, without the need to read about the history or about any character. In addition, they see it as a promoter of tourism, and that students may prefer to get to know their country first before getting to know a foreign country, which is why they stress the importance of adding film to the university curriculum. This could make students who thought a film was boring, turn out to be an entertaining film, showing something they would never have imagined existed in the country.

In addition, they add that cinema is the only means of communication that is art, specifying it as the place where you have to be more educated, more read, but they still struggle with the interest that university students have in it, and it is not their fault, but the fault of a state that does not have a law with screen quota. On the other hand, they mention that, being from the coast, it is difficult to identify with a story that happens in another region because it is not the same context in which they live, but it can still create an interest in knowing the place. This will depend on the way the director shows the place in the film, the space must have an important weight, almost like another character, so that by itself invites you to get to know it.

Another way in which the director can intervene in the film is through music. Experts mentioned that it can help bring out the sense of identification in college students, as it is connected to emotions. You may not even see an image, but when you listen to the music, you feel the emotion, the energy, the sadness, the joy. Also, for students or for a younger person who is used to watching a commercial type of cinema, watching a movie where there is no music is going to seem strange.

They also mention that an easy resource to generate emotions, since an original music or a well-known song can make the scene overflow with emotions, and correct or attenuate weaknesses in the film. Music is a commercial phenomenon, which works very well with young people, so it has to be taken advantage of. Likewise, music is not only a song, it is also melodies, a tune, something that supports the narrative of what is being told and that it must have a purpose, otherwise it will be merely distracting. One of experts adds that music should work on a question of identity, because nowadays it is presented in a more commercial way.

Regarding cultural manifestations such as dance and handicrafts, the interviewees mentioned that university students do not consider them important for our culture, since there is much detachment with these topics and it is not so present. However, others do consider it important, because it has to do with the question of activity, and with being able to take something from the place, but that everything must have a sense, first to know the value and why of things before observing directly in the film. For this, the experts mention that there must be an intelligent way of seeding the culture through a creative story, it should not be forced because it would be unnatural and would provoke a rejection instead of an identification.

Finally, specialists mention that one of the ways to show cultural manifestations in a film is to link current and ancestral cultural phenomena, so that culture is sown while the plot of everyday life is developed. They also mention that cultural manifestations should come out of history itself, that they should be more contemporary or more within the reach of current generations. They also mention that gastronomy, street art and sexual dissidence are topics that generate interest in young audiences. In addition, there are very good stories that could be based on myths, legends or traditions that one could reflect at the level of a production.

Figure 1. Summary of the experts the identification of university students

Note. The figure shows the most important points mentioned by the experts regarding what they think about the students.

Repercussion of identity generated by Peruvian cultural films in university students.

University students consume Peruvian films, but not very often, mentioning the lack of releases in theaters with respect to cultural films and how difficult it is to find them on digital platforms. In addition, some only want to watch the blockbusters.

They feel identified by aspects such as the customs, traditions and way of speaking shown in films based on the coast of Peru. However, they do not feel identified with those films that show the culture of other regions, since it is not something they see in the region where they live. In addition, they argue that Peruvian cultural films tend to show highland departments, which they appreciate and recognize as part of the country, but not as part of their own identity, since they are people from the coastal region.

The students do not believe that the majority of university students value seeing their cultural identity reflected in Peruvian cinema, but rather that they prefer to see foreign films. However, they mention that there is an audience that does, although it is smaller. This audience would be among students of humanities, especially in communication sciences. In addition, they add that the contests, awards or festivals that are presented to university audiences are a great impulse not only for the value of seeing culture in films, but also for the continued creation of this type of cinema.

This is related to the research of Fernández and Flores (2019), who mention that students feel identified with films produced according to their reality, where characters and natural environments of the region where they live are shown. Also in what is mentioned by Rodríguez Barriga (2021), who says that students are indifferent to the recognition of the diversity of races as part of the national identity, as well as they consider that it is more valuable to know about foreign art than national art. These results are supported by Heredia and Cubas (2020), who sustain the theory of cultural identity, which encourages the public to understand the cultural factors of other groups. In such a way that it can be said that it is necessary to have lived experiences and situations in order to build an identity.

Figure 2. Summary of university students regarding the identity that Peruvian cultural films generate in them.

Note: The figure shows the most relevant points with respect to identity valorization and impact.

Identification of the preference and perception of university students for Peruvian cultural films

College students prefer to watch movies in the genres of suspense and comedy, but they also like drama, action and horror. In addition, they do not consider the number of people who go to see a movie as a reference when considering it good or bad. They tend to be guided more by reviews or recommendations, as well as by the trailer or synopsis of the movie.

University students consider that the technical aspects of a film are important for them to want to see it. The photography, the script, and the colorization of a film make it more attractive. In addition, they consider that the director and the actors are references to know if the film will be to their liking. Finally, they mention social networks, especially tik tok, as a platform that makes them have interest in a certain film, either by giving a review of it or by inserting certain fragments that make you want to see it in its entirety.

As for Peruvian films, the plot is important and must be liked by the subjects in order to watch it, as well as the genre. They also take into account the actors who are part of the film. Some take into account the director or the production team, as well as the photography of the film, since they consider that Peruvian landscapes can be exploited in this area. In addition, an important factor is the recommendations or positive reviews. They also mention the lack of marketing and promotion strategies so that Peruvian films can reach all types of audiences.

This is related to what Fernández and Flores (2019) show in their research, where students highlight that the level of consumption of Peruvian films has as an influential factor the use of correct promotional strategies and some production values. On the other hand, they add that, what causes the low consumption of films, are the reduced opportunities to release the films in exhibition platforms. These results are supported by Litman (1983, cited by Cuadrado, 2021) who mentions that there are several determining factors when a person chooses to watch a movie. Some of them are: production costs, film awards, recognitions, casting of actors, among others. Finally, the university students consider it important that Peruvian cinema has more support from the State, that a larger budget is allocated to the creation of auteur films and that laws are implemented to promote Peruvian cinema. As well as the creation of more distributors that allow Peruvian cinema not only to reach more people nationally, but also abroad. In addition, they mention innovation in actors, plot and improvement in technical aspects such as camera movements and photography.

Figure 3. Summary of undergraduates regarding preferences of undergraduates

Note: The figure shows the grouping of the reasons that lead university students to watch a Peruvian cultural film.

Conclusion

Lambayeque university students consider that Peruvian cultural films generate identification, but this is conditioned by the geographic and sociocultural representation in film productions. Lambayeque students feel a greater connection with those films that show traditions, customs and landscapes of the northern coast of Peru. On the other hand, their identification with films that represent other regions of the country is lower, which reinforces the idea that cultural identity is closely linked to one's immediate surroundings.

In addition, familiarity with the themes, language and cultural expressions presented in the audiovisual narrative influences the viewers' perception of authenticity and closeness to the story. students consider it important that films reflect their reality, as this contributes to strengthening their sense of belonging. However, the consumption of this type of cinema is still limited due to the low supply of films with these characteristics and the generalized preference for foreign commercial cinema.

A key factor identified in this study is the lack of exposure and dissemination of Peruvian cinema in conventional entertainment spaces, which limits its impact on young audiences. To improve the identification and appreciation of Peruvian cultural cinema, it is recommended that the State and academic institutions implement promotion and education strategies that allow young people to learn about and appreciate the cultural diversity reflected in these productions.

The impact (repercussion) of Peruvian cultural films on the identity of Lambayeque university students is influenced by the way in which these films deal with the country's culture, customs and heritage. The results show that young people tend to recognize and value those aspects of cultural identity that are directly related to their environment and personal experiences, while cultural elements foreign to their reality can generate a perception of distance or even indifference.

Although cultural films have the potential to strengthen national identity, their impact on university students is limited due to the lack of access and exposure to this type of cinema. The lack of a consolidated film industry and the absence of effective public policies for the promotion of cultural cinema reduce the opportunities for students to interact with this content.

In addition, the research revealed that university students consider that cinema can be an educational and cultural tourism promotion tool, as long as the stories are attractive and presented in an innovative way. It is concluded that in order to generate a significant impact on the identity of university students, cultural cinema must be better integrated into academic spaces and have dissemination strategies that awaken the interest of young audiences, promoting a greater appreciation of the country's cultural richness. Regarding preferences and perception, Lambayeque's university students show a pattern of film consumption that favors foreign commercial films over national productions. Among the most preferred genres are suspense, comedy and horror, while cultural films tend to be seen less frequently due to the lack of effective marketing and distribution strategies.

Students consider the technical quality of a film to be a determining factor in its consumption. Aspects such as cinematography, visual storytelling and art direction are crucial to capture their attention. Likewise, social networks have proven to be an influential medium in film promotion, as young people often base their decision to watch a film on recommendations, reviews and visual snippets shared on platforms such as TikTok and Instagram. The study reveals that, although university students recognize the importance of cinema as a reflection of cultural identity, the perception that national productions are of lower quality or lack attractive stories affects their willingness to consume this type of content. Therefore, we conclude that it is necessary to strengthen the Peruvian film industry by promoting public policies that encourage the production and exhibition of cultural films, as well as the inclusion of film and cultural studies in university education. In this way, it will be possible to consolidate a critical and receptive public to the audiovisual manifestations that reflect the national identity.

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Communicating youth representation in the streaming era. A systematic review

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Introduction

The present systematic review study considers as a starting point the following research question: What is, and, in any case, what is the current state of the art on youth representation in fiction series in the streaming era? Likewise, the present study has as its main research objective to define the current state of the art of youth representation in fiction series in the streaming era, with the purpose of building a theoretical framework that allows the development of research focused on youth audience and the streaming era. The systematic review took into account four databases and included keywords related to representation, youth and the streaming platform Netflix. Considering research articles published in the period of a decade (2014 - 2024) as the main source of information.

In order to develop and present the contents of this study, we will first address a theoretical framework on the topic of youth audience in the streaming era. What is sought here is to orient the reader on what the previous systematic reviews on the subject have been and how they have been related to youth fiction series and the content of streaming platforms to the point of defining the variables under study. This section will show that the present systematic review found that previous research has been in charge of characterizing the perception of the audience with respect to topics such as sexuality and the mental health status of young people. Likewise, the fact that, for the most part, the studies on youth audiences and fiction series reviewed use qualitative approaches and content analysis techniques stands out.

Next, the methodological design section is defined, which used the technique of integration of the variables of Population, Intervention, Comparison, Experience and Context (PICEC). It considered the EBSCO, PubMed, Dialnet and Google Scholar databases as the main source of information for the search of research articles. The evaluation of the quality of the research articles included in the study was based on the AXIS system (Downes et al., 2016), which guarantees 14 quality criteria of the scientific productions incorporated in this systematic review.

Finally, to close this chapter, the main conclusions of the studies analyzed are presented. The fact that a synthesis of the current state of the art on the subject under study shows a greater degree of visualization of communities that had previously been marginalized in other audiovisual productions, hence the initiative to explore a greater number of topics that had been historically excluded, such as youth suicide and gender violence, stands out.

The youth audience in the streaming era

The consumption of fiction series on streaming platforms is an element that has become part of the daily life of young people. Streaming platforms, by allowing audience members to consume the content they prefer at the time they want and on the device of their choice, becoming an a la carte menu, is what has led to the "boom" of streaming on any device, without depending on a television set and/or a specific schedule for the consumption of a series or program (Bentley & Lottridge, 2019). Fiction series of the youth genre, those oriented to a specific audience that is in a transitional stage from adolescence to adulthood, have existed for decades. However, each series adapts to the current situation of the generations that consume them. In the 1990s, series tended to focus on issues related to social class and romance. In the early 2000s, series featured mystery, fantasy, science fiction and even musical stories (Forni, 2020).

In the 2010s, youth fiction series began to show more openly and explicitly situations related to the mental health of young people. Moreover, it is the phenomenon and the high audience levels of the series *13 Reasons Why* (2017-2020), which unleashes a concern about the quality of the representation of "delicate" issues in the audience. As there was an increase in the number of suicides among young people at the same time the series was released. Eventually, Netflix removed an explicit youth suicide scene from the series. However, the mental health status of those who consumed that production had already been affected (Hong et al., 2019; Raya Bravo et al., 2018; Rosa et al., 2019; León-Duarte and Villegas, 2023; 2024).

Systematic reviews related to youth fiction series and streaming platform content have focused on different variables, such as the mental health status of young people, as well as the state of the art of the representation of suicide in fiction after the release of *13 Reasons Why* (Guinovart et al., 2023). Previous research indicates that the quality given to youth fiction series is of utmost importance due to the possible impact they can have on the audience, especially on those who are in a stage of self-discovery and definition of self-identity (Raya Bravo et al., 2018). However, the fact that fiction series are a medium that can transmit positive values to young people, as well as a channel that can transmit teaching on topics with which they are not completely familiar, is not ruled out (Allen, 2023).

It should also be considered that the current generation of young people is the first to grow up hand in hand with technology and from its first steps has relied on electronic devices as a way of consuming entertainment (Morduchowicz, 2018). Studies related to the effects and impact of streaming content are relatively recent and there is not a large number of systematic reviews. The present systematic review study aims to fill a gap in the state of the art by considering studies published in the last ten years related to the representation of young people in fiction series. As well as the possible impact on youth audiences who dedicate time to the consumption of this content.

Design of the methodological strategy: Integration and synthesis

The systematic review considered different databases as the main source of information for the search of research articles. The results obtained in the following databases were considered: EBSCO, PubMed, Dialnet and Google Scholar. Using as main keywords for the search engine: "YOUTH + REPRESENTATION + NETFLIX" and "YOUTH AND NETFLIX AND REPRESENTATION". Studies published in English and Spanish were also considered. Additionally, the direct Spanish translation of the terms "YOUTH + REPRESENTATION + NETFLIX" was used. Research articles published in the last ten years (in the period 2014-2024) in research *journals* and/or magazines that had open access through the previously mentioned databases were considered. Publications that were not of this type were excluded. However, when applying the search criteria, the results obtained were published in the 2020-2024 period.

For the review and analysis of the texts included in the systematic review, the technique of integration of the variables Population, Intervention, Comparison, Experience and Context (PICEC) was used. Where, for the Population, studies that had fiction series and/or the audience of such content at the center were considered. Considering also the degree of intervention, the representation of young people. That is, to define the purpose of building a conceptual theoretical framework where the representation of the youth experience in fiction series and the degree of quality of such representation from the boom of streaming platforms are considered. Likewise, the Comparison of the study lies in the relationship between the representation of young fiction series and the possible impact it may have on the audience. On the other hand, the Context of the systematic review considered articles published globally in the two main languages of the review (English and Spanish).

In this systematic review study, the main variable is social representation. Starting from what was previously established by Moscovici (Moscovici, 1979), who points out that social representation is an organized body of "knowledge and psychic and social activities", which allow individuals to understand an aspect of social and/or physical reality. Therefore, the inclusion criteria were defined on the basis of those aspects that were considered to be the most appropriate for the objective of the systematic review and the state of the art that it was intended to construct.

As shown in Table 1, the main inclusion criteria for the systematic review are: 1) the language in which the article was published was English and/or Spanish; 2) the research was focused on fiction series (studies that had as main variables the impact of the content, the representation of young people and those that used methods such as content analysis were considered); 3) studies that explicitly express the results (regardless of the approach); 4) research articles that have humans or the content of fiction series as the object of research and/or subject of study, and; 5) studies that specifically analyze elements within audiovisual narratives and that have as main variables the representation of violence and/or the impact of violence.

On the other hand, the exclusion criteria consisted of: 1) research articles that were published in a language other than English and/or Spanish (as well as publications that were not research articles), 2) research that explicitly did not focus on fiction series and/or the representation of young people in such audiovisual productions, 3) studies that did not explicitly express the results obtained (either through qualitative, quantitative and/or mixed approaches), 4) studies where humans and/or the content of fiction series was not the object of the research or the main subject of study, and 5) studies that analyzed different aspects within the audiovisual narrative other than youth representation. It is important to point out the fact that no restriction was considered in terms of gender, ethnicity and/or country of origin of the participants of the research articles selected for the systematic review, as well as that of the authors in any of the publications.

Table 1. *Inclusion and exclusion criteria*

Inclusion criteria	Exclusion criteria
1) Articles written in English and/or Spanish.	1) Research articles that are written in a language other than English and/or Spanish.
2) Research focused on fiction series (considering studies on the impact of content consumption in fiction series depicting violence and studies on the representation of violence using the content analysis method).	2) Research that does not explicitly focus on fiction series and the representation of violence in such productions.
3) Studies that explicitly express the results (whether quantitative, qualitative or mixed).	3) Studies that do not explicitly express the results (of any nature, whether qualitative, quantitative and/or mixed).
4) Research articles where the subjects of study are humans and/or the content of fiction series.	4) Studies that do not consider humans and/or the content of fiction series as the main subject of study or object of research.
5) Studies that specifically analyze aspects within audiovisual narratives and have the representation of violence or the impact of violence as the main variable.	5) Studies that analyze other aspects within the audiovisual narrative and do not focus specifically on the representation of violence in fiction series and/or audiovisual productions.

Source: Own elaboration, 2025.

As shown in Table 2, 18 publications were found in the selected databases: EBSCOhost, PubMed, Dialnet and Google Scholar, after searching for keywords with the filters of years (2014-2024) and languages of publication (English and Spanish). Of which, nine were excluded for having an object of study other than the content of fiction series, not having young people as the subject of study, considering historical figures as the focus of the study, not being research articles and/or considering the impact of some other medium other than streaming platforms (such as social networks and/or cinema). Likewise, it should be noted that some articles were found twice in two different databases, as shown in Table 2.

Table 2. *Articles obtained through the databases*

Author and year of publication	Title	Type of publication	Language	Database	Object of study	Meets inclusion criteria
(Mateos-Perez, 2021)	Research on Spanish fiction television series. A critical review study (1998-2020).	Academic journal article	Spanish	Google Scholar	Previous studies on Spanish fiction series.	Yes
(Pallejá, 2023)	Cristina Fernandez Cubas's haunted houses: menace and sentience	Academic journal article	English	Google Scholar	The narrative of Cristina Fernández Cubas' works as contributions to the use of the "sensitive house" in the horror genre.	No
(Granados-León et al., 2022).	Bibliometric analysis and thematic review of studies in childhood consumption from 1974 to 2019.	Academic journal article	English	Google Scholar	The influence of social marketing on children's consumption of products	No
(Rendón, 2020)	A First-Generation Scholar's Path to Knowledge	Book chapter	English	Google Scholar	Laura Rendón's self-history and theory of self-history	No

(Villarreal et al., 2024).	Eating Disorders and Hallyu: A review of the literature.	Academic journal article	Spanish	Google Scholar	The relationship of Korean content consumption (K-pop, K-beauty, K-drama and mukbang) on the increased prevalence of Eating Disorders and Food Intake.	No
(Vasquez Mego & Díaz Balcázar, 2024)	Audiovisual language in contemporary cinema: a review of the literature between 2020 and 2024.	Academic journal article	Spanish	Google Scholar	Globalization, audiovisual language and sensitive issues in film.	No
(Martín Calvete, 2024)	Mechanisms of association between digital social network use and suicidal behavior in adolescents and young adults: a systematic review.	Academic journal article	Spanish	Google Scholar	The increase of suicide in adolescents and young adults and its possible relationship with the use of social networks.	No

(Manfredi & Bartolini, 2023a)	Multilingual and Multi-Generational Italian Identity in a Netflix Series: Subtitling Generazione 56k (2021) into English	Academic journal article	English	EBSCOhost Dialnet	The representation of Italians in Netflix fiction series: "Generazione 56k".	Yes
(Garrido Muñoz de Arenillas & Zaptsi, 2021)	Archetypes, Me Too, Time's Up and the representation of diverse women on TV	Academic journal article	Spanish	EBSCOhost Dialnet	The representation of women in Netflix and HBO fiction series.	Yes
(Mussies, 2024)	"The Fate of England Rested With a 22 Year Old Boy" - Media Representations of the Youth and Childhood of King Alfred the Great.	Academic journal article	English	EBSCOhost	The representation of "Alfred the Great" in the media (including Netflix).	No
(Albertalli et al., 2024).	Alice Oseman.	Periodic publication	English	EBSCOhost	The Heartstopper series by Alice Oseman.	No
(McKenzie et al., 2021).	Young People's Perspectives and Understanding of the	Academic journal article	English	PubMed	The perspective of young people regarding the	Yes

	Suicide Story in 13 Reasons Why				representation of youth suicide in the fictional series "13 Reasons Why".	
(Vázquez Rodríguez et al., 2020).	The representation of adolescent queer identities in 'Sex Education' (Netflix, 2019-).	Academic journal article	Spanish	Dialnet	The representation of queer-identifying adolescents in the fictional series "Sex Education".	Yes
(Ferrera, 2020)	Construction of the adolescent character in European serialized fiction. Netflix original series as a case study	Academic journal article	Spanish	Dialnet	Youth characters in 23 European fiction series on Netflix.	Yes
(Simón Astudillo, 2023)	"Only yes is yes": Analysis of sexual violence in streaming series and its reception by youth audiences.	Academic journal article	Spanish	Dialnet	The representation of the "#MeToo" movement in streaming fiction series and the perception of youth audiences regarding such representation.	Yes

(Gutiérrez Lozano et al., 2020).	New online TV content distribution offers and their reception.	Book chapter	Spanish	Dialnet	The perception of Spanish youth audiences and streaming platforms.	No

Source: Own elaboration, 2025.

The quality assessment of the research articles included in the study was based on the AXIS system (Downes et al., 2016). The AXIS method successfully developed an academic text evaluation tool in order to assess, based on specific criteria, the quality of a scientific production, as well as and the risk of a given academic bias or criterion. together with a supporting help text, using the Delphi methodology. For the case of the present study, fourteen (14) specific indicators were considered, which are described in Table 3.

The first quality criterion is whether the research objectives were clear, whether the study design was appropriate, whether the sample considered was appropriate, whether the study population was clearly defined, whether the selection of subjects was adequate, whether the variables were appropriate, whether the instruments used had prior validity or were validated at the time of the study. Likewise, it is questioned whether the description of methods was adequate, whether the results are consistent with the study, whether the results of the analysis are described in the methods presented, whether there is a justification of the discussion and conclusion of the results, whether the limitations of the study are explicitly pointed out, whether there were conflicts of interest that could affect the author's point of view of interpretation. Finally, it is questioned whether ethical approval or consent was obtained (or not) from the study participants. The research articles analyzed met most of the study quality criteria.

Table 3. *Quality assessment of the included articles*

Criteria	**Study:** *Research on Spanish fiction television series. A critical review study (1998-2020)* (Mateos-Pérez, 2021).	**Study:** *Multilingual and Multi-Generational Italian Identity in a Netflix Series: Subtitling*	**Study:** *Archetypes, Me Too, Time's Up and the representation of diverse women on TV* (Garrido	**Study:** *Young People's Perspectives and Understanding of the Suicide Story in 13 Reasons Why*	**Study:** *The representation of adolescent queer identities in 'Sex Education' (Netflix, 2019-)* (Vázquez	**Study:** *Construction of the adolescent character in European fiction. Netflix original series as a case study*	**Study:** *"Solo sí es sí": Analysis of sexual violence in streaming series and its reception by youth audiences*

		Generazione 56k (2021) into English (Manfredi & Bartolini, 2023b).	Muñoz de Arenillas & Zaptsi, 2021).	(McKenzie et al., 2021).	Rodríguez et al., 2020).	(Ferrera, 2020).	(Simón Astudillo, 2023).
Were the research objectives clear?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was the study design appropriate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was the sample adequate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is the population clearly defined?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was the subject selection process adequate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were the variables appropriate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were validated instruments used or previously piloted/validated in other publications?	Yes	No	Yes	Yes	No	No	No
Are the methods adequately described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Are the results consistent?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are the results of the analysis described in the methods presented?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are the discussion and conclusion justified in the results?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are the limitations of the study noted?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there any conflict of interest that could affect the author's point of view of interpretation?	No	No	No	No	No	No	No
Was ethical approval and/or consent obtained from participants?	No	No	No	Yes	No	No	No

Source: Own elaboration, 2025.

The synthesis strategy for the systematic review can be observed in the results section, in Table 4. This is followed by the title of the publication, the methodology applied in the study, the theories used, the main variables incorporated in the study (or variable if only one was identified), the main results, and finally, the relevance and/or contribution provided.

Table 4. *Summary of selected articles*

Author	Title	Methodology used	Applied Theory(ies)	Variable(s)	Results	Relevance and/or contribution
Mateos-Perez	Research on Spanish fiction television series. A critical review study (1998-2020).	Search, evaluation, synthesis and analysis of previous research.	-Theory of cinematographic practice	Previous research on Spanish fiction series.	The publication of research related to Spanish fiction series has been increasing since the growth of streaming, with studies on content being the major object of study (before audiences and production).	The study presents a relevant contribution on the current state of the art of the number of research studies focused on streaming platforms. It also presents the main topics on which studies have previously focused (including specific topics such as feminism).
Manfredi & Bartolini	Multilingual and Multi-Generational Italian Identity in a Netflix Series: Subtitling Generazione 56k (2021) into English	-Descriptive translation study methodology. -Qualitative analysis of "multilingualism".	Not specified	-Content of the Italian fiction series *Generazione 56k* -The language used in the subtitles of the fiction series *Generazione 56k*	-There are some phrases in the dialogues that are lost when translated from one language to another. -The language used by the characters changes according to the generation and/or age range they represent.	The study highlights the importance of translating the characters' dialogues because of the possible messages that can be lost. Likewise, series such as *Generazione 56k* stand out from other series for their way of characterizing the characters shown on screen.
Garrido Muñoz of	Archetypes, Me Too, Time's Up and the representatio	Qualitative and quantitative analysis of the time given to women on screen and the quality of	Neo-archetypal theory	The representation of women in fiction	In the wake of the #MeToo movement, the female characters	The study shows the current state of women's representation in fiction series and

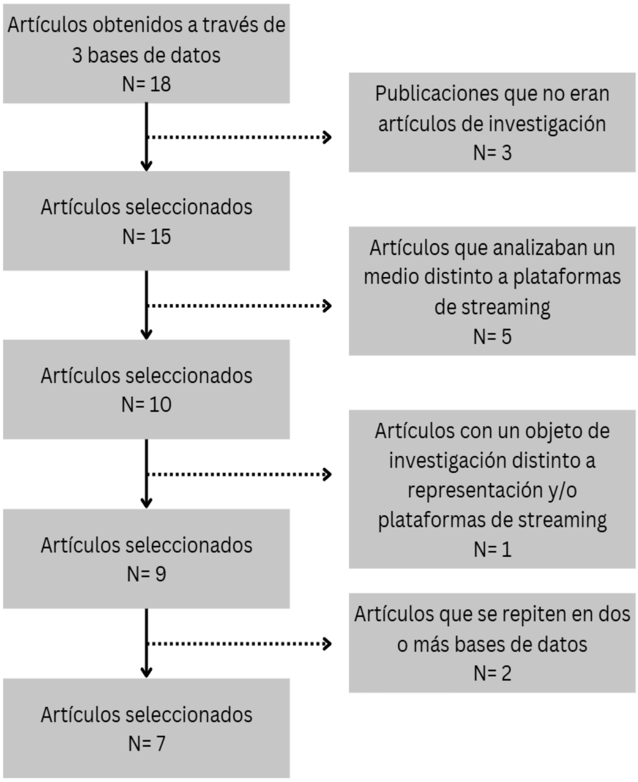
Arenillas & Zaptsi	n of diverse women on TV	the representation shown.		series (including their socio-demograp hic profile and the behavior or stereotype s given to these characters.	shown on screen are more complex and diverse than in previous times.	how stereotypes that other audiovisual productions had previously established have been subverted.
McKenzi e et al.	Young People's Perspectives and Understandin g of the Suicide Story in 13 Reasons Why	Semi-structured interviews with 25 adolescents and/or young adults regarding their perspective of the youth fiction series *13 Reasons Why*.	Not specified	-The representa tion of young people in the fiction series *13 Reasons Why*. - Teenagers' perception of the teen series *13 Reasons Why*.	The teen fiction series *13 Reasons Why* is perceived somewhat negatively by the audience that previously consumed it. With some pointing to the fact that it was overly "dramatized" and the conversations it generated were due to the shock of the explicit suicide scene.	The study presents a relevant model for the approach to youth audiences and allows to know their perception regarding the way youth issues are represented on screen.
Vázquez Rodrígu ez et al.	The representatio n of adolescent queer identities in 'Sex Education' (Netflix, 2019-).	Content analysis of the juvenile fiction series *Sex Education*.	Queer theory and the concept of intersectio nality	-The representa tion of teenage characters that are part of the LGBTIQ+ community in the teen fiction series *Sex Education*.	-Although *Sex Education* visualizes characters of different sexual identities, it propagates stereotypes such as the homophobic aggressor. -Sex Education could be a pedagogical tool for adolescents to learn about sexuality.	The study presents an analysis model that allows identifying relevant aspects within the narratives of youth fiction series, which has the possibility of being adapted to more than one fiction series.

Ferrera	Construction of the adolescent character in European serialized fiction. Netflix original series as a case study	Analysis of the characterization of adolescent characters in 23 European Netflix fiction series, applying a mixed methodology analyzing a total of 132 adolescent characters.	Not specified	-The characterization of teenage characters in productions from Europe released through the streaming platform Netflix.	-Although there is a certain equality between the presence of female and male characters, those who identify themselves as heterosexual continue to predominate. -In most youth productions, the main characters are looking for an identity.	The study presents a method and model of analysis relevant to the current state of streaming content and fiction series that allows analyzing these productions that target young audiences.
Simon Astudillo	"Only yes is yes": analysis of sexual violence in streaming series and its reception by youth audiences.	Mixed methodology consisting of content analysis of five series available on streaming to recognize how it represents sexuality, complemented by interviews with 20 young consumers of content from streaming platforms.	Not specified	-The representation of sexuality (including sexual violence) in fiction series on streaming platforms. -The perception of young people regarding the representation of sexuality in fiction series.	-The representation of sexuality has advanced, however, it still does not explicitly address issues arising from sexual violence and/or issues related to consent.	The study presents relevant information on the current state of themes related to sexuality and sexual violence in fictional series of the streaming era, as well as a content analysis model that may be useful for future audiovisual productions.

Source: Own elaboration based on Ferrera, 2020; Garrido Muñoz de Arenillas & Zaptsi, 2021; Manfredi & Bartolini, 2023b; Mateos-Pérez, 2021; McKenzie et al., 2021; Mussies, 2024; Simón Astudillo, 2023; Vázquez Rodríguez et al., 2020; Villarreal et al., 2024.

As shown in Figure 1, in the flowchart, 18 research studies available in four databases were initially considered, of which three were discarded because they were not research articles (some being book chapters and/or journal articles). Subsequently, 15 research articles were considered, of which five were discarded because they analyzed a different medium (such as film and/or literature). Then, of the remaining ten articles, one of them was discarded because its object of study was different from that of the systematic review (the representation of a historical character). Finally, with nine remaining articles, two of them were omitted due to the fact that they were repeated in two databases, being available in both databases with the search keywords. Therefore, seven research articles were selected for the synthesis of the systematic review.

Figure 1. Flow diagram



Source: Own elaboration, 2025.

Conclusions

This systematic review applied the AXIS method to review scientific articles directly related to youth representation in the streaming era. The review was based on the combination of evidence, diverse epistemological processes and the experience of the researchers who published their studies on this topic. The systematic review consisted of the review, analysis and synthesis of the content of the research articles included in the study. It considered scientific publications exclusively within the last decade. It found as main findings: 1). The fact that most of the studies reviewed and analyzed are aimed at characterizing the way in which fiction series try to represent aspects such as sexuality, mental health status and/or youth experience in their narratives; 2). A significant part of the studies reviewed focuses on the perception of young people with respect to specific variables such as the representation of a particular topic, as is the case of mental health in young people (e.g., *13 Reasons Why*); 3). Research focused on fiction series, and specifically those that seek to know the youth representation of particular topics, rely on the construction of content analysis models as the main technique. However, when dealing with quantitative variables, the use of questionnaires and/or surveys is resorted to; 4). Among the main conclusions of the studies reviewed, the following almost unanimous finding stands out: despite the positive progress of a greater visualization of people of genders and sexual identities that had previously been marginalized in audiovisual productions, the way in which fiction series currently represent some sensitive topics, for example, suicide and/or physical or mental violence, it is also recognized that there is still a long way to go to be perceived in a more positive way by the audience and, thus, avoid having a negative impact on those who dedicate their time to the consumption of fiction series. It is suggested for future studies to include a greater number of research articles to be analyzed, as well as a greater number of databases, besides considering studies in languages other than English and Spanish, as well as evaluating the possibility of expanding the search engine words.

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Advances and trends in artificial intelligence applied to new narratives

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Introduction

Currently, Artificial Intelligence (AI) poses significant concerns and challenges for higher education in the context of the increasing accessibility and capability of AI tools (Perkins, 2023). In recent years, there has been an exponential increase in published studies on this topic, with China leading the way, and much of the research is coming from education departments However, there remains a lack of understanding of the applications and pedagogical implications of AI in education (Crompton & Burke, 2023). There is a weak linkage between AI applications and pedagogical theoretical perspectives, which limits the integration of AI into education (Crompton & Burke, 2023). Serious ethical concerns and a lack of critical reflection on the associated risks persist (Zawacki-Richter et al., 2023). 19). Another problem in higher education is the lack of effective communication and the need for flexible assistance, which often prevents students from accessing the help they need (Sajja et al., 2 023). The current context of dialogue system evaluation is characterized by human evaluation as the most reliable, albeit costly and poorly reproducible, method. Therefore, automatic measures, mainly reference-based and reference-free, have been proposed to complement human evaluation (Zhang et al., 2023), 2024).

However, students are often confronted with an uninspiring theoretical curriculum, which hinders their learning and contributes to high rates of Ineffective teaching methods and the workload of teachers in assessment also complicate the process. The adoption of innovative solutions, such as AI, could help to address these challenges and improve assessment and student learning (dos Santos & Jun, 2006). The main problem faced by higher education students in developing countries is the lack of access to educational materials due to the barrier to access to educational materials (dos Santos & Junior, 2024). Since most of the academic content is taught in English, a large part of the population that is not proficient in English is excluded from higher education opportunities and socio-economic prospects q This translates into educational inequality that perpetuates the cycle of limited educational opportunities in these regions (Devlin et al., 2019). Another challenge faced by students is the lack of standardized assessment frameworks (Jun g & Kim, 2024).

AI is an emerging technology that is profoundly transforming social and productive systems, and its impact extends across multiple sectors. Given its dynamic nature, it is crucial to conduct a parallel analysis of its evolution and to develop methodologies for its evaluation (Jung & Kim, 2024). AI is defined as a set of technologies that enable machines to interpret and manage the environment. This enables more efficient and fluid interactions, especially in fields such as healthcare and education. AI refers to technologies that allow machines to interact with natural language and process it in a more efficient and fluid way, especially in fields such as healthcare and education (De Gagne, 2023). In education, models such as ChatGPT generate human-like responses and are essential in online learning and assessment (Naidu, 2023). & Sevnarayan, 2023).

AI is the ability of computers and computer systems to perform tasks that would normally require human intelligence, such as learning, reasoning, perception, decision making, and problem solving. These AI-driven evaluations aim to understand the impact and effectiveness of explanations generated by AI systems on learners in factors such as acceptability, usability, and informativeness (Du & Daniel, 2024). d (Sokol & Vogt, 2024) Bibliometrics has been useful in this context, providing indicators to evaluate the technologies (Sokol & Vogt, 2024). (Sued, 2024).

Evaluation is a key process in education that collects, analyzes and interprets educational progress. It is classified into formative assessment, which provides continuous feedback, and summative assessment, which measures student learning. AI influences these online assessment processes, presenting both benefits and challenges related to academic integrity. (Naidu & Sevnarayan, 2023).

This process involves measuring the performance and progress of students. Assessment is essential for understanding the strengths and weaknesses of students, which allows teachers to adjust their teaching methods to meet their students' needs. The main types of assessment are formative, which provides continuous feedback throughout the course, and summative, which assesses learning at the end of a course. AI has great potential to support the assessment of students during the learning process, as it can process more information than a human being and provide more personalized learning experiences at the end of an academic term (Fan, 2023). This allows early detection of learning difficulties and the implementation of correct interventions. (Dos Santos & Junior, 2024).

Another problem is the lack of generalization and interpretability in existing cognitive diagnostic methods, so a new hybrid approach is proposed that combines symbolic representations and optimization techniques to more effectively model the complex interaction between learners and exercises in educational environments. (Shen et al., 2024).

This bibliometric study will focus on answering the following key questions:

- What are the main trends in the application of artificial intelligence to assessment in higher education?
- Which institutions, countries and authors are leading research in this field?
- How has the scientific production on this topic evolved over time?
- What are the main sources and journals publishing research on AI and assessment in higher education?
- Which topics and keywords are the most researched in the field of artificial intelligence? applied to educational assessment?

With the aim of analyzing in depth the advances and trends in educational assessment with artificial intelligence, Bibliometric analysis was used. Bibliometric analysis was first popularized by the use of artificial intelligence. This methodology allows the processing of large volumes of bibliographic data from the Scopus database, covering the period from 1986 to 2023, identifying patterns of bibliographic data and identifying patterns of bibliographic data.

Bibliometrics is a multidisciplinary field used to analyze the behavior of literary production and its evolution from 1986 to 2023, identifying patterns, relationships and emerging trends. It was defined by Otlet in 1934 as "measurement applied to books" and focuses on obtaining a quantitative profile of literary records and their evolution within a specific temporal context. The resulting bibliometric maps provide a visual representation of the structure and evolution of the field, facilitating the identification of the main sources of scientific knowledge (Leilah & Yara, 2005).

The resulting bibliometric maps provide a visual representation of the structure and evolution of the field, facilitating the identification of the main sources of scientific knowledge. Scientific knowledge mapping, also known as academic mapping, is a developing area of research based on the theories and practices of scientific research. The research area is based on the theories and practices of scientometrics and bibliometrics (Yi & Jiang, 2024).

To deepen the bibliometric analysis, the Vosviewer and RStudio programs were used. Vosviewer allowed visualizing the relationships between documents, authors and keywords, generating knowledge maps (Laudano et. Al.,2018) which facilitates Opting for bibliometric techniques allows the analysis of a greater volume and diversity of articles compared to other methodologies, such as meta-analyses or meta-analytical studies (Laudano et al.,2018). systematic review studies (Martens et al., 2016).

RStudio, together with the bibliometrix package, was used to perform quantitative analyses and generate bibliometric indicators, which allowed us to identify trends in the number of articles in the literature.

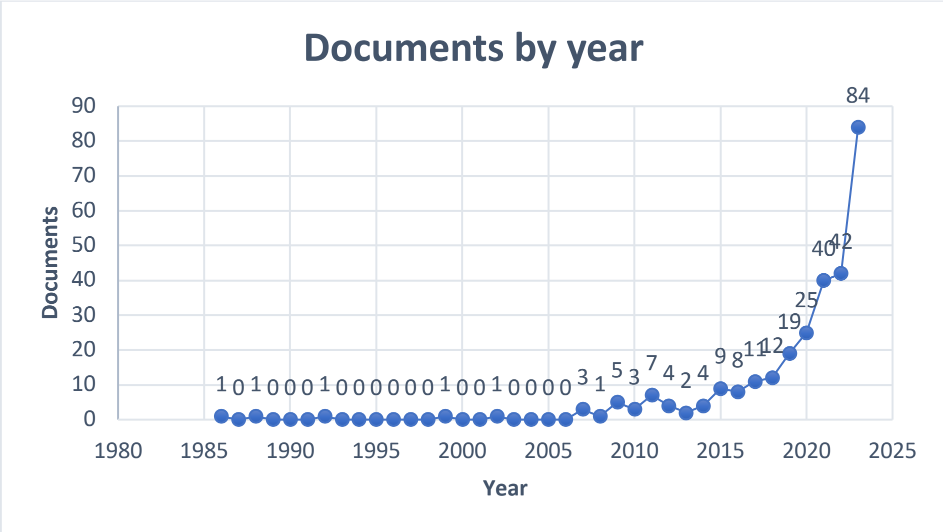
Collection of initial statistical data

This study aims to examine and evaluate the current knowledge of the field and to identify emerging trends and key contributors to the field. Search criteria were established for the Scopus database, which was used to identify issues, opportunities and challenges. A total of 284 articles were collected using the search string “higher education” AND evaluation AND “artificial intelligence”, which were analyzed in terms of publication, country, author, prod, and article type. After the search, the data were exported to Excel in CSV format and then imported and examined using the visualization software VOSviewer (version 1.6.20) and RStudi. or to generate detailed bibliometric indicators.

Analysis of the volume of documents

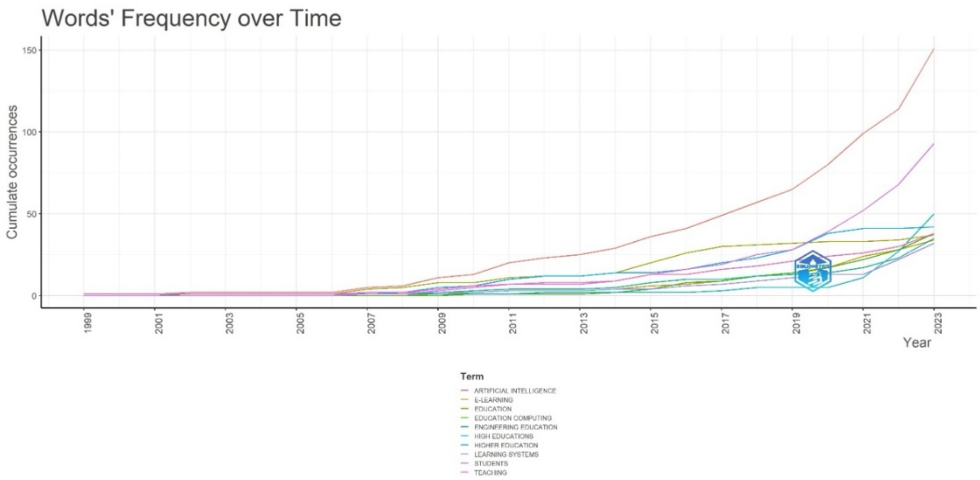
Figure 1 shows the evolution of the volume of documents. Figure 1 shows the evolution of the number of documents per year over time. An increasing trend in the number of documents over the years can be observed, with a steady growth from 1986 to 1986. There has been a significant increase since the 2000s, with a steady growth in the number of documents per year over time. A peak is observed from 1986 to 2019, with some year-to-year fluctuations. A peak is observed in 2023, which appears to be a value of about 2.5 million documents per year. The range of values goes from about 2 document the graph gives a clear perspective of the evolution of the productivity of the papers in the 1980s to almost 84 papers in 2023.

Figure 1 Visual representation of papers by year



It can help to understand the main research topics and approaches in the field, shows the articles found for the most frequent terms in the literature. The most frequent term is "artificial intelligence", which first appeared in 1999 and has an exogenous trend. Education-related terms such as "students," "higher education," "educational computing," "teaching," "education," and "education" are the most frequently used terms in the field. Concepts such as "e-learning" and "learning systems" also appear frequently, and "engineering education" also have a significant presence. The indicates an interest in technologies applied to education.

Figure 2. Visual representation of word frequency over time



Citations per year

This graph shows the evolution of the average number of citations per year of a set of documents over time. The average number of citations per year begins in Average citations per year start at very low levels, around 0, during the 1980s and early 1990s. From 2002 onwards, the average number of citations per year is very low. Around 2019, there is a steady increase in average annual appointments, with an upward trend. Around 2019, there is a strong increase in average annual appointments, with an upward trend. From 2012 onwards, there is a decline in the average number of citations per year, but the average number of citations per document per year is still increasing. In the last few years, the graph shows a trend towards an increase in the average number of citations per document per year, but it remains relatively high compared to the beginning of the period under analysis. The trend is upward in the average number of citations per year, reaching almost 3.8 citations per document in 2023. i 3.8 citations per document in 2023.

Figure 3. *Visual representation of citations per year*

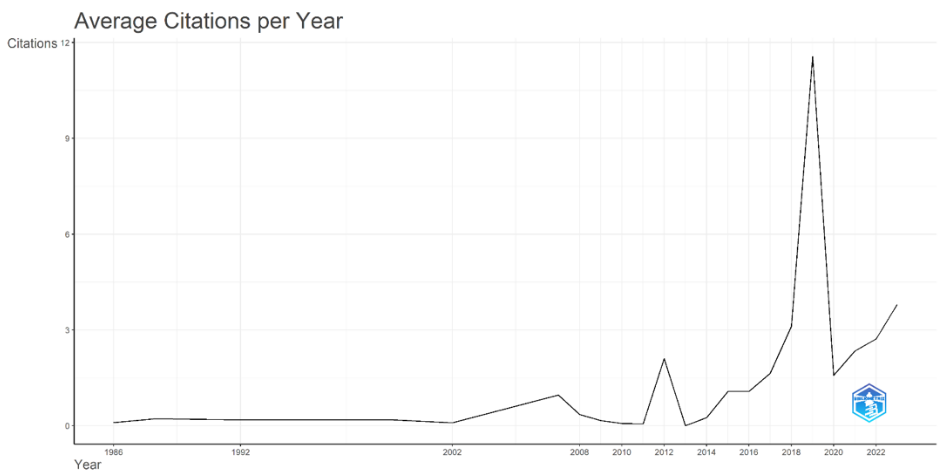


Figure 4 shows a comparison of the number of papers published by the top 15 authors. Dunder, I., and Seljan, S. Currie, G., Degboe, B.M., Dwitayanti, Y., Gaglo, K., Kossingou, G.M., Luimula, M., Ouya, S., Pavlovski, M., Ravyse, W., Sgouropoulou, C., and Tu, Y.F. have 2 docu The number of documents per author is of the total number of papers, while the rest of the authors have about one, while the rest of the authors have about two papers each. in about of authors have about 1 document each.

Figure 4. Representation of documents by year of origin .

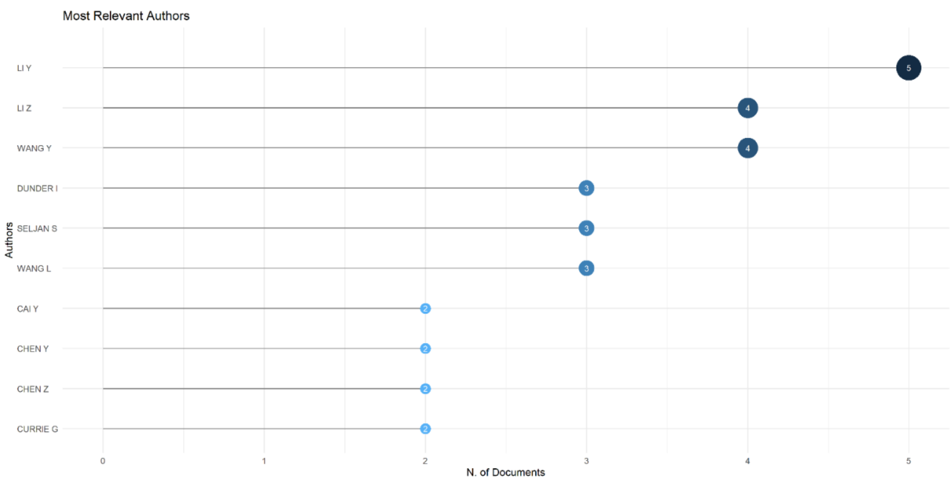
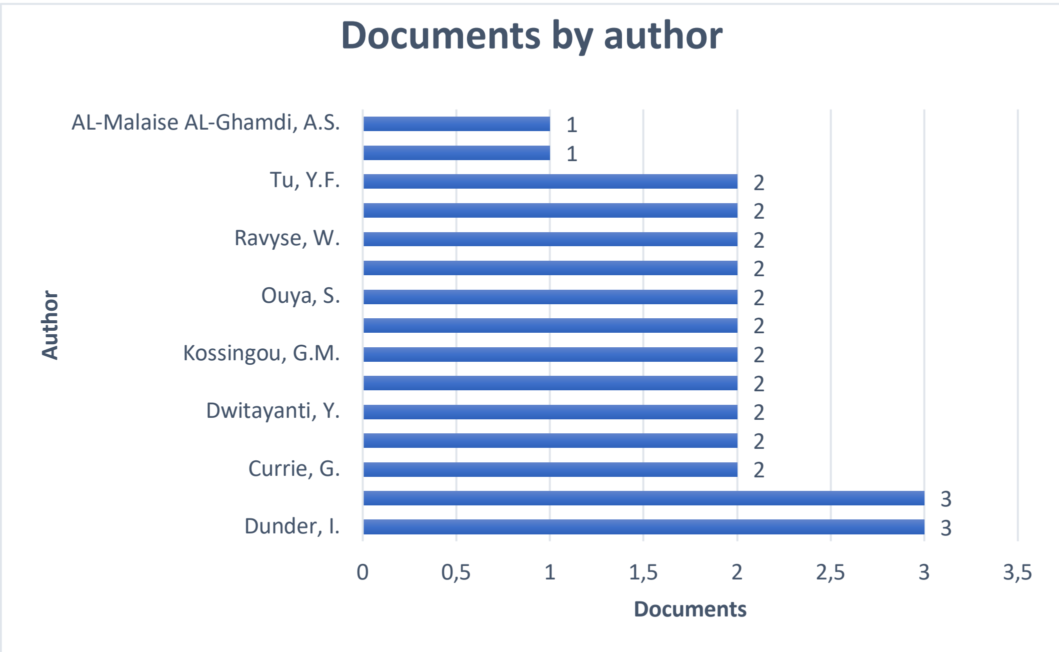


Figure 5. Visual representation of the most relevant authors



Documents by year of origin

This figure shows the evolution of the number of documents published per year for the different sources or publication channels. There is great variability in the number of documents published per year. The source "Lecture Notes in Computer Science Including Subseries Lecture Notes in Artificial Intelligence and lecture notes In Bioinformatics" presents a large variability in the number of papers per year among the different sources, with some presenting more pronounced peaks than others. The source "ACM International Con The source "Ference Proceeding Series" shows an increasing trend, reaching almost 5 papers per year in 2023. "Advances In Intelligent Systems And Computing" and "Communications In Computer And Inform The "Advances In Intelligent Systems And Computing" and "Communications In Computer And Information Science" have a more stable behavior over time, with values between 1 and 2 papers per year. "Journal Of Physics" has a more stable behavior over time, with values between 1 and 2 papers per year. Conference Series" is the source with the fewest articles, maintaining levels of less than 1 paper per year. Some interannual fluctuations are observed in the Majority This suggests a variable dynamic in the production of documents in this field. visual representation of the number of documents by year of origin.

This number of documents published by the 15 most important countries or territories. This type of analysis by country or territory is crucial to identify the most cited documents. This information can help to identify the main research centers and the most active geographic regions within the field of study. This information can help to identify the main research centers and the most active geographic regions within the field of study. This information can help to elucidate the patterns of international collaboration and the global distribution of scientific output. China tops the list with the highest number of scientific papers in the world. Spain ranks third with 19 papers, while India ranks fourth with 14. The United Kingdom (12 papers), Mexico (12 papers), Indonesia and Portugal complete the list. The United Kingdom (10 papers), Australia (9 papers) and Germany (8 papers) have moderate productivity levels. Indonesia and Portugal complete the list with the lowest number of publications, with about 7 documents each.

There is an uneven distribution of publishing activity, with the following standing out do China and the United States as the main contributors, of other countries with more modest contributions.

The blue nodes, such as China, represent a cluster of high-impact research, with connections between countries with the highest citation volumes in a specific field of research. to countries such as the UK, Sweden and India, indicating strong research ties or shared citation networks. Ch Spain is the center within the red cluster and also acts as a significant node in the collaborative network, particularly connected to countries such as Germany, France, Germany, Italy, Spain and the United States, which indicate strong research ties or shared citation networks. The different countries, such as Germany, Mexico, Turkey and Colombia, suggesting an active role in the generation and dissemination of knowledge within its region. The thickness of the lines indicates the strength of the relationships, with closer countries collaborating more closely, with closer countries collaborating more closely.

Type of publication

This analysis of the distribution of documents by type of publication can help to understand the structure and structure of the literature. This analysis provides valuable information on the publication habits and preferences of researchers in the field. It can help to understand the structure and dynamics of scientific communication in the field. This pie chart illustrates the percentage distribution of documents by type of publication. The most predominant category is "Conference Papers", which represents 51.8% of the total number of papers. Papers", which represents 51.8% of the total number of documents, and 'Articles', which represents 51.8% of the total number of documents, are in second place with 29.6% of the total number of papers. Conference reviews" account for 10.9% of the total number of papers, with 29.6% of the total number of documents. The less common types, such as "Book Chapter", "Review", "Retracted" and "Book", range from 0.4% to 3.5%.

Most of the activity is concentrated in papers. Most of the activity is concentrated in conference papers and journal articles, suggesting that these are the main channels of scientific communication in this field. The low proportion of scientific communication in this field is concentrated in conference papers and journal articles. cough "Book The low proportion of "Book" and "Book chapter" formats indicates that these are less relevant compared to publications in conferences and journals. The figure shows the number of relevant documents in comparison to those published in conferences and journals.

Documents by affiliation

The figure presents the number of documents published according to the institutional affiliation of the authors, which is useful in terms of the number of documents published. This is useful to identify the main actors in the field of study and to understand the research dynamics in the different institutions. Tecnológico de Monterrey is the institution with the highest number of published papers according to institutional affiliation. The Tecnológico de Monterrey is the institution with the highest number of documents, reaching 7 publications, which indicates its leadership in research production in the area analyzed. Universidad Rey A bdulaziz University and the University of Zagreb also stand out, although with significantly fewer publications, around 4 each. The University of Salamanca, the Faculty of Humanities of the University of Zagreb, Turun ammattikorkeakoulu, and the Charles S. Charles University, the Faculty of

Humanities of the University of Zagreb, Turun ammattikorkeakoulu, and the University of Zagreb also stand out, although with significantly fewer publications, around 4 each. Turt have a similar number of papers, with approximately 3, suggesting a strong research activity at these institutions.

Other universities, such as Polytechnic University Other universities, such as the Polytechnic University of Aguascalientes, the University of South Africa and the Autonomous University of Aguascalientes, have lower figures, with 2 papers each. The distribution shows that the first positions are in the top three, with 2 papers each. occupied the distribution shows that the top positions are occupied by institutions with a considerable number of publications, while the remaining institutions contribute more modestly. The visual representation of documents by affiliation institutions contributes more modestly.

Cooccurrence of auto key words

author keyword co-occurrence network created in VOSviewer identifies a total of 19 keywords grouped into 5 clusters. est This network graph visualizes the connections between various terms related to "artificial intelligence", "higher education" and associated concepts. Cluster 1 groups terms related to assessment methods and active learning in the educational context.

Keywords such as "active learning", "assessment", "active learning", "min Data mining", 'data mining', 'education' and 'evaluation' suggest an interest in applying data mining techniques to evaluate and improve teaching processes.

The central component of this group is the interest in data mining. This group is focused on educational evaluation, with special emphasis on measuring the impact of new methodologies and technologies on student learning. This group is also interested in educational evaluation, with special emphasis on measuring the impact of new methodologies and technologies on student learning. This group is focused on the application of new methodologies and technologies on student learning. This group shows a clear trend towards the use of data analysis tools to generate real-time feedback and optimize academic performance. back in real time and optimize academic performance.

Cluster 2 focuses on the application of artificial intelligence (AI) in the educational context. It includes terms such as "AI", "chatbot", "decision support system", "e-learning" and "fuzzy logic", q The presence of "chatbot" highlights the role of conversational agents. The role of chatbots as tools to support both students and educators in e-learning environments, facilitating a more dynamic and interactive educational experience.

Cluster 3 includes key AI technologies such as "ChatGPT", "machine learning", "natural language processing (NLP)" and "performance evaluation". These technologies are deeply interconnected with the "eva The prominence of "ChatGPT" underscores the growing interest in natural language generation models, which suggests that, in addition to developing these applications, there is an emphasis on measuring their effectiveness in a variety of educational settings. as essential tools to enhance the learning experience, enabling more natural interactions. between humans and machines in educational settings.

Cluster 4 highlights the connection between "educational innovation," "higher education" and "learning analytics." The presence of these terms suggests that technological innovation in educational settings can be a key driver of the learning experience.

Connections between authors, countries of affiliation and research topics. and research

This Sankey plot visualizes the interrelationships between key entities within the bibliometric analysis: countries, authors and research topics. The first column, labeled AU_CO (countries of origin), groups together the countries of origin of the authors who have contributed significantly to the field. China stands out as the country with the largest number of researchers, reflecting its leadership in terms of publications and scientific output. Other relevant countries in this context are the United Kingdom, Australia, India, Finland, Spain, Croatia and Indonesia. Other relevant countries in this context are the United Kingdom, Australia, India, Finland, Spain, Croatia and Indonesia. The second column, AU (authors), presents the names of the main researchers.

Each bar relates these authors to their country of origin and research topics, making it easier to visualize their contributions. Authors such as Li Y, Li Z, Wang Y and Wang L, linked to China, are among the most prominent. In addition, researchers such as Luimula M and Dunder I from Finland and Seljan S from Croatia also appear as notable contributors, The size and length of the bars reflect the level of contribution of each author in terms of research impact. The third column, DE (research terms or areas of research), groups the main topics addressed by these authors. The second column, DE (research terms or areas of research), groups the main topics addressed by these authors. The second column, DE (research terms or areas of research), groups the main topics addressed by these authors. Common research areas include Artificial Intelligence (AI), Machine Learning, Natural Language Processing (NLP), Chatbot and Higher Education. In addition, in addition, terms such as Academic Integrity, Fuzzy Logic, Learning, Decision Support System, and ChatGPT are also connected to specific research contributions.

The connections that appear in this section are the connections between the three columns (country, author, research area) reflect collaborative contributions and shared research approaches among researchers from different countries. For example, Li Y is linked to AI research, while Seljan S is related to fields such as fuzzy logic and Chatbot. jan S is S is related to fields such as fuzzy logic and Chatbot, while Wang Y and Wan L are related to higher education and natural language processing. g L are related to higher education and natural language processing.

The most cited authors within the bibliometric analysis, highlighting those with the greatest impact in terms of citations. Tu, Y.F. tops the list with only two papers but 66 this place him as the most influential researcher in this set of studies, suggesting that his publications have been widely referenced by the academic community.

Authors such as Dunder, I. and Seljan, S. also have a notable presence, each with three papers and 22 citations, although their impact on the academic community has been limited. Their impact per article is lower compared to Tu, Y.F. This reflects that, although they have contributed significantly, their individual papers have not reached the same level of influence. The same level of influence has been achieved.

Other authors, such as Pavlovski, M., Degboe, B.M., and Gaglo, K., with two papers and 18 citations each, show a moderate level of recognition. Luimula, M. and Ravyse, W. have received 13 citations for their two papers, which places them at a lower level of academic impact.

At the bottom of the page, this page shows a moderate level of recognition, while Luimula, M. and Ravyse, W. have received 13 citations for their two papers, which places them at a lower level of academic impact. At the bottom of the page, this page shows a moderate level of recognition. a table is Dwitayanti, Y. anti, Y., with two papers but no citations yet, which may indicate that his research is recent or has not had a significant impact so far.

Conclusions

This research conducted a comprehensive bibliometric analysis of publications addressing advances and trends in the use of artificial intelligence for assessment in higher education. Using data from the Scopus database, covering the period from 1986 to 2023, a significant body of scholarly work was analyzed. These publications not only document scientific advances in the field of higher education, but also provide a comprehensive overview of the current state of the art in the field of assessment in higher education. These publications not only document scientific advances in the field, highlighting innovative findings, but also provide a fundamental platform for the development of new theories and the promotion of critical scholarly debates.

The study reveals the growing relevance of artificial intelligence in educational assessment and underscores the importance of further research in this area to address current gaps and challenges. In particular, it identifies the need to create a new and critical academic research agenda. In particular, it identifies the need for further exploration of how artificial intelligence can be effectively integrated into education systems, ensuring equity, transparency and efficiency in assessment. It also stresses the urgency of creating solid methodological frameworks that allow for a wider and more accurate application of these technologies in a variety of educational contexts.

The following are the main findings of the bibliometric analysis:

Publication sources: The top five preferred journals for these publications are Lecture Notes in Computer Science, including the subseries Lecture Notes in Artificial Intelligence and Lecture Notes i n Bioinformatics, ACM International Conference Proceeding Series, Advances in Intelligent Systems and Computing, Communications in Computer and Information Science and Journal of Physics Conference Series. The year-to-year fluctuations in most of these sources suggest variable dynamics in the production of papers in this field. The most of these sources suggest a variable dynamic in the production of papers within this field.

Cooccurrence of keywords: The most used keywords are artificial intelligence, higher education and machine learning. These results can guide future researchers in the selection of keywords to easily identify specific research fields in search engines. Search engines. authors' contribution: In terms of article production, Li Y and Li Z are the most prolific authors, while “Tu”, “Dunder” and “Seljan” have the highest total citations. The analysis shows that researchers from different geographical areas are interconnected through citations in the field of AI. “Seljan” have the highest total citations. analysis shows that researchers from different geographical areas are interconnected through citations in the field of AI. IA.

Impact of publications: In terms of contribution to publication, Dunder, I. and Seljan, S. are the authors with the highest number of papers, each with about 3 publications. The most cited publication, with 1,040 citations, is Systematic Review of Research on Artificial Intelligence Applications in Higher Education - Where are the Educators? The most cited country, with 1,040 citations, is Systematic Review of Research on Artificial Intelligence Applications in Higher Education - Where are the Educators? in Higher Education - Where Are the Educators? The most cited countries are Germany, Vietnam, USA and China. The predominant category is "Conference Papers", which represents 51.8% of the total number of papers.

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Public policy strategies for the communication of inclusive digitalization in universities

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Introduction

Public policy strategies for inclusive digitization in Peruvian universities encompass a series of initiatives aimed at reducing the digital divide and promoting equitable access to digital educational resources. This issue is especially relevant in Peru, where socioeconomic inequalities and geographic challenges have hindered the integration of technology in higher education. In 2021, approximately 91% of rural households lacked Internet access, underscoring the urgent need for comprehensive public policy interventions to ensure that all students, regardless of socioeconomic status or geographic location, can benefit from digital learning opportunities (APEC, 2023; International Trade Administration, 2024). On the other hand, the Peruvian government has recognized the importance of addressing these inequalities through various strategies, especially after the COVID-19 pandemic, which exacerbated gaps in access to education. Policies have been developed under initiatives such as the APEC Internet and Digital Economy Roadmap (AIDER), with the objective of improving digital literacy and technological infrastructure, with special attention to marginalized groups, such as women and indigenous populations (Digital Development, 2022; Lara-Navarra et al., 2023).

Otherwise, a prominent example is the Inclusive Digital Education (IDE) program, which highlights the importance of integrated approaches that consider the specific needs of students and teachers in different contexts (Generis Online, 2024). However, significant challenges remain, such as the gender gap in access to Information and Communication Technologies (ICTs) and insufficient digital infrastructure in rural areas (Colina-Ysea et al., 2024; SOM

Steering Committee on Economic and Technical Cooperation & Human Resources Development Working Group, 2024). In addition, the regulatory framework is also evolving, with regulations such as the General Education Law, which promotes inclusive education. However, the effectiveness of these policies depends largely on robust implementation and collaboration between various actors, including government agencies, educational institutions and civil society (Burneo, Barrantes & Duffó, 2022; Education Profiles, 2021). Inclusive digitization in Peruvian universities is therefore a dynamic and complex process, which presents opportunities for innovation, but also persistent barriers to equity. Continued research and public policy development will be key to overcoming these challenges and achieving a more inclusive digital education ecosystem that benefits the entire population (Barrantes, Duffó & Burneo, 2021).

The historical background

The path towards inclusive digitization in Peruvian universities has been shaped by various socioeconomic and technological factors over the years. Historically, Peru has faced significant challenges related to digital access, especially in rural and remote areas, where a substantial percentage of the population resides, estimated between 40% and 70% (APEC, 2023). Moreover, by 2021, only 9% of rural households had access to the Internet, evidencing a deep digital divide that limits educational opportunities for many (USAID, 2024). This context highlights the need to develop public policy strategies to reduce these gaps and ensure equitable access to digital education resources. Thus, in the early 1990s, Peru became one of the first countries in Latin America to establish a permanent Internet connection. However, progress in expanding connectivity to rural areas has been slow, often hampered by fragmented civil society support and limitations in policy implementation (USAID, 2022). Digital entrepreneurship drove economic growth in Peru between 2019 and 2023, accelerated by the pandemic. It highlights the importance of technology, strategic collaboration and inclusion for sustainable and equitable development (Acosta, K., & Lara, D. (2024). Ultimately, the digital ecosystem in Peru has been marked by contrasts; while urban areas, particularly Lima, benefit from advances in FinTech and GovTech, rural areas remain digitally underserved (USAID, 2022; USAID, 2024).

On the other hand, in recent years the Peruvian government has made progress in reducing these disparities through initiatives aimed at promoting digital skills and entrepreneurship, especially in small and medium-sized enterprises (USAID, 2024). However, regulatory challenges persist, affecting the ability of educational institutions to effectively integrate technology into their curricula and teaching methodologies. The lack of comprehensive Internet coverage and the need for adapted regulatory frameworks have become central issues in discussions on digital inclusion in education (USAID, 2024; Lara-Navarra et al., 2025). In response to these challenges, the Ministry of Education has implemented policies to foster equality and combat discrimination in schools, aligning with national and international commitments to inclusion (Generis Global Legal Services, 2025). However, for these policies to be effective, they must be complemented by coordinated efforts to improve the digital competencies of university teachers, which would contribute to raising the quality of higher education (Colina-Ysea et al., 2024).

In closing, the digital landscape of Peruvian higher education continues to evolve, demanding innovative approaches and sustained collaboration among different actors to achieve a fully inclusive digital education system.

The current public policy framework

The current public policy framework in Peru on digital inclusion, especially in higher education, is strongly influenced by the overall objectives of improving digital access and equity. A central axis of this framework is the closing of the indigenous digital divide and the promotion of inclusive growth, in alignment with the APEC Internet and Digital Economy Roadmap (APEC, 2023). Given this, policy recommendations focus on the "SEA+5C" approach, which emphasizes Structure, Enablers and Accountability, with attention to the following aspects: commitment, connection, content, coordination and capacity (SOM Steering Committee on Economic and Technical Cooperation & Human Resources Development Working Group, 2024).

On the other hand, concerning the focus on inclusion, Peruvian policies are designed to address structural inequalities, exacerbated by the transition to digital education during the COVID-19 pandemic. This includes the specific challenges faced by women, who often experience thematic inequalities that affect their conditions of study (Burneo, Barrantes & Duffó, 2022). Government recognition of these inequalities has driven initiatives aimed at ensuring that the benefits of digital education are accessible to all, particularly marginalized groups, including indigenous populations and people with disabilities (Education Profiles, 2021).

In contrast, in terms of policy implementation and best practices, the emphasis on best practices and the exchange of ideas among APEC economies has been identified as playing a crucial role in shaping Peru's policy environment. This is evident in the collaboration between local policy makers, indigenous stakeholders and academic experts, who gather information and share experiences to guide future actions in digital inclusion (APEC, 2023). Thus, initiatives under the Southern Voice project, which investigates the impact of digital devices in higher education, reinforce the need for policies that consider the socioeconomic context of users, especially in rural areas, where access to digital resources remains limited (Barrantes, Duffó & Burneo, 2021; Magallanes-Blanco & Levine, 2020). Also, with respect to the regulatory environment, the General Law on Education and the General Law on Persons with Disabilities establish a framework for inclusive education, stipulating that public and private universities must have special admission programs and reserve places for people with disabilities (Education Profiles, 2021). In short, this framework reflects the country's commitment to promoting an inclusive educational environment that addresses the diversity of student needs and ensures equitable access to digital education resources.

Closing digital divides in education is important because it will enable citizens to participate in digital ventures that unite geographically separated economic activities within a digital entrepreneurship ecosystem.

According to few research studies have measured the effectiveness of different types of actions to reduce digital inequalities. The study identified employment, educational level and broadband coverage as static variables that influence digital access. As dynamic variables, it identified dissemination activities aimed at social literacy, which do generate changes in these inequalities, but are not sufficient. The study concludes that in order to reduce digital inequalities, policies that combine these two variables must be established.

Finally, it is necessary to determine how public policies in education take into account the digital right of children to privacy within the framework of the United Nations' Observation No. 25. In a study conducted in Australia, it was concluded that the education departments of the different States should work to build more transparent public policies on children's digital rights in order to make informed decisions on the part of the families of these children.

Strategies for inclusive digitization

To begin with, regarding the landscape of inclusive digital education initiatives, this aims to address the changing priorities and demands around inclusive digital education and hybrid learning. This approach recognizes the importance of examining international literature and current work in this field to identify areas for exploration, focusing on four interrelated policy areas: technology, students and teachers, educational institutions, and governance systems (European Agency for Special Needs and Inclusive Education, 2022). Similarly, IDE's findings suggest that an integrated strategy is crucial for the digital transformation of inclusive education, providing a framework for policymakers who wish to strengthen educational resilience and inclusion. There is a virtuous cycle that starts with al

On the other hand, in terms of improving digital literacy and access, it is considered that, in order to close the digital divide in remote areas, particularly in the context of Peruvian universities, the expansion of digital literacy programs is essential. In this regard, there is a positive perception on the part of the faculty regarding the need to develop digital skills and gamified strategies in virtual educational programs (Nuñez-Pacheco et al., 2023). These initiatives are already landed in training plans proposed for times of COVID 19 pandemic (Pérez-Sánchez et al., 2022). In the same context, during the pandemic, digital platforms emerged to strengthen education in rural areas of Peru with low connectivity. These tools facilitate access to curricular content and improve interaction among students, promoting digital education (Echegaray et al., 2024).

These digital inclusion programs should specifically target underrepresented groups, such as women and older people in the community, to ensure broad participation in digital initiatives (Heeks, 2025). In addition, creating locally relevant content in native languages can improve engagement and effectiveness, especially in sectors such as agriculture, commerce, and governance, which are crucial for rural communities (Heeks, 2025; Nipo et al., 2024). A digital governance model significantly improved academic management at the National University of San Martin in the city of Tarapoto, specifically in data governance, however, there is still a gap to be filled with respect to IT security (Garcia-Estrella C. et al., 2025).

On the other hand, in terms of infrastructure development and support policies, investment in digital infrastructure is fundamental to facilitate access to technology in rural areas, allowing these communities to compete in the digital economy. However, these investments must be accompanied by supportive policies that encourage digital adoption and promote a holistic approach, empowering rural entrepreneurs and educational institutions (Nipo et al., 2024). In addition, collaboration between local governments, educational institutions and community organizations can amplify the impact of these initiatives by providing the necessary institutional support (Heeks, 2025).

Similarly, pertaining to the point of mental health and emotional well-being, it is critical to address the emotional and cognitive challenges that may arise with the transition to online learning environments. Technological strategies should focus not only on improving Internet access, but also on fostering a positive cognitive and emotional state among students (Vargas-Merino et al., 2022). Consequently, this dual approach may help mitigate problems such as emotional exhaustion and feelings of isolation, which have been exacerbated by the rapid transition to digital platforms during the COVID-19 pandemic (Cassaretto, Espinosa, & Chau, 2024; Vargas-Merino et al, 2022).

Challenges and barriers to public policy in the digital era.

The digital divide poses significant challenges for inclusive digitization in Peruvian universities, particularly in light of gender disparities and socioeconomic factors. Peruvian universities have focused on studying with greater interest the digital culture and highlights the requirement to generate national policies that encourage this in an active online intercultural citizenship (Turpo, O. et al., 2023). There is a substantial gender digital divide, with women experiencing less access to Information and Communication Technologies (ICTs) compared to their male counterparts. This gap is evident in both educational and domestic settings, where sociocultural norms further exacerbate inequalities in technology use and access (Burneo et al. 2022; Cassaretto et al. 2024). In addition, ICT access is further complicated by geographic disparities, especially in remote and rural areas. Studies indicate that isolated communities face unique challenges related to Internet adoption, stemming from factors such as geographic isolation, an aging population, and limited economic opportunities. These contextual elements often discourage engagement with digital technologies and limit the effectiveness of ICT initiatives. (Magallanes-Blanco & Levine, 2020; Heeks, 2025)

The government of Peru has implemented digital literacy strategies to strengthen essential competencies and skills in compulsory education. Initiatives such as "The Education we want for Peru" have achieved significant progress in the education system, although they still lag behind more developed regions (Hueyo el al., 2019). The National Financial Inclusion Strategy (NFIS) in Peru seeks to improve access to financial services, but the digital divide, especially in rural areas, remains a challenge. Although there is progress, it does not prioritize the most vulnerable populations, so it is necessary to redefine its objectives to achieve effective universal inclusion (Machaca et al., 2024). In that sense, ICT policies in Peru are essential for integration into the global economy, but their impact is limited due to the lack of cultural and social approach, depending on the market to reduce digital divides (Mansilla, E. 2020). Although the government has worked to reduce the digital divide, inequalities between rural and urban areas persist. Comprehensive policies have mainly favored cities, combining infrastructure, devices and digital training (Robinson et al., 2020; Iparraguirre, P.. 2024). Similarly, during the COVID-19 pandemic, the problem of digital inclusion became more pronounced. Many university students from vulnerable sectors struggled to secure quality devices and reliable internet access for online learning. Some universities responded by establishing initiatives such as the Connectivity Fund, aimed at providing essential technology to disadvantaged students; however, gaps in digital inclusion based on socioeconomic status and territorial factors persisted (Cassaretto et al. 2024). At the same time, although infrastructure improvements, such as telecenters, have been introduced to improve connectivity in remote areas, these efforts alone are not sufficient to foster social and economic inclusion. Successful integration of ICT into the educational experience requires comprehensive support, including digital literacy training, relevant local content, and institutional partnerships to ensure sustained impact and engagement with technology (Heeks, 2025).

The future of public policies for digitization in Peruvian universities.

To begin with, future strategies for inclusive digitization in Peruvian universities should prioritize the promotion of equitable access to digital tools such as ChatGPT, ensuring that diverse student populations benefit from these resources. This includes the development of support systems that cater to students with different levels of digital literacy, enabling a more personalized and effective integration of technology in educational settings (Arbulú-Ballesteros et al., 2024); therefore, establishing knowledge-sharing communities will also be essential to sustain the long-term adoption and continuous improvement of digital tools across institutions. The advancement of digital education in Peru is beginning to show good results at both the teacher and student level, despite still finding a large gap with respect to school infrastructure related to actual learning (Delgado-Martín, A., & Larrú-Ramos, J. (2024).

Furthermore, with respect to economic sustainability to ensure the viability of implementing AI tools, a comprehensive cost-benefit analysis should be performed, focusing on resource allocation strategies that support upgrades and ongoing system maintenance. Investing in local technical expertise is crucial to provide sustained support for these initiatives, thus improving the overall effectiveness of digital education tools in universities (Arbulú-Ballesteros et al., 2024); thus, as the digital economy in Peru grows, aligning educational strategies with economic sustainability will be vital for long-term success.

Thus, on policy development the establishment of clear and adaptable policies for the use of AI tools within universities is imperative. Regular evaluations of the effectiveness of implementation through defined metrics will provide valuable information on the strengths and weaknesses of these strategies. In addition, developing robust feedback mechanisms will facilitate continuous improvement, allowing institutions to adapt their approaches based on empirical evidence and changing needs (Arbulú-Ballesteros et al., 2024); this follows that creating institutional frameworks that promote sustainable AI integration will enhance the educational experience while addressing the unique challenges faced by Peruvian universities.

At the same time, the unique contexts of the Peruvian higher education sector need to be addressed to develop actionable policies. University administrators, faculty members, educational technology planners, and policy makers must collaborate to address infrastructure needs and ensure that AI integration responds to the local challenges and opportunities present in regional universities (Arbulú-Ballesteros et al., 2024); as, by focusing on these personalized goals, stakeholders can foster a more inclusive educational environment that leverages digital technology to improve learning outcomes.

Finally, it is important to consider the importance of anti-discrimination policies as part of future directions, strengthening anti-discrimination policies within educational institutions should be prioritized. This involves legislative reforms and collaborative efforts among educators, government officials, and civil society organizations to create inclusive learning environments (Garcia-Estrella et al., 2025); therefore, ongoing evaluations of these policies will be necessary to adapt them to the evolving educational landscape and ensure that they effectively reduce bias and promote equity.

Conclusions

Digital education favors social inclusion at the university level, but its impact depends largely on the availability of technological infrastructure and the level of digital competence of both students and teachers (Ortiz, R. 2023 & Paola et al., 2024). Inclusive digitization in Peruvian universities is a dynamic and complex process that presents both opportunities for innovation and persistent obstacles to equity. Continued research and public policy development will be key to overcoming these challenges and achieving a more inclusive digital education ecosystem. Collaboration between government, educational institutions and civil society is critical to ensure that all students, regardless of socioeconomic status or geographic location, can benefit from digital learning opportunities.

To move towards effective inclusive digitization, it is crucial to implement strategies that prioritize equitable access to digital tools and economic sustainability (Arbulú-Ballesteros et al., 2024). This includes the development of clear and adaptive policies for the use of artificial intelligence tools within universities, as well as the creation of support systems that cater to students with different levels of digital literacy. In addition, it is essential to foster collaboration among diverse stakeholders to address local challenges and promote equity.

Strengthening anti-discrimination policies within educational institutions is also vital. This involves legislative reforms and collaborative efforts among educators, government officials, and civil society organizations to create inclusive learning environments. Ongoing evaluations of these policies will be necessary to adapt them to the evolving educational landscape and ensure that they effectively reduce bias and promote equity.

In summary, inclusive digitization in Peruvian universities requires a comprehensive and collaborative approach that addresses both structural barriers and specific student needs. Only through sustained commitment and the implementation of effective policies will it be possible to achieve a digital education system that benefits the entire population.

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Virtual laboratories with AI for teaching engineering based on audiovisual communication

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Introduction

In the current context of engineering education, characterized by challenges related to accessibility, sustainability and adaptation to individual needs, virtual laboratories (VL) have emerged as an innovative and complementary alternative to real laboratories (RL), whose implementation faces limitations of cost, infrastructure and flexibility. This advance has been significantly driven by the rapid development of Information and Communication Technologies (ICT) and accelerated by the COVID-19 pandemic, which profoundly transformed educational methods by favoring teaching-learning environments mediated by emerging technologies such as virtual reality (VR). In this scenario, VR-based LVs have shown remarkable effectiveness and acceptance among students, as evidenced by a study with 420 engineering students from Spanish and Portuguese universities, who value these tools positively without underestimating the importance of LRs in face-to-face teaching. Thus, post-pandemic hybrid models integrate both approaches, allowing a more complete, flexible and contextualized training to the new demands of the educational environment (Vergara et al., 2022). This tool, when combined with emerging technologies such as artificial intelligence (AI), allows not only the recreation of complex scenarios but also the personalization of the educational experience according to the capabilities, interests and pace of each student.

The integration of AI into these virtual laboratories has revolutionized engineering education. AI facilitates the creation of advanced and personalized simulations, adapting the educational content to the learning style of each student. In addition, it allows the automation of tasks such as assessment and feedback, freeing teachers to focus on more strategic aspects of the educational process (Knoth et al., 2024); (Ounejjar et al., 2024). Recent studies have shown that the use of AI-powered virtual laboratories significantly improves academic performance and understanding of complex concepts in engineering (Castro-Gutierrez et al., 2023); (Ren et al., 2024).

However, the implementation of these AI-powered virtual laboratories raises a fundamental question: how do these environments contribute to the improvement of learning in engineering education, in terms of sustainability, accessibility, personalization, and academic performance? Answering this question is essential to understand the true impact of these tools on engineering education and the evolution of educational methodologies. This question not only addresses the technological level, but also the pedagogical, social and environmental levels.

The objective of this chapter is to analyze the impact of the use of virtual laboratories powered by artificial intelligence in engineering education, highlighting their pedagogical, technological, social and environmental benefits. It will explore how these tools not only optimize the learning process, but also promote a more inclusive and sustainable education. In addition, the ethical and practical implications of their implementation will be addressed, providing a comprehensive view of their role in modern education.

Sustainability is a key aspect of contemporary education. Virtual laboratories reduce the need for physical resources and minimize the environmental impact associated with traditional laboratories. By eliminating the consumption of disposable materials and decreasing the carbon footprint, they contribute to a greener and more responsible education (Ching-Pong Poo et al., 2023); (N. Zhang & Liu, 2024). This virtualization makes it possible to reduce the consumption of materials per student by more than 60%, which also implies considerable savings for educational institutions.

In terms of accessibility, these virtual environments have proven to be a powerful tool to democratize access to hands-on experiences in engineering education, allowing students from different geographical and socioeconomic backgrounds to access high quality resources without relying on physical infrastructure, the effective implementation of these laboratories still faces significant challenges. The sudden arrival of the COVID-19 pandemic forced educational institutions to adopt rapid solutions, often without the time needed to adequately plan their integration into the curriculum. In the engineering field, where hands-on learning is deeply tied to the operation of specialized equipment and the development of complex technical skills, the transition to remote laboratories was particularly complex. Although significant progress was made through the use of simulators, specialized software, and experiment recordings, these resources were not always available or sufficient to replicate the full hands-on experience. This highlights the need for further refinement of virtual environments and their documentation to ensure that equity of access is accompanied by formative quality that meets the high standards required for engineering education (Alkhasawneh et al., 2024). Also, virtual laboratories can be adapted to the needs of people with disabilities through accessible interfaces and assistive technology, promoting a truly inclusive education.

Personalization of learning is another significant advantage. AI integrated into virtual labs can adapt content and activities according to the needs and individual progress of each student, facilitating more effective, learner-centered learning. This adaptability improves motivation and engagement, essential elements for academic success (Serrano & Moreno-García, 2024). In addition, technologies such as intelligent tutoring systems and learning analytics make it possible to monitor progress in real time and dynamically adjust the level of difficulty and the content addressed (Arnau-González et al., 2025).

The incorporation of virtual laboratories powered by artificial intelligence in engineering education represents a profound transformation that responds to the contemporary challenges of sustainability, accessibility, personalization and improved academic performance. By analyzing recent studies and practical experiences, both best practices and challenges faced by institutions in integrating these emerging technologies are revealed. This critical assessment provides educators, researchers, and educational policy makers with a solid foundation for making informed decisions about the use of virtual laboratories to promote more equitable, efficient teaching that is in line with the current demands of the educational and professional environment.

Key Technologies in Virtual Laboratories

Another key aspect in the evolution of virtual laboratories is the incorporation of emerging technologies that encourage interaction and experimentation-based learning. The integration of augmented and virtual reality platforms allows students to manipulate equipment and systems in immersive digital environments, bringing the hands-on experience closer to real-world scenarios. Likewise, the use of digital twins, powered by AI and real-time simulation models, facilitates the monitoring and dynamic adjustment of variables in virtual experiments. These tools not only enrich the teaching-learning process, but also enhance student autonomy, promoting a self-directed and adaptive approach to engineering education (Sayil et al., 2022). These advanced simulation capabilities are complemented by specialized artificial intelligence techniques, such as physics-informed neural networks (PINNs), which extend educational applications in areas that require modeling of complex physical phenomena. For example, in thermal problem solving, PINNs have proven to be highly effective in predicting heat transfer in multiphase flows, capturing dynamics such as bubble motion in fluids or interaction with heated surfaces (Rom, 2023). Unlike digital twins, which replicate complete systems, PINNs focus on optimizing the accuracy of specific models by integrating physical parameters (thermal conductivity, convection coefficients) into their training, which reduces the dependence on expensive computational simulations. This synergy between digital twins and PINN allows students to experiment with realistic scenarios and real-time results, even in disciplines where traditional numerical methods are limiting.

In addition to remote collaboration, mixed reality (MR) is revolutionizing training processes in industrial and educational environments by integrating interactive and adaptive models. In the field of engineering, this technology allows students and professionals to experiment with virtual prototypes in real time, optimizing the learning of mechanical and electrical assemblies without the need for physical material. A representative case is the use of MRI in the training of aeronautical maintenance technicians, where the combination of immersive simulations and remote assistance with AR facilitates the identification of faults and the execution of complex procedures with greater precision. The implementation of these tools not only improves knowledge retention, but also reduces operating costs and minimizes risks associated with handling delicate or hazardous equipment (Yan et al., 2025).

The evolution of these learning platforms is complemented by the use of AI-powered virtual assistants designed to provide real-time guidance and support to learners. These assistants can answer questions, suggest personalized resources, and monitor learners' performance to provide specific recommendations to optimize their learning process. A prime example is the ALEKS system, which employs AI algorithms to continuously assess the user's level of understanding and adjust educational content based on their strengths and weaknesses. Thus, the integration of these assistants in AI-based learning environments not only improves learner autonomy, but also enhances interaction with the content in a dynamic and adaptive manner. (Ounejjar et al., 2024)

The integration of artificial intelligence in educational environments not only optimizes the personalization of learning, but also transforms the way students and teachers interact with knowledge. In this context, machine learning and AI-driven adaptive systems make it possible to generate more effective teaching strategies based on real-time data collection and analysis. These tools not only facilitate the identification of conceptual gaps in students, but also suggest specific reinforcement methodologies to improve content assimilation. Likewise, the development of intelligent educational assistants, capable of interpreting individual progress and dynamically adapting the difficulty of exercises, contributes to more inclusive and accessible teaching. As these technologies evolve, their implementation in education requires an ethical and methodological approach to ensure their proper integration into training programs, maximizing their impact on students' academic development. (Knoth et al., 2024).

A fundamental aspect of integrating digital twins into engineering education is their ability to enhance training in predictive maintenance and optimization of complex systems. By providing highly accurate virtual representations of critical infrastructure, these technologies enable students to analyze equipment behavior and predict potential failures before they occur, reducing operating costs and improving efficiency. In addition, the incorporation of artificial intelligence algorithms in digital twins makes it possible to analyze large volumes of data in real time, facilitating pattern identification and evidence-based decision making. An outstanding case is the use of digital twins in the training of engineers in the energy sector, where dynamic models that replicate the operation of power plants have been developed to train future professionals in the efficient management of power generation and distribution. This convergence between advanced simulation, data analysis and hands-on learning represents a significant advance in technical education, aligning academic training with the demands and challenges of modern industry. (Sleiti et al., 2022).

Despite the increasing use of emerging technologies in engineering education, significant challenges persist in their effective implementation and adoption. Recent studies have shown that while 50% of research on educational technologies focuses on learning analytics, only a small percentage explores the potential of extended reality (XR) in training environments. This reflects the need to develop more robust methodological frameworks to accurately assess the impact of these tools in the teaching of technical disciplines. In addition, the lack of integration between different technologies, such as artificial intelligence, digital twins and virtual reality, limits their applicability in real-world scenarios. Overcoming these gaps requires an interdisciplinary approach that not only considers technological advances, but also incorporates effective pedagogical principles, ensuring that these innovations truly contribute to enhancing the educational experience and preparing students for the challenges of the industrial sector. (Sembey et al., 2024)

Applications in Engineering Education

The combination of artificial intelligence and virtual laboratories in engineering education not only optimizes access to hands-on experiences, but also facilitates personalization of learning and continuous assessment of student progress. Thanks to big data analysis and machine learning models, it is possible to identify patterns in student performance, allowing content and methodologies to be tailored to their specific needs. In addition, automated feedback, based on AI algorithms, provides recommendations in real time, improving the understanding of concepts and problem solving in simulated environments. These advances not only enhance university education, but also prepare future engineers to face complex technological challenges by providing them with tools that replicate real industrial situations and foster training that is more aligned with the demands of the labor market. (Ren et al., 2024)

A key aspect in the evolution of virtual laboratories is their ability to adapt to the changing needs of the educational and professional environment. The implementation of online learning environments has proven to be an effective strategy to ensure the continuity of engineering education, even in crisis situations such as the COVID-19 pandemic. These digital spaces have allowed students to access advanced simulation tools, develop practical skills in safe conditions, and benefit from innovative methodologies such as inquiry-based learning (IBL). In addition, the incorporation of interactive technologies has reduced barriers to access to technical education, improving the equity and flexibility of the training process. Although challenges such as connectivity and workload management persist, the benefits far outweigh the limitations, consolidating virtual laboratories as a key piece in the teaching of electricity and engineering in general. (Díez-Pascual et al., 2025).

A fundamental aspect in the integration of virtual laboratories in the teaching of electromagnetism is their ability to promote autonomous and experimental learning. These platforms not only allow the observation of electromagnetic phenomena in real time, but also facilitate the manipulation of key parameters, enabling the formulation and testing of hypotheses within a controlled environment. In addition, tools based on artificial intelligence and virtual reality have been shown to improve conceptual understanding by providing immersive and adaptive experiences, adjusting the difficulty of the simulations according to the student's progress. Recent research has shown that the use of virtual laboratories in electromagnetics courses not only increases academic performance, but also enhances skills such as logical reasoning and problem solving, essential in the training of engineers and scientists. (Castro-Gutiérrez et al., 2023).

The implementation of virtual laboratories and interactive simulations in the teaching of electricity and magnetism not only benefits undergraduate students, but has also proven to be effective at earlier educational levels. The incorporation of scientific simulations adapted to different ages allows a better understanding of abstract concepts, fostering the development of critical and reflective thinking from an early stage. However, the effectiveness of these tools depends to a large extent on their design and on the teacher's guidance, since certain representations can generate misconceptions about the behavior of electrical circuits. Therefore, it is essential that educators carefully select digital resources and complement their use with explanations that reinforce the fundamental principles of electricity and electromagnetism. Thus, virtual laboratories not only represent an accessible and flexible alternative for teaching science and engineering, but also a powerful means to stimulate curiosity and meaningful learning in students. (Falloon, 2019)

A complementary approach to virtual laboratories and remote instrumentation is the use of augmented reality (AR) environments for teaching electromagnetics. These technologies allow interactive visualizations of electric and magnetic fields to be superimposed on the real world, facilitating the understanding of abstract concepts. Applications such as Circuit AR and Magnetic Field Visualizer have proven to be effective tools for reinforcing spatial intuition and improving the interpretation of complex physical phenomena. Furthermore, the combination of AR with remote instrumentation systems based on Node.js and Raspberry Pi 4 enables the creation of hybrid experiences that integrate real device manipulation with enriched simulations, optimizing both the accessibility and quality of experiential learning in STEM education. (Irwandi et al., 2021)

A key aspect in the evolution of virtual laboratories is the integration of emerging technologies such as Augmented Reality (AR), Virtual Reality (VR) and the Internet of Things (IoT), combined with Artificial Intelligence (AI) and Machine Learning (ML). These tools enable the creation of immersive and interactive environments where students can experience complex physical phenomena with greater accuracy and realism. For example, the use of IoT sensors in electromagnetics experiments enables real-time data collection, which can be analyzed by AI to personalize feedback and optimize learning processes. In turn, AR and VR offer three-dimensional simulations that strengthen the understanding of abstract concepts, improving the visualization and manipulation of electric and magnetic fields. The combination of these technologies not only enriches engineering education, but also poses new challenges in terms of accessibility, interoperability and data security. As these solutions advance, their effective implementation will depend on innovative strategies that balance technological development with student-centered pedagogical approaches. (Arnau-Gonzalez et al., 2025).

Sustainability and Accessibility in Engineering Education

The use of virtual laboratories powered by artificial intelligence in engineering education constitutes an innovative and strategic response to contemporary challenges of sustainability, equity and efficiency. These emerging technologies reshape engineering access, teaching and learning, combining economic and environmental benefits with an ethical commitment to inclusion. A concrete example of their effectiveness is evidenced in a quasi-experimental study with 92 civil engineering students, where a gamified LV to simulate a concrete lab reduced the time required in physical labs by 16%, improved navigation proficiency, and decreased the need for assistance. In addition, students showed a high willingness to adopt these environments in future sessions (Vahdatikhaki et al., 2024). This case demonstrates how virtual environments, by requiring a low initial investment and being highly scalable, offer a viable alternative for institutions with limited resources, maximizing long-term and human profitability (Isaza Domínguez et al., 2024).

The social dimension of virtual laboratories is reflected in their ability to democratize access to engineering education, overcoming geographical, economic and technological barriers. This flexibility is evidenced in a study conducted with 153 students of Information Technology in Spain and Latin America, where a virtual laboratory with Arduino increased grades by 28.8% and attendance by 247.18%, also improving student motivation and productivity (Lamo et al., 2022). Likewise, cloud or open source platforms, such as those analyzed by Castro et al., (2024), have facilitated flexible and student-centered learning, especially in regions with digital divides. In this sense, the ability of these platforms to offer accessible educational environments adapted to diverse social and economic realities is crucial for advancing educational inclusion. However, the industrial implementation of these technologies must also be properly evaluated. An analysis of 13 cases of AR/VR applications in manufacturing showed reductions of 23.61% in process time and 25% in cycle time, without compromising workload or usability (Zigart et al., 2023). These results highlight the need to design accessible, well-integrated educational and operational environments capable of bridging gaps in both educational and industrial settings. Higher education, especially in contexts of digital divides, has been boosted by the use of these virtual environments, which have proven effective in offering more flexible and autonomous education, as observed in developing countries, where these technological solutions are actively contributing to leveling access to technical and scientific education (Alyoussef, 2023).

The positive impact of virtual laboratories is also evident from an environmental perspective. Virtualization of academic practices significantly reduces the use of physical inputs such as chemical reagents, electronic boards and electromechanical components, which are not only costly, but also generate hazardous waste and demand high levels of energy for operation and storage (Ching-Pong Poo et al., 2023). Recent studies indicate that replacing physical practices with digital simulations can reduce the consumption of materials per student, which translates into a smaller institutional carbon footprint. This transformation not only represents an improvement in terms of operational sustainability, but also contributes to the fulfillment of the Sustainable Development Goals, in particular SDG 4, which promotes quality, inclusive and equitable education, and SDG 13, aimed at climate action. By allowing students to experiment with complex situations without generating material waste, virtual laboratories reaffirm universities' commitment to environmentally responsible education (Lopera-Pérez et al., 2022).

In addition to these advantages, virtual laboratories with AI open an invaluable opportunity for the construction of a truly inclusive education for people with disabilities. The design of these environments can incorporate assistive technologies such as screen readers, voice interfaces, text magnifiers, or eye-tracking systems, allowing students with visual, hearing, or motor disabilities to actively participate in laboratory activities. This accessibility not only eliminates physical barriers, but also promotes an approach of social justice and universal education, where functional diversity is seen as an enriching element of the classroom, rather than a limitation. By overcoming the restrictions imposed by conventional infrastructure, virtual laboratories expand the scope of accessibility beyond the geographic or economic, allowing all students, regardless of their conditions, to have the opportunity to experiment, explore and learn on equal terms.

These dimensions - supported by empirical studies such as those of Vahdati (2025) on gamification of concrete laboratories, Zigart (2024) on industrial applications of AR/VR and Lana (2025) in the context of STEAM education - evidence that the implementation of virtual laboratories with artificial intelligence in engineering education goes beyond mere instrumental use. Not only do they satisfy technological requirements, such as real-time simulations or the use of digital twins, and pedagogical ones, such as personalization of learning or adaptive assessment, but they represent a profound transformation of the educational paradigm, in which sustainability, inclusion and operational efficiency are strategically integrated. As detailed in the original paper, these environments have been shown to reduce material consumption by up to 60% (Ching-Pong Poo et al., 2023), facilitate educational access in vulnerable contexts (Castro et al., 2024) and improve training times by 23-28% without compromising learning quality (Zigart, 2024; Lamo, 2022).

Far from being a simple alternative to face-to-face laboratories, this modality is configured as a transformative educational infrastructure. It reconfigures sustainability by reducing hazardous waste and carbon footprint, aligning with Sustainable Development Goals 4 and 13. It redefines accessibility through the use of universal design principles, such as voice interfaces and screen readers, along with hybrid models that eliminate geographic and socioeconomic barriers. Furthermore, it legitimizes its effectiveness with concrete metrics, from a 16% improvement in time efficiency in face-to-face environments (Vahdatikhaki et al., 2024), to a 247% increase in student engagement in virtual experiences (Lamo et al., 2022). However, as noted at the beginning of the chapter, its widespread adoption faces significant challenges, such as the need to train teachers in the ethical and pedagogical use of artificial intelligence, ensure interoperability between technological platforms and establish solid regulatory frameworks for the management of student data. Only by addressing these conditions will it be possible to consolidate this model as a proposal that is not only innovative, but also ethical, inclusive and relevant to train engineers prepared to face the challenges of a society undergoing digital and environmental transformation.

Conclusion

The incorporation of virtual laboratories powered by artificial intelligence in engineering education represents a profound transformation in traditional pedagogical models. Throughout the chapter, it has been evidenced that these tools not only reconfigure the dynamics of access to knowledge, but also promote new ways of learning, teaching and evaluating. The possibility of recreating highly complex experimental environments in interactive digital scenarios allows training that is more in line with the demands of the contemporary industrial and technological context. In this sense, virtual laboratories with AI should not be considered mere substitutes for physical spaces, but rather instruments of pedagogical innovation that facilitate autonomous learning, the development of practical skills and deep conceptual understanding. One of the most significant contributions expected to be achieved with this research is to validate the strategic role of artificial intelligence as a facilitating agent for the personalization of learning in engineering. Thanks to its adaptive capabilities, AI not only allows adjusting contents and methodologies to the profile of each student, but also optimizes feedback and monitoring of academic progress. This aspect is especially valuable in disciplines such as engineering, where theoretical abstraction and practical application require highly differentiated teaching processes. Thus, virtual laboratories are consolidated as safe, dynamic and flexible experimentation environments, where error becomes a learning opportunity, and simulation becomes an effective form of professional preparation.

From an analytical approach, it can be affirmed that the pedagogical benefits of this educational modality are articulated with other dimensions of great impact: sustainability, accessibility and equity. The virtualization of academic practices reduces the consumption of physical and energy resources, minimizing the environmental footprint of institutions. It also eliminates the geographical and economic barriers that have traditionally restricted access to technical education, allowing students from diverse contexts to actively participate in quality training experiences. This democratization of knowledge represents not only a technological advance, but also an ethical commitment to educational justice.

Despite these advances, the chapter has also highlighted some challenges that require attention. These include the need for robust methodological frameworks to assess the impact of these technologies, the effective integration of multiple digital tools, and teacher training in techno pedagogical competencies. Future research will need to delve deeper into these aspects, incorporating interdisciplinary approaches that link engineering, pedagogy, and data science. It will also be necessary to study in greater detail the effect of these technologies on student motivation, critical thinking and problem solving to ensure that the observed benefits are sustained in the long term. From a propositional perspective, it is recommended that institutional policies that promote the design and implementation of accessible, sustainable and student-centered virtual laboratories be encouraged. This implies not only investing in technological infrastructure, but also consolidating collaborative networks between universities, research centers and educational organizations. The creation of open repositories of simulations, the development of intelligent learning support systems, and the integration of extended reality tools are lines of action that could further enhance the impact of these platforms in higher education. The analysis presented in this chapter leads to the conclusion that virtual laboratories with artificial intelligence not only enrich engineering education, but also open a new horizon for educational innovation. Their effective implementation will contribute to train more prepared, critical and adaptable professionals, capable of facing the challenges of an increasingly digitalized and complex world. Research in this field has only just begun, and its transformative potential augurs a profound and sustained evolution of educational practices in the field of applied sciences.

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Technological innovation in communication and its impact on higher education

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Introduction

Sustainable development is closely linked to social welfare, and education plays a fundamental role in this process. In this context, information and communication technologies (ICTs) have emerged as key tools for educational transformation, facilitating access to knowledge and improving the quality of teaching. The incorporation of technological tools such as mobile devices, digital whiteboards, massive open online courses (MOOCs), virtual laboratories and interactive simulations has enabled the evolution of teaching methods, both in schools and in higher education institutions (Haleem et al., 2022) .

In the last two years, the evolution of new technologies has played a key role in various professional and personal fields. Their application has enabled the expansion of teleworking, virtual meetings, advances in the field of medicine and the development of vaccines, as well as the creation of new products and markets. In addition, its impact has been evident in everyday activities, facilitating access to distance education and promoting significant growth in e-commerce (Molleví et al., 2023) .

The problem of Technological Innovation and its Impact on Higher Education is centered on the gap between technological development and its effective application in the educational field. Although universities have incorporated digital tools in their teaching methods, an efficient integration that improves the quality of learning is not always achieved.

Despite efforts to modernize teaching, many institutions still apply traditional methods, making it difficult for students to adapt to a work environment that demands digital skills, critical thinking and problem solving skills (Mezinska et al., 2024) .

The objective of the research is to transform teaching and learning processes, adapting them to the demands of today's world. It seeks to integrate technological tools to improve the quality of higher education, facilitating access to knowledge and developing digital competencies in students.

The justification for the study responds to the need to adapt teaching models to the new demands of the 21st century. Today's society is in a digital era where access to information and the development of technological skills are essential for academic and professional growth.

From this perspective, the application of digital tools in education not only optimizes the learning process, but also expands opportunities for access to knowledge. Virtual platforms, interactive resources and artificial intelligence have facilitated the development of more flexible educational environments, where students can learn at their own pace and from any location. Their implementation not only benefits students and teachers, but also contributes to the evolution of the education system as a whole, guaranteeing an education more in line with the demands of the modern world.

Digital Transformation in University Teaching

The COVID-19 pandemic, declared in March 2020, forced governments and education systems to make unprecedented decisions to deal with the crisis. Among the measures adopted, the closure of educational institutions, from schools to universities, was one of the most drastic. In response, several countries implemented strategies to ensure the continuity of learning, promoting the adaptation of traditional educational models (Parker et al., 2021; Sahu, 2020)

One of the main solutions implemented was the transition from face-to-face teaching to online modalities. This change, supported by the use of digital technologies, made it possible to maintain academic activities in a context of health restrictions. In this sense, the use of virtual platforms was consolidated as an essential resource for education, facilitated by advances in information and communication technologies (ICT) (Petchamé et al., 2021; Pokhrel & Chhetri, 2021)

ICTs have played a fundamental role in the transformation of higher education, providing tools for distance learning and enabling the creation of innovative educational environments. Thanks to these technological solutions, institutions were able to adapt to the challenges imposed by the pandemic and ensure the continuity of the teaching process in a context of global emergency (Petchamé et al., 2023) .

Higher education has undergone a significant evolution due to the impact of digital transformation. This process goes beyond the simple digitalization of academic materials, as it implies a strategic change in the way institutions manage and structure their educational models. Digital transformation is a process aimed at optimizing the operation of an entity through profound changes in its structure, achieved through the integration of information technologies, computing, communication and connectivity. This definition emphasizes its strategic nature and its potential to generate disruptive changes in traditional organizational models. As a result, digital transformation not only modernizes the tools used in teaching, but may also require the redefinition of organizational structures and the implementation of new strategies that allow educational institutions to adapt to a constantly changing environment (Bygstad et al., 2022; Verhoef et al., 2021) .

The digital transformation of education, as a series of innovative applications of digital technology in education, is characterized as intelligent, data-driven, networked and knowledge-based. A data-driven education system seeks to quantify the educational process and its effects through digital technology and the collection of effective data generated during various educational activities. A networked education meets the needs of users by facilitating access, exchange and sharing of information, and overcoming the spatio-temporal limitations of education through remote and asynchronous collaboration. A knowledge-based education system emphasizes the use of knowledge graphs in educational digitization to represent concepts and their relationships, create libraries of knowledge base resources, perform interpretable assessments, and lay the foundation for adaptive learning and teaching. Finally, an intelligent education system emphasizes the adoption of artificial intelligence technology to transform teaching methods and talent training models to better meet the demands of mass and personalized education. Overall, it is the reconstruction of a series of components, such as intelligent environment, teaching, resources, evaluation and governance, which constitute a high-quality, learner-centered education model and system (Wang et al., 2023) .

The core operations of HEIs are influenced by the digital transformation. It permeates all aspects of teaching, learning, research and work in higher education, including methods, locations, formats and objectives. The transformation involves the creation of new infrastructures and increased use of digital communications for learning, teaching, research, administration and interaction, as well as the need for students and staff to acquire digital skills for their future jobs. Universities require a coherent strategy that enables the entire institution to collaborate on digital initiatives. Good leadership and dedicated staff who can communicate and implement their goals with confidence are critical to achieving this. With a clear vision, stakeholders and team members will be more engaged and focused in the digital transformation process (Abad et al., 2020) .

Digital transformation has become one of the main objectives of educational institutions, particularly higher education institutions, in recent years. It is an important step to gain a competitive advantage in the sector, as well as for corporate institutions. Several research studies have addressed the issue of digital transformation. Processes, policies, practices, competencies and models are changed in a deliberate and planned way to take advantage of technological improvements, as well as their increased social influence, when digital transformation is implemented. In this context, higher education institutions, like any other sector, must expand comprehensively if they are to keep up with changing market situations and developments and remain a key driver of this change over time (Nermend et al., 2022) .

As technology advances, teaching methods must also adapt to the changes, and procedures must evolve, controlling their impact. One of the advantages of digital technologies in schools is the possibility of monitoring the use of resources and student activity. The consumption figures for e-books, video tutorials, course materials and other digital content are abundant. The use of technology in education presents its own challenges, as it can be complex and time consuming. The educator must weigh the benefits of investing time in technology adoption against its potential impact on student learning (Bygstad et al., 2022) .

Teacher training universities, as well as the second and third phases of teacher training, play a key role in the context of the digital transformation. Continuous digitization is transforming education in terms of the design of teaching and the learning process on which it is based. Teacher education institutions have a special responsibility to train future teachers to acquire or expand their competencies related to digitization within the framework of professionalization, so that they can use new digital technologies and corresponding concepts for the development of teaching and learning (Brändle et al., 2023)

Teachers must be able to take advantage of modern digital technologies to facilitate and enhance the achievement of interdisciplinary and subject-specific educational objectives. The use of digital technologies Technologies in the classroom, such as virtual reality or explanatory videos, are not an end, but should be linked with the expectation of adding value to teaching and learning (Hillmayr et al., 2020) .

In the current context marked by digitalization, educational institutions face the challenge of ensuring digital equity as a key element for success in hybrid and distance learning environments. To achieve this, it is essential to adopt an inclusive approach that takes into account the diverse characteristics of the student body, as well as their specific needs (Imran et al., 2025) .

Several studies agree that this equity implies guaranteeing adequate access to technological resources such as devices, stable Internet connection and adequate furniture for study. In addition, institutional support for students and teachers through the provision of these tools can reduce existing digital divides. This type of support not only improves the educational experience, but also positively influences permanence and academic performance, essential aspects in today's competitive higher education landscape (Dhawan, 2020) .

The role of teachers has been fundamental in the implementation of innovative changes within the school environment. They have acted as active agents driving transformations in teaching methods, adapting to new tools and strategies to improve educational quality. Their participation has been key in the constant evolution of the educational system (Adu & Zondo, 2024) .

However, when it comes to the incorporation of information and communication technologies (ICTs) in pedagogical processes, many teachers face difficulties. This is largely due to the lack of specialized pedagogical preparation in the use of these tools, which limits their effective application in the classroom. In order for ICTs to be used effectively in teaching, it is necessary for teachers to develop specific pedagogical skills. These skills are essential to facilitate the transition from traditional methods to more inclusive digital teaching approaches that prioritize active student learning and encourage student participation (Hervás-Torres et al., 2024) .

In specific areas such as the teaching of economics, there is evidence of a low implementation of technologies in the classroom. This is attributed to limited teacher training that does not provide the necessary tools to integrate ICT into the educational process, leading to the predominant use of conventional methods. The lack of training in digital competencies has generated a reliance on traditional methodologies, which have proven to be ineffective in achieving meaningful learning in subjects such as Economics. This situation highlights the need to rethink teacher training programs in order to improve teacher preparation for the challenges of digital education (Adu & Zondo, 2022) .

Artificial Intelligence and Personalized Learning

The incorporation of artificial intelligence (AI) in the educational environment represents a challenge that goes beyond simple technological adoption. This process requires overcoming negative perceptions, strengthening the digital competencies of teachers and students, and addressing ethical and practical concerns about its application. Although there is a growing positive perception about the potential of AI as an educational tool, especially at primary and secondary levels, there is still a low level of knowledge about its functions and real benefits in pedagogical practice (Galindo et al., 2024) .

Recent research has identified concrete advantages of the use of AI in education, such as time optimization in the development of lesson plans, the search for teaching resources and the correction of assignments. These tools can offer significant support to everyday teaching tasks, contributing to a more efficient management of time and resources (Chounta et al., 2022)

However, despite these benefits, there are still reservations on the part of teachers. Many of these concerns are related to the reliability of AI tools, the fear of possible errors in their operation and the learning load involved in their correct implementation. These factors generate an additional barrier that must be addressed through continuous training, accompaniment and clear strategies for their effective integration into the educational process (Kabudi et al., 2021) .

With the advancement of AI-based learning tools, adaptive learning systems can now offer an even more personalized and engaging experience for learners and can be considered a very powerful solution for personalized education. Adaptive learning systems are strengthened by artificial intelligence (AI), which combines natural language processing, predictive analytics and machine learning algorithms to handle massive volumes of data. This allows AI-driven adaptive learning platforms to dynamically modify techniques, content, and feedback to meet the needs of all learners (Buciuman & Potra, 2025) .

The use of artificial intelligence in adaptive learning has improved academic performance and learning engagement, with encouraging results. However, it is essential to address moral dilemmas and ensure successful execution. AI can process large data sets to identify patterns that humans would find difficult to recognize, and can adapt and personalize educational content in real time, providing personalized learning experiences. As stated in, AI-driven adaptive learning systems comprise a network of interconnected components that collaborate to provide a personalized learning experience (Hanna et al., 2025) .

AI algorithms use learning profiles and real-time feedback to dynamically modify the complexity, format, sequence and delivery of learning materials. Learning modeling involves identifying your learning style and providing learning resources according to your preferences. Despite the growing interest in AI-based learning systems, there is little research on their implementation in real educational environments. Therefore, the integration of these systems in educational environments seems to be in its early stages of development (Tusquellas et al., 2024) .

AI plays an essential role in shaping the future of teaching and learning, and therefore its role in higher education is attracting international interest, with many countries committing resources to its study and training. Globally, investments in AI education and research are aimed at fostering leadership in the domain and preparing students for the upcoming labor markets (Kovalainen et al., 2025) .

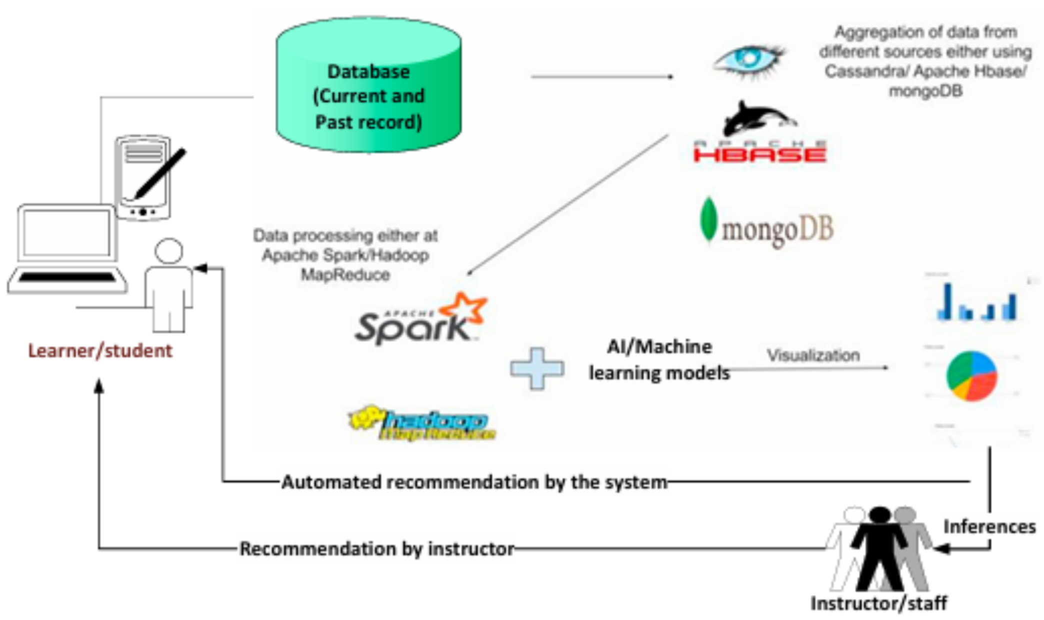
AI in education offers great potential to personalize learning and democratize education worldwide. It includes AI-powered education systems, intelligent agents, autonomous grading and assessment, and learner support Chabots for learner/instructor communication and collaborative learning. The demand for self-directed, personalized, and flexible learning is growing, and interest in AI for the education system is gaining momentum due to recent technological advances (Al-Badi et al., 2022) .

The identification of learning styles has captured the attention of researchers in the educational field, who seek to develop more personalized and engaging learning experiences for students at . Different tools and traditional approaches have been used to detect these styles and adapt educational content to the preferences of each individual. This section provides a detailed analysis of recent studies exploring methodologies employed in artificial intelligence (AI)-based research to automatically classify learning styles and modify educational content accordingly (Kanchon et al., 2024) .

Personalized learning is difficult and uneconomical in the traditional educational environment; however, advances in AI are helping to make this dream a reality. As technology advances, more advanced adaptive technologies are becoming available. These technologies collect information, such as students' prior knowledge and academic performance, to predict and improve learning trajectories. This personalized approach goes a long way in bridging the gap between socioeconomic status and special needs of the student body (Saqr et al., 2024) .

Personalized learning has been consolidated as an effective strategy to enhance academic performance. This approach allows content and methods to be adapted to the preferences, needs and learning styles of each student. Unlike the traditional model, which offers a one-size-fits-all solution, personalized learning recognizes the diversity that exists in the classroom. This methodology is more responsive to individual characteristics, promoting more meaningful learning. Moreover, its implementation has been facilitated by the advancement of educational technologies. Therefore, it is considered a promising alternative to more rigid approaches (Imamah et al., 2024) .

Figure 1. *Personalized learning process in an artificial intelligence (AI) environment*



Note: Retrieved from (Al-Badi et al., 2022).

In higher education, personalized learning has gained importance in the face of student diversity. Artificial intelligence facilitates the implementation of tailored strategies, especially in virtual environments. Various AI-driven models have been shown to improve motivation, engagement and academic performance. In addition, they allow catering to different learning styles and providing support to those who present difficulties, thus promoting inclusion. These technological solutions reinforce equity by providing educational experiences tailored to the individual needs of students (Naseer et al., 2024) .

The systems and prototypes we develop are created in a relatively short period of time, with teams of three to five students. To optimize the process, we promote the use of various technologies that allow the agile creation of prototypes, making it easier for developers to focus on the most relevant aspects of each initiative. One of the main tools is Unity Game Engine, widely recognized for its capabilities in the development of immersive virtual reality experiences. This platform relies on the intensive use of scripts developed in C#, which enables an efficient integration of artificial intelligence functions and extended reality (XR) environments (Constantinescu et al., 2024) .

Another key tool is the use of generative AI for image creation, which is applied from the initial stages of conceptual design to the refinement of the graphical interface, texture production and the generation of 360 degree environments. Free models such as Stable Diffusion are frequently used for these purposes (Constantinescu et al., 2024) .

The use of artificial intelligence to generate 3D models from text is also being explored, a developing technology that, despite its emerging status, is useful for rapid prototyping. During the different phases of the project, tools such as ChatGPT and other natural language models are also integrated, which, although they face challenges such as the generation of erroneous information (known as "hallucination"), are used for ideation tasks, interactive dialog generation and technical problem solving (Dai et al., 2023) .

ChatGPT's architecture is based on a transformational neural network, a key advance in the field of deep learning. This type of network is characterized by its ability to retain complex, long-range relationships within text, which is essential for maintaining contextual coherence in prolonged conversations. Thanks to its training with large volumes of data, the model is able to identify linguistic patterns accurately, resulting in not only coherent but also grammatically correct responses. This capability makes ChatGPT a highly adaptable tool, useful in a variety of tasks and contexts (Tayan et al., 2024) .

Universities around the world have faced a number of significant changes and challenges due to the expansion, diversification, and internationalization of higher education. Among the most critical issues are the effects of digital transformation, generative artificial intelligence technologies, educational inequality, credential inflation, declining public funding, and concerns about educational quality (Lyu & Thurston, 2024) .

This change has been driven by a variety of factors, such as the influence of educational policies, the obligation to meet quality benchmarks, increasing global competition in student recruitment, teachers' efforts to strengthen the quality of education, and students' growing expectations for quality education. Teacher research in higher education has become a key tool for investigating system complexities, promoting educational change, and addressing existing problems, enabling teachers to engage in continuous improvement of learning and teaching (Lyu & Thurston, 2024) .

Finally, the role of teachers is critical to the successful integration of new technologies in educational environments, which makes it essential to examine their acceptance of the use of Generative Artificial Intelligence (GenAI) tools. Educational reforms that include the use of GenAI for teaching and learning may not be effective without the support of teachers and their willingness to use these tools. Despite the potential benefits of GenAI in education, there is a lack of understanding about how teachers perceive these technologies and whether they are willing to adopt them, especially in the context of primary and secondary education (Kong et al., 2024) .

This study seeks to address this gap through the implementation of a modified technology acceptance model in order to analyze the perceptions and acceptance of IA tools among teachers at these educational stages. The model has been widely used in various contexts as a basis for investigating the factors that influence the acceptance of specific technologies and computer systems.

Conclusions

This research has shown that digital transformation is a crucial element in the evolution of higher education, especially in the context of the COVID-19 pandemic. Information and communication technologies (ICT) have allowed educational institutions to maintain the continuity of teaching through online modalities. This adaptation has expanded the frontiers of education, providing access to students from diverse geographic locations and socioeconomic situations. As digitization takes hold, there is increasing flexibility in teaching and learning methods, facilitating a more inclusive and accessible environment.

Despite progress, the integration of technology in higher education still faces significant challenges. One of the most important obstacles is unequal access to technological tools, which generates gaps between students who have adequate access to resources and those who lack them. In addition, the lack of digital preparation and training of teachers limits the potential of ICTs to improve the educational process. Universities must address these challenges through strategies that promote digital equity, ensure continuous teacher training and guarantee that all students have access to the technologies necessary for their learning.

Artificial intelligence (AI) is emerging as one of the most innovative tools for personalizing learning. Through adaptive algorithms, AI can design individualized educational experiences, adjusting to the pace and specific needs of each student. This not only optimizes learning, but also allows teachers to provide more accurate, real-time feedback. The use of AI in higher education also facilitates the creation of more interactive and dynamic learning environments that adapt to the constantly changing skills and knowledge required in the job market.

For digital transformation to be effective, universities must adopt a strategic vision that includes not only the integration of new technologies, but also an organizational restructuring that favors collaboration, innovation and continuous learning. This implies that institutions must be willing to redefine their educational models, invest in technological infrastructures and foster a culture of change among academic and administrative staff.

Ensuring digital equity is critical to the success of higher education in the digital age. Universities must ensure that all students, regardless of their background or socioeconomic status, have access to the means necessary to actively participate in the learning process. This includes providing adequate devices, quality internet access, and institutional support in the transition to hybrid or fully digital educational models. The implementation of inclusive policies can help bridge the digital divide and students' academic outcomes. Finally, personalized learning, facilitated by AI and digital technologies, prepares students for tomorrow's professional environment, where technological skills are increasingly in demand. Through personalization of learning, students can develop key competencies in areas such as problem solving, creativity and critical thinking. In addition, the ability to adapt to the use of emerging technologies is critical to address the current challenges of an ever-changing job market.

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Approach complex topics outside the classroom with gamified transmedia with gamified transmedia narrative

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Introduction

We investigate methodologies that facilitate the adaptability of the Let Me Be! Project in different contexts with the objective of validating its application in nodes of any geographical location, in the immediate future, within the framework of the ever-changing social situations in each place. We want adolescents and young people to solve the link problems that arise in their place, at a given moment, while still relating them to the framework of the transmedia map. We wonder what are the factors to be taken into account to facilitate, to those who manage the node and those who moderate it, the production of pieces and activities that adapt to the local cultural reality, to the historical moment and at the same time belong to the narrative universe of the Project.

We want to make our mistakes and successes available to other researchers and entrepreneurs of gamified transmedia who wish to venture into education plans outside the classroom. In addition to giving a practical step for the implementation of ¡Déjame Ser! the lessons we are learning may be useful for other projects. Let's look at some particularities that challenge us.

First of all, it was decided not to create, at least in principle, a narrative universe of our own. In our case we chose to take as our main story the video Sunshine by BrazilianGuilherme Marcondes, produced for DayOne in 2018 in the USA. A production thought to be used globally, created elsewhere. We believe this is a positive factor because we wanted the project to be able to be replicated across borders. This animation video was known and used by those who were working with teenagers in Uruguay. We found it an excellent material to develop side stories that would allow us to reflect on how characters are built in real life as children and how they come to settle in a toxic relationship. Immediately side issues are opened, problems that are related and build a complex system, ideal to work with gamified transmedia.

Our transmedia roadmap involved producing canon material without us being the authors of Sunshine. For this reason, in a way our canon can be considered as a fandom for Sunshine. This should not confuse about the meaning of the term when we apply it to the project. When we use the word canon we will refer to the pieces proposed by ¡Déjame Ser! that have diverse authors. In addition, participants create fandom products in the activities.

The second atypical factor of the project is to function in nodes that besides sharing a narrative universe, objectives and practices, must have their own identity. Those who manage the nodes must ensure that the moderation of activities with their fandom production occurs, but there is a novel factor that we must solve: It involves canon production to address the problems of the place at each moment. At each node there should be canon authors available. Normally canon is produced centrally. The fandom is the one with dispersed and heterogeneous authors. In this research we apply participatory design to elaborate methods to create canon pieces for future authors of the nodes to be created in other countries.

Since the main story was created in New York and the first side pieces in Montevideo, the next step is to have canon pieces created in different parts of the world with different situations. This is not difficult if it were about fandom, but we need the canon of the project to contain this diversity without straying completely from the narrative universe. That is, the places and characters of Sunshine. The tension between flexibility and consistency is a challenge. It must show what happens in one place in a way that is understandable for other places, in the narrative universe, while letting the fandom be 100% local.

Another problem to solve that we have investigated is how to produce them. In some nodes there may be professional staff and in others there may not. In fandom there are often audiovisual artists, storytellers, computer scientists, guys with philosophical gifts, and psychologists. They appear over time and are reflected in the fandom productions of the various popular transmedia. Node managers can be people with good will, but without time, technical knowledge of audiovisual production, or equipment.

Flexibility is oriented to the identification of the project with the vision of self-realization in the cultural fabric of the node, and to the predominant linkage problems. Sometimes they are permanent, but there are also emergencies. For example, in Montevideo in 2024 there were calls for mass fights in public places, for no apparent reason, creating a fashion. Another more generalized example is the tendency to isolation and school dropout after the pandemic. How to integrate them into the transmedia map?

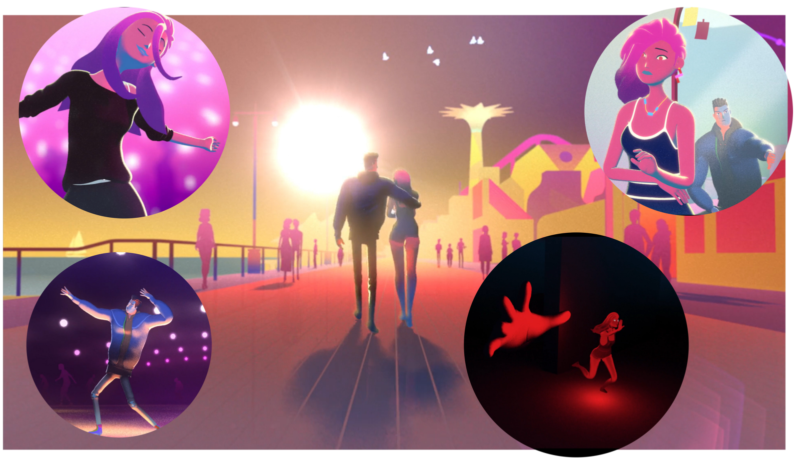
Coherence with the project is not limited to trying to integrate as best as possible each piece within the narrative universe with the same places, characters, and the same artistic proposal. New pieces should be connected through migratory clues or narrative gaps with the main story or an existing side piece in order to facilitate the connection of themes to develop the ability to relate. The treatment of something that happens in a place at a certain time should not become an isolated, unconnected theme.

Coherence with the project methodology entails relating problems and solutions, going deeper, developing critical thinking and the ability to deal with complex issues. It entails overcoming superficiality, avoiding that dialogues are limited to the repetition of simple prefabricated answers corresponding to the different positions present in a group or in society. The moderators must make the participants want to venture into thinking about causes, effects and possible solutions on their own. The creation of transmedia pieces and activities is a necessary input to achieve this.

Project Overview

The overall objective of the project is the self-realization of the participants with others. It uses as its main story a video about dating violence. It focuses on the resolution of bonding problems through gamified transmedia storytelling. Side pieces were added to address other related bonding problems in a gamified way.

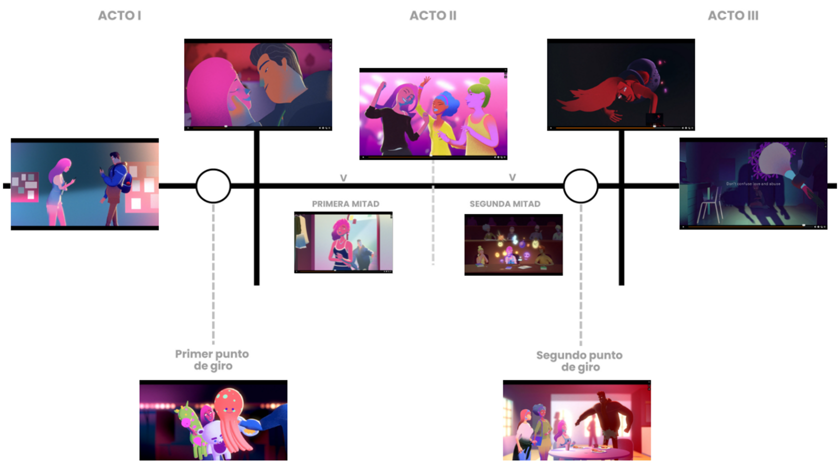
Figure 1. The main story: Sunshine (Marcondes, 2018).



Source: https://www.guilherme.tv/day-one Day One https://www.dayoneny.org/
It is appropriate to show how two kids who could be self-actualized (images on the left) end up in a toxic relationship that seems to continue like a loop (images

on the right). This is a three-year plan, primarily aimed at adolescents and young adults. Today it is focused on the participatory design of the first year, through tests in small groups with the objective of obtaining an experience and a proven and improved methodology that will allow it to be applied in large nodes in different parts of the world, adapting it in a flexible way.

Figure 2. Dramatic structure of Sunshine



Source: Own elaboration from video captures.

The Project looked for moments within the original story created by Marcondes to insert strategic gaps, migratory clues or emotional links that could lead to side stories, a necessary step to build the transmedia map.

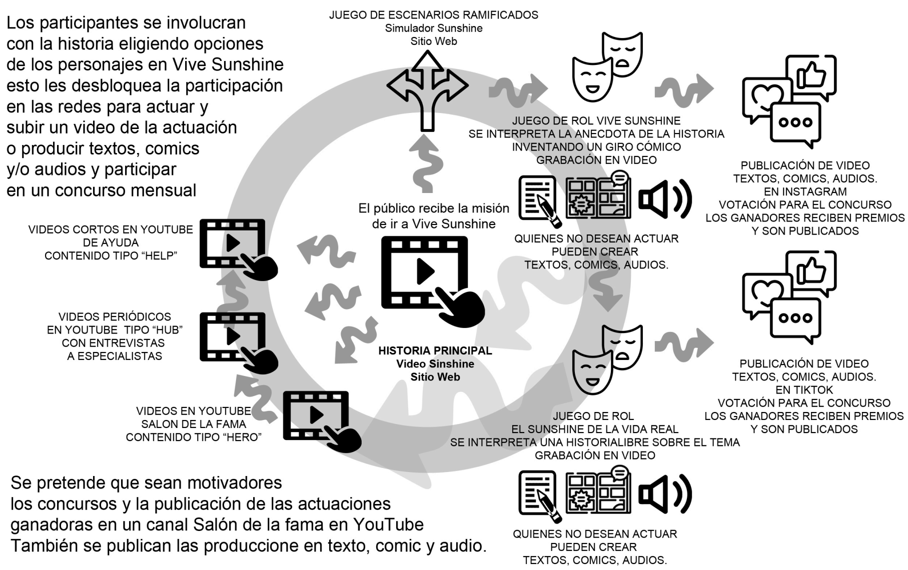
Figure 3. Structure of the lateral stories of the canon

Source: Own elaboration from video captures.

The side pieces deal with prequels and sequels of the characters' lives. It allows multiple related themes to be dealt with, allowing for a deeper dive into causes and solutions. Each participant can engage with a different theme, enter a side story and then relate it to the rest.

To describe the Project in a few words, it could be said that it provides a battery of media on a set of interconnected themes with the purpose of allowing different participants to enter the same narrative universe through different paths. Each one approaches what interests him or her, according to his or her tastes. Whoever arrives meets others, who arrived by different paths.

Figure 4. Transmedia map of the project during the first six months of application



Source: Own elaboration.

The original canon involves dealing with major themes each month first through branching scenarios, in order to engage with them. Then the participants perform role plays or other productions for the contests, reflecting on them. At the end of each month the winners go on to the YouTube Hall of Fame.

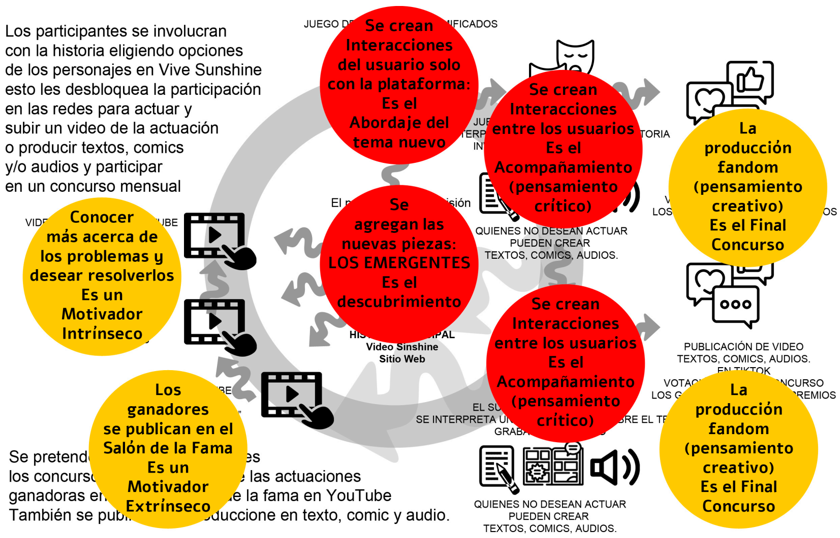
There are different narrative pieces, videos, comics, texts, audios, games, branched scenarios, role-playing games. Discussion and contests of fandom productions (virtual and face-to-face) are promoted. Adolescents should think about the problems addressed in the narrative universe or in their own world. It implies making an effort to understand how they are produced, not only with the answers they have heard, the prejudices, the simplistic solutions. It is proposed to present solutions in a playful way.

The current priority of the Project

When intending to implement this plan outside the usual educational frameworks, the role of the node managers and moderators at each site is very important in order not to leave the results to chance. Flexible replication requires special care. Current research seeks to provide inputs so that a replication of the plan does not make us forget its essence. The production by the participants should develop their critical thinking through live dialogue or by means of devices. Intrinsic motivators (the satisfaction of solving something that is affecting a colleague, a family member, society) and extrinsic motivators (being valued by others and eventually winning awards by getting productions displayed in a YouTube Hall of Fame) should be kept in mind. One should always seek to make the experience memorable, even if it is very different in each node.

At this point the research focused on essential challenges prior to replication. We wonder if we can create and propose a general method that facilitates adaptation to different situations to be left at the disposal of node managers and moderators. We are interested in promoting the production of pieces of the transmedia canon for a node at a given time and subsequent activities that generate fandom production related to the topic. Those who will manage and moderate nodes in the future do not necessarily have all the possibilities, so we must provide them with tools to strengthen this aspect. This research was conducted with the intention of learning from our audience what are the best practices to perform this task.

Figure 5. Transmedia map of the project showing new elements



Source: Own elaboration.

The original canon is now overlaid with new elements marked in red, which must be created, and lead to others marked in yellow, which must be moderated, where participants will create their fandom products for the contests. As before, the winners are now also inducted into the YouTube Hall of Fame.

We consider that the validation of this process is necessary for the Project to be able to solve the concrete linking problems of the participants of each moment and each region without losing sight of the connection with the related themes in the transmedia map. The interconnection of the new narrative pieces with the general structure has the purpose of favoring critical thinking, and avoiding the superficial treatment of each new theme in a disconnected way and far from the life of the participants. In addition, it allows participants to continue to arrive at the narrative universe through different personal paths. It would not be advisable to add the new topic with a totally disconnected case. We do not wish to leave this problem to those who implement the Project without proposing methods and making available the learnings obtained for its application.

The research

The rapid creation and inclusion of pieces on emerging issues that arise, at a moment's notice in a node, to solve linkage problems involves multiple challenges. We have selected the following:

- How to create cases that are integrated into the narrative universe?
- Which characters to choose?
- How to create narrative pieces with a quality in accordance with a canonical content?
- How to produce activities to motivate playful fandom production involving participants' reflection?

For each question we chose as a hypothesis a method that allows to easily create transmedia pieces and activities within the style of the main story. We took into account that in some nodes there may be audiovisual and computer production companies or people trained to produce professional quality material, while in others there will be basic materials and just someone with good will, but no knowledge or skills. We chose to create methods and products closer to the minimum technical possibilities than to the maximum. We leave open possibilities of higher quality production for those who can take advantage of them. After applying them with a group of students, we took notes of the successes and mistakes. In addition, we set out to add new challenges that could be perceived in the testing. The testing and participatory design were carried out in the classroom, with direct observation of the participants' dialogues and actions.

Historical framework

Why have we undertaken this challenge? Traditional education is in crisis despite the application of new pedagogical theories in schools and universities.

Classroom proposals are trying to adapt, with better or worse results, to a world that is advancing faster. Toffler (1980) said that the educational system is based on the model of the first schools that prepared for work on the assembly line. We can add that this type of work was the first to be automated and is done by robots. It is not unusual for the irruption of generative AI to produce fears because people have continued to be trained for other jobs replaceable by machines. Toffler has bet on the need for the development of critical thinking, the ability to make decisions.

The new generations make use of other virtual and face-to-face spaces that they consider their own and already constitute, in fact, a more attractive learning environment. However, countries organize educational plans in a collective imaginary that has not been able to fully detach itself from the idea of mass production. People, meanwhile, have sought how to learn in other ways. Why not think of educational plans, outside the formal system, for society to develop the ability to dialogue different solutions to complex problems? For Bas (2014) an educational system that wishes to develop innovation in young people, must meet five conditions: pragmatism, contextualization, sustainability, global vision and strategic vision. It implies a structural reform of the educational system, in order to integrate it into a national innovation system to maximize the competent and creative potential of the participants.

Connectivism emphasizes the importance of diversity of opinions and the individual's capacity to develop autonomy and participation in virtual networks Siemens, G. (2004). It has been criticized for encouraging superficiality. The idea of the diversity of opinions that can be found in networks has fallen due to the application of algorithms that personalize the information shown to each user based on his or her profile. Bias bubbles are produced because networks sell advertising, they seek clicks. It is increasingly difficult to see on Facebook what contacts post and easier to be distracted by other "interesting" content.

If users only receive content that matches their preferences and extremely opposing opinions (which are intended to provoke outrage that generates clicks) it increases the polarization of opinions and the uncritical reaffirmation of one's own ideas. Collaboration between different contacts on a topic is not helped. We can conclude that it is not enough to use the networks. Being able to connect does not ensure quality or depth. Verhagen (2006) argues that connectivism does not present anything new that is not in other learning theories. It is necessary to develop strategies to address complex problems outside the classroom, where people connect and learn.

Although networks are losing utility with their new algorithms, there are spaces where there is a collaborative participation and construction of knowledge that allows avoiding superficiality if properly implemented. The public also gathers to play in virtual spaces, watch movies and other narrative pieces of the same universe, create fandom productions. The industry makes available the gamified transmedia experience. Motivational design applies these techniques to produce changes in an organization or in public good campaigns. Educational plans have begun to take advantage of this possibility within formal education. We believe that its true potential lies outside the classroom, as a transversal resource, complementary to formal institutions. The main stumbling block is that the collective imagination still overly associates "education" with the classroom.

The context in which the idea arises

How did we get here? We have noticed in Uruguayan basic education, Plan Ceibal, UTU, and private schools, that adolescents and young people who seem to dislike solving problems presented in class, communicate with monosyllables and show disinterest in everything proposed by the educational center, dabble with good spirits in complex problem systems proposed by some video games. They create and share solutions in videos and through messages on the networks. The games contain narratives with cases and problems to solve that simulate real or fantastic phenomena, complicated processes that have rules. There is learning, but it is taken as a distraction.

In the last decade we have been working in workshops on issues such as dating violence, abuse against adolescents, bullying. We noticed that the most affected children, victims of violence at home, escaped by playing at killing enemies on a screen. Others, victims of bullying at school, watched fights of students from other schools on YouTube or made fun of their classmates on social networks. We thought it was violent for them to talk directly about what was happening to them, but somehow, they were doing something that related to their problem, even if it was not in the desirable direction.

We wondered, could we get them to solve bonding problems by sharing solutions in the networks or other equivalent spaces? Everyone was interested in what affected them personally and there was a tendency to be indifferent to the other's problem. We found that there were underlying issues that could function as connectors, the hierarchies between peers that turn into domination, toxic relationships and the rejection of what is perceived as different. Consequences appeared such as low self-esteem, isolation and low tolerance to frustration, which turned into fights.

We thought that if everyone discovered that the problem affecting them had a relationship or a common background with the other's problem, collaboration could be favored and indifference reduced. The virtual space where they sometimes have fights, make fun of each other, play at being winners at the expense of those who lose, learning that motivates the creation of bonding problems, could motivate them to look in another direction. It can summon them to compete to solve what is hurting their friends. We have found that adolescents went from feeling like heroes for dominating others to being recognized for building solutions for the group.

As previous classroom experiences, we have created flowcharts where we were challenged to connect various linking problems to find relationships between them. We were invited to think of life problems as a video game: what are the rules, the mechanics, what can you do to achieve what each character wants? Thinking about decisions and consequences, menus applicable to real life, missions and results as in a game, allows to reduce the emotional load that makes participants evade. Avoid superficial posturing such as answering the response they expect from them.

Students evade with proposals outside the classroom that seduce them to naturalize bonding problems. It is not enough to carry out one day an activity in the classroom like the ones we have described. We think that attractive spaces must be created to which they can connect in order to be heroes before their peers, demonstrating the ability to make decisions, creating solutions as if it were a game. Just as they create videos showing Minecraft tricks, they can propose ways out of a toxic family, friend or partner relationship, how to overcome bullying experiences, how to help a friend who chooses to isolate himself.

We begin to devise a plan that has the common goal of self-realization, where everyone will find his or her own profile, and an obstacle that could be called domination, which can manifest itself through different bonding problems. The pitfall immediately reported by the students is that we constantly learn to consider the winner as the one who dominates others in some way, and then we tend to see as a crime the extreme consequences that sometimes occur in the defeated. This frequent reflection is evidence that some critical thinking can be achieved by overcoming superficiality.

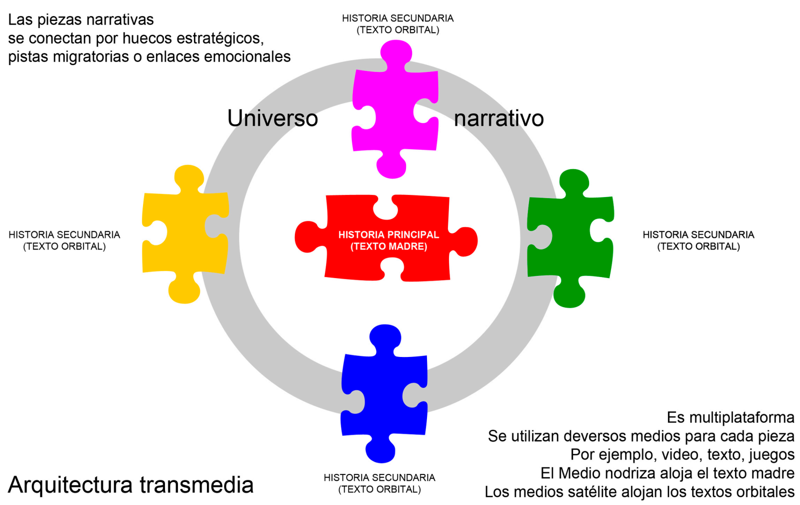
Looking for a common background to create a network of intertwined problems with students often appears the naturalization of the search for a spontaneous hierarchy in the peer group, where some are "alpha" and others have to be "the last ear in the jar". In adolescence they create their own identity, they often naturalize the methods that their context employs, which can be very different from one place to another, and use them to be recognized by their peers. Systematizing a way to virtually deal with these concepts, in games and discussions in spaces for all the public began to be our goal.

We came to the conclusion that we had the technological possibility to make everyone see that they are not the only one with a problem. That they perceive that they have something in common with others who apparently have a different life. That they want to agree to find a different perspective, something that the algorithms of the networks do not promote. We have proposed that when students escape from a boring class by connecting to their cell phones, they begin to feel more motivated to enter a space with these characteristics than networks where they go to make fun of others, watch fights or play games where they shoot at a virtual enemy that represents their stepfather.

Gamified transmedia storytelling

Long before schools were invented, human beings gathered to listen to oral storytellers. It was a face-to-face synchronous interactive experience where the emotional factor and identification with the characters played an important role. The stories related cases that allowed learning. They transmitted a vision of the world. The audience could participate.

Figure 6. The transmedia concept



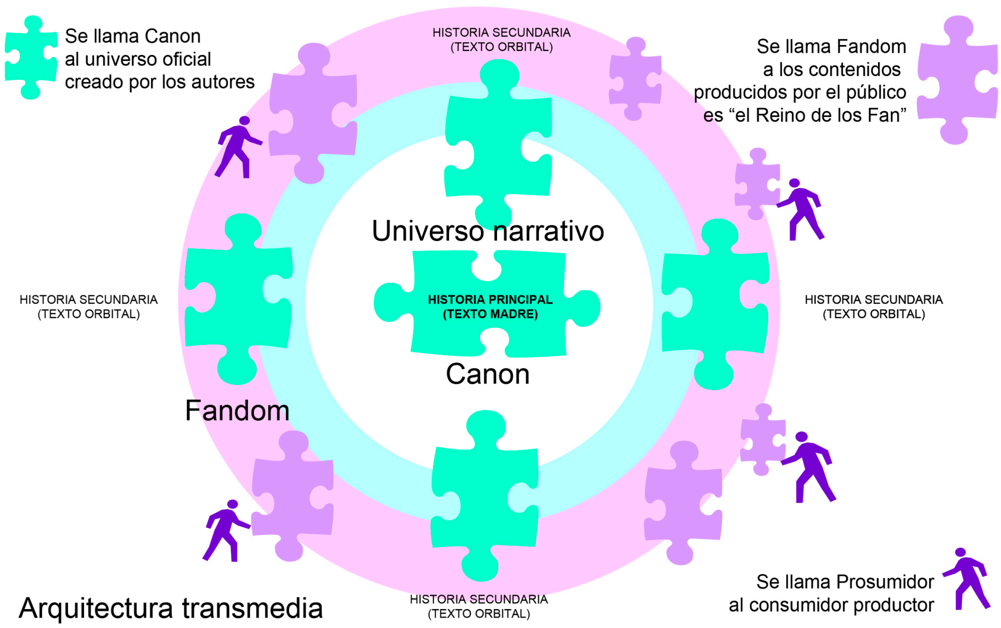
Source: Own elaboration.

With the advent of the printing press, the first medium, books made it possible to multiply the availability of stories that a person could access. Analog electronic media added the moving image and the possibility of connecting synchronously at a distance. With the first media, the audience was only a receiver.

Humans also learned skills by playing. For example, fighting with a wooden sword, riding a bicycle, scoring goals. Actually, this is not an activity exclusive to humans because animals learn in a similar way. Play is much more participatory than storytelling. In fact, by playing we sometimes construct a story. There are games in which children play roles by rehearsing scenes from the adult world or characters from stories of their choice. Play has been linked to storytelling and active learning before school existed.

In our time, the combination of what we put into practice when we play applied to the assembly of stories presented with the different technological possibilities available is called gamified transmedia storytelling. It is not unusual that when formal education enters into crisis we turn our eyes to what we have used to learn from the beginning, narrative and game. There was in practice a face-to-face gamified narrative in life before classrooms became widespread. People also related experiences obtained in stories, oral stories of the elders, games, paintings on walls, stained glass windows, statues with which they made their own knowledge and beliefs of their culture. A primitive transmedia experience existed before the concept was created.

Figure 7. Distinction between canon and fandom



Source: Own elaboration

Several authors have contributed to the understanding of how transmedia storytelling can be used to improve education outside the classroom by pointing out some aspects. Transmedia storytelling encourages student participation, allowing them to contribute to the story and learn in a deeper way. They allow content to be adapted to the interests and learning pace of each student, thus personalizing the educational experience. They promote collaboration among students and open up new learning possibilities, fostering curiosity and motivation. We will mention some authors.

Jenkins (2003) is one of the pioneers in the study of transmedia storytelling. His work has been a reference for understanding how stories can be expanded across multiple platforms and media, and how this can be applied in educational contexts to encourage student participation.

Scolari (2018) has continued and deepened Jenkins' studies. His work interests us because it analyzes how transmedia narratives can transform education by enabling non-linear and interest-based narratives for students, thus promoting a more meaningful and participatory learning experience.

Lantorno (2022) has also reflected on transmedia storytelling as a powerful pedagogical strategy. Her approach focuses on how these narratives can transform traditional pedagogies by considering students as active subjects in the teaching and learning process.

Inmaculada Marín (2018) says that people play throughout their lives and, above all, they play when there is no imposition to play. She argues that the game as a methodology and strategy, which we could call gamification, can radically and disruptively transform the process of teaching and learning.

There is abundant research on gamification. Pelling (2002) used the term to describe the application of game elements in non-game contexts. Werbach and Dan Hunter (2012) created a theoretical framework on gamification. Deterding (2011) has contributed to the academic definition of gamification and its application in various contexts. He has explored how elements of game design can be used to enhance participation and engagement in non-game environments. McGonigal (2011) argues how games can be used to solve real problems and improve everyday life. Her focus on the positive potential of games has influenced the use of gamification in a variety of settings. Zichermann (2011) has researched gamification and its impact on human behavior. He promotes the use of gamification techniques to encourage participation and engagement.

Gamification is more than adding medals or including some fun material in the tasks. Gaitán (2019) highlights that this technique facilitates the internalization of knowledge in a fun way, generating a positive experience. Gamification motivates students, increases their commitment and fosters the spirit of self-improvement through rewards and challenges. However, gamification is not only useful to motivate, it improves the quality of learning.

Gaitan notes that gamification generates a positive user experience and develops greater engagement, which can lead to more effective internalization of complex knowledge. This suggests that gamification can facilitate the learning of critical and analytical skills. Crossick (2024) says that gamification not only helps maintain motivation, but also allows constant feedback on their learning, which contributes to deeper analysis of content and improves problem-solving and critical thinking skills. Conde (2024) says that it not only benefits learners in terms of motivation, but also helps them develop important skills such as collaboration and problem solving.

Mora (2017) said that you can only learn what you love. Narrative usually brings emotion and identification with the characters, interactivity allows personalized active experiences. On the memorable and the interaction of transmedia narrative with gamification Pañella (2024) addresses motivational design as a key tool to create memorable and effective experiences in the professional environment. He emphasizes that motivational design seeks to redesign activities to make them "memorable" and "pleasurable". This is achieved by integrating game elements according to the motivational profile of each person, which allows activating desired behaviors and behaviors in the participants.

He suggests that gamification, being based on a deep understanding of human motivations, can be used to address complex problems. By designing experiences that connect with the intrinsic motivations of participants, it fosters greater involvement and effectiveness in solving organizational challenges. It promotes the use of inductive reasoning and collaboration among participants, which can contribute to the development of critical thinking. By engaging users in an active process of discovery and analysis, they are encouraged to reflect on their actions and decisions within the gamified context.

Affeldt (2015) says that fostering non-formal spaces for experimentation and learning can contribute to innovation. If we go back to human evolution from oral storytellers and games where children play roles to the current technological possibilities, it is clear that with personal digital devices there are important variations. It is not the same experience. There are hurdles to jump. Balladares (2002) reminds us of the importance of teacher training for the handling of technology, an important issue for what we propose, the production of pieces for the project in different nodes.

Today's technology offers much more to read and to play, anytime, anywhere, supposedly for free, but charges third parties by making us click here and there as often as possible. To get lots of clicks it stimulates internal immediate reward mechanisms. It makes the contents smaller so that they are quick to consume and we come back to click on the next one. With this action we charge a few cents to the advertiser, who pays for the service that seems to be free. This strategy favors superficiality. We are not interested in going deeper but in satisfying stimuli that do not satiate, the immediate reward, and we click again.

The production of authors, the canon, is complemented by the production of fandom, the narrative pieces created by the public. Gamification applies techniques and principles of games in other fields. Discovering the relationship of the different stories told by different media constitutes in fact a game, a narrative puzzle that invites to relate pieces and build new ones. It motivates participation. Game techniques create a relaxed atmosphere that favors deepening if intrinsic and extrinsic motivators are applied.

The most famous transmedia universes include examples such as Star Wars, Marvel, Potter. In Spain we find El Ministerio del Tiempo, La Casa de Papel, MasterChef España, La Peste, set in 16th century Seville. These are communication products that include gamification and games. Assassin's Creed Odyssey, an action role-playing video game developed by Ubisoft of Canada, which integrates transmedia storytelling and gamification in an entertainment product with narrative universes that expand beyond the game itself, including books, movies and additional digital content.

Gamified transmedia storytelling has been applied in the educational system. We can mention the Teaching Innovation Project at the University of Seville (2020-2022) It focused on teaching creative writing and Spanish literature, using transmedia narratives and gamification to foster creativity and student engagement.

In Uruguay, the Desafío Profundo (2021) project defines itself as an institutional platform for research, creation and experimental production for quality learning developed in collaboration with the Ministry of Education and Culture of Uruguay and the Technological University of Uruguay (UTEC). It provides materials and resources so that teachers can integrate it into their didactic proposals. It includes the transmedia educational novel "Mystery of Cabo Frio" and the project "1930: The Journey" focused on the history of the first World Soccer Championship.

These cases are linked to formal education. There are also projects that combine transmedia storytelling and gamification outside the classroom. Guardianes is a project created by Critertec Educación, for children and young people between 6 and 14 years old. With a narrative based on real scientific facts, it adds science fiction elements to engage participants by combining education and entertainment. Participants create digital content to counter an interspatial threat in an active and collaborative learning process. In Spain, the Gamificación Transmedia para la Divulgación Científica project uses gamification principles and transmedia narratives to promote science outreach.

For all these reasons, gamified transmedia storytelling offers possibilities for different people to be interested in different topics that are linked to the same narrative universe, allowing to address the complexity of the relationship between topics in a playful way in different media. This is what we needed for the Let Me Be! project. In our case, although we are aiming at an application outside the classroom, virtual interaction can be easily combined with face-to-face interaction since the groups of participants know each other live because they are colleagues in their educational centers.

We decided to take the Sunshine video as our lead story because we saw untapped potential. It was being used to address bonding issues, especially violence against women, in a more traditional way. In the face-to-face workshops we noticed that the critical thinking required was not achieved, but rather a superficial posture. Nothing is solved if everyone leaves with the idea that "girls are usually victims" and "boys are usually abusers" and forget the issue. In the same group we saw that the dominant ones were celebrated, and boys who tried to be different from the boy in the video were mocked. At best, they were told that they were free in their choice of gender, assuming the idea that not wanting to be a bully meant not being a heterosexual male. Clearly, these simplifications are confusing and do not help to resolve anything.

We perceived a tendency to superficiality with ideas that identified heterosexual males with the boy's personality, while girls tended to think that they should evolve from a dominated role, as the protagonist, to a dominant role as the boy. The goal in words became that "the girls stop losing" and that "now the boys lose". In fact, the girls continue to look at the dominant boys and think that the others are losers or that they have another gender option. There is no discussion of abuse, domination. There is no discussion of self-realization with others. That was discussed in other workshops, bullying, or gender diversity, but in real life everything is related. Sunshine seemed to us to be an excellent material to develop side stories that would allow us to reflect on how characters like this boy and this girl are built in real life as children and then settle in a toxic relationship, which seems to repeat a loop, what happens to what they wanted to be, why domination is celebrated.

The objectives

The Project raises a set of issues such as dating violence, toxic relationships, domination. At the time of implementation, other unforeseen relationship problems arise, which can be integrated into the narrative universe. For example, calls for mass fights in public places, replicated in schools, or the lack of interest in attending class and maintaining a live social bond in the classroom after the pandemic.

If new problems are not included in ¡Dejame Ser! we are not taking advantage of their potential. We want to enhance its impact by allowing young people and adolescents to think about what is happening and propose alternatives in the midst of changing realities.

From this experience, we wish to integrate new themes through a canonical piece to be created and some activity that will become part of the transmedia map. For example, the canonical piece can show the characters of the narrative universe in a situation of being called to a fight or dropping out of school due to lack of interest in socializing with their peers. The activities should make young people discuss the causes and possible solutions to the problems to produce fandom pieces that are then exhibited, motivating their "hero" authors and making their peers think. It involves testing the flexibility of Let Me Be!

The objectives are, firstly, to create a method for the production of:

- New pieces of the transmedia canon for selected emerging problems. For example, a video, a comic, a text, an audio such as a podcast or a song, a video game.
- Subsequent activities that generate fandom production related to the theme. These have a digital component, because they are convened on a platform, and a component of personal interaction, the action of the moderators with the participants. The activities make each participant (who approached by some path to the transmedia map) get in touch with the problem shown in the created piece, get involved with it, interact with other participants (who may have arrived by other paths), reflect and build with the others some fandom productions. For example, perform a short performance and record a video, create a comic or a storyboard proposing

variations on the story, or write a text, an audio such as a podcast or a song related to the topic.

In the actual application, other complementary aspects will be added, which are not included in this test. A YouTube channel is planned as a space for canon-fandom articulation. Videos are provided using the hero-hub-help strategy. The hero space will show the best cases of fandom production, the winners of the contests, a hall of fame. As hub content, short videos will be created by invited experts who analyze the issues addressed at each moment. They will be an input for those who create fandom products or suffer from any linking problem to be informed and to be able to deepen their knowledge of the issues. Ce will create help videos, which can be of two types, functional for the project or relief for extreme cases that may occur. Some will provide technical help to carry out the fandom production. The others should include information about emergency protocols in the node in case of extreme situations that the participants may be experiencing. For example, abuse, violence, segregation, depression.

A second objective was to create a method to test the products to be tested, which involved creating a provisional answer to each question. These were the hypotheses. We chose methods that almost anyone can apply, that do not require expensive equipment or qualified personnel. The main intention was to think of methods to facilitate the task at any node.

The third objective was to obtain inputs to propose validated methods through testing. This was done by applying the transmedia piece and applying the activities with the fandom production. The purpose is to elaborate good practice guides, tutorials, manuals that facilitate the task of those who manage and moderate the nodes.

Testing hypotheses

How to create cases that are integrated into the narrative universe?

For this point we proposed to go through the following steps:

- Collect anecdotes from emergent cases, find similarities and main themes. For example, audio is recorded, annotated on a whiteboard and a photo is taken or text is collected through an online questionnaire.
- Create a storyboard of a short story that brings together the common aspects of the anecdotes and main themes. For example, draw slips of paper, stick them on a board and take a photo, or create them digitally.

- The facts must be thought in the narrative universe of transmedia. To do this, the storyboard frames are associated with frames of the most appropriate places that appear in the main story.

Which characters to choose?

We traveled this road:

- Think about which characters from the main story are more appropriate for their characteristics to interpret the story. To do this, the storyboard frames are associated with frames of the characters chosen from the main story.
- Create new characters, if necessary. To ensure that these new characters do not clash with the style of the narrative universe, we looked for secondary characters from the main story and modified them to turn them into others while maintaining the same style.

How to create narrative pieces with a quality in accordance with a canonical content?

Different media can be created, text, audio animation. We chose the comic book because we believe it is relatively easy to do and allows the characters and backgrounds to be recognized as part of the narrative universe. We went through the following steps:

- Backgrounds of the selected sites were traced.
- The characters of the main story were copied.
- The secondary characters to be modified were copied and changed to become new characters.
- The comic frames were created from the storyboard by superimposing characters on backgrounds. In some cases, completely new drawings were created. The result is intended to maintain the same style as the main story.

How to produce activities to motivate playful fandom production involving participants' reflection?

For this point, we believe it is advisable to follow the same three-step itinerary applied in the first semester Branched Scenarios (the Sunshine Simulator) Live Sunshine Contest and the Real Life Sunshine Contest.

- The comic book is converted into a branching scenario, which in the Project is called the Sunshine Simulator. H5P, Google Forms, PowerPoint and other tools can be used to create this interactive canon activity in digital form. The brief for participants is to choose options in the comic for one of the characters to do something different. The goal is for them to engage with the emerging issue at hand and think about what the alternatives are to the problem.

- A Vive Sunshine Contest is proposed where participants act out the characters for the scene of the month. The audience is asked to play one of the characters doing something different. They upload the video to the Instagram space or the node's website.
- A Real Life Sunshine Contest is proposed. Participants act out an anecdote from their environment related to the theme, outside the narrative universe. They upload the video to the TikTok space or to the node's website.
- In both you can participate without acting, creating scenes in text, audio or comic.
- The most shared and liked videos receive the audience award and are posted on YouTube in a Node Hall of Fame.

One element to add is how to evaluate whether the process produced a breakthrough in relation to the emergent addressed. Since we had direct contact with the students, we limited ourselves to observing their subsequent behavior.

First, the emerging themes and the groups that would participate in the tests were selected.

Secondly, transmedia pieces and gamified activities were created following the hypotheses. At this point, for the first test we made the pieces ourselves to check the difficulty. In the second one, people from another application node will do it, to test how they interpret and put the method into practice, in order to improve it.

Thirdly, the transmedia pieces and gamified activities were applied. The narrative piece was presented in the classroom with groups of students two months after having had a first contact with the main story of the project. Students saw the new piece canon met live to produce digital and paper fandom pieces. Direct observation of the participants' dialogues and actions, taking notes and collecting the productions was conducted.

Selected emerging themes

As a preparatory activity we selected two emerging themes and chose where to test each theme.

Figure 8. The emerging

Source: https://dejameser.uy/

On the project's website today, these graphs are used to identify calls for fights (left circle) and isolation (center and right circles).

In the first semester of 2024 there were calls for massive fights involving teenagers in public places in Montevideo, Uruguay, through networks. We chose to include the emerging topic "Calls for fights" and tested it in a Technical School in Montevideo, which usually has "challenges to fight" among students every year.

As a second emerging issue to be tested, we selected the topic "Isolation and school dropout after the pandemic" based on local and foreign data on a high percentage of adolescents who continue to have difficulties in resuming the social life they had before the periods of forced virtuality. Initially we plan to apply it in other centers in Uruguay.

Prototyping and testing on "Convocatorias a peleas" could be carried out between May and August 2024. A Technical School of DGETP-UTU, Dirección General de Educación Técnico Profesional - Universidad del Trabajo was chosen. The group selected was a second year of Basic Vocational Training in Programming and Video Games. The School had had significant behavioral problems in the previous year and in the first semester. The School's response was usually to sanction and expel students. These students then repeated the same behavior in another school or dropped out. The first issue took more time than expected due to the situation the students were going through.

Regarding the second emerging issue, "Isolation and dropping out of school after the pandemic", we decided to carry out the test in educational centers in Argentina, where this emerging issue was most strongly manifested, presumably because adolescents and children have been forcibly confined during the pandemic. Two different tests were organized, one in the north, in Campo Largo, Chaco, and the other in the south, in Río Gallegos, Santa Cruz. The organization opted to create different canon pieces adapted to each place, which takes more time than originally planned. These will be created by people from the node in each place, which will allow us to test if the method is applicable and also if the resources we provide, such as instructions and advice, are sufficient. For this reason these two tests are still being prepared for implementation in 2025.

Collection of data on the emergent

As a first hypothesis, we thought that in order to create cases that are integrated into the narrative universe in each node, the people who take on the task should collect anecdotes of cases of the emergent, find similarities and main themes. In our case we took two real stories of calls to fight. The first one was commented on by a large audience and the mass media. The second one was witnessed in first person and counted with direct comments from numerous protagonists.

The first call produced by social networks inviting to a park near a shopping center in Montevideo. It was said that two leaders of teenagers who supposedly have sympathizers would fight. It was an invitation for groups to take sides with one or the other, generating a pitched fist fight. The fight ensued and numerous onlookers were beaten by the participants. Commercial premises were broken and looting took place. There was police intervention and more people were beaten. Subsequently, other similar calls were repeated.

The second call was witnessed among students of the Technical School selected for testing. That was one of the reasons why we selected it. We discovered that the students were watching videos on YouTube and social networks of mass fights and other fights taking place in nearby schools. During class some received messages on their cell phones that we later discovered were challenges to fight during recess. Numerous groups got together in the playground, started fighting, the secondments intervened, there were sanctions. As the fight broke up, days later they tried to repeat it unsuccessfully at the school. We later learned that several fights took place in the street during the following weeks. In previous years, similar events had taken place at the school, but there had been no mass demonstrations in the city. For weeks they would upload videos of their fights that competed with those of other schools on the networks. Undoubtedly, becoming a star in fights with strangers was a motivator for many students. It was mixed with other causes, rivalries and unresolved problems between teenagers, classroom groups and families.

The production of the history canon on the emerging

We created a storyboard: We thought of the most basic method in case in the node where it was applied there was no one who knew how to draw. We cut and pasted screenshots of Sunshine, images from the Project's website and wrote text. The calls for fights were in the narrative universe of transmedia.

On the question "Which characters to choose? We selected those that were plausible for their characteristics to interpret the story.

To create the narrative pieces with a quality according to a canon content we chose the comic because it allows to take the images captured from the video and the project's website, we believe it is relatively easy to do and allows the characters and backgrounds to be recognized as part of the narrative universe. We should propose a method that any node manager can easily perform. The comic frames were created from the storyboard by superimposing characters on backgrounds. Dialogues were added in clouds. In some cases completely new elements were added. The result is intended to keep the same style as the main story.

The production of canonical activities on the emerging

The hypothesis we wished to validate in order to produce activities to motivate playful fandom production was to follow the three-step itinerary applied in the first semester Branching Scenarios (the Sunshine Simulator) Live Sunshine Contest and The Real Life Sunshine Contest. We discovered that the hypothesis had a problem. These activities presuppose that there is a contest, outside the classroom, a Hall of Fame, which are strong extrinsic motivators. Instead they had the videos of the fights that motivated in the opposite direction. We also did not have hub and help videos that would help inform them about the problem and trigger intrinsic motivators, the desire to solve it.

We decided to apply an activity that would bring together and unify planned proposals and at the same time lead to a fandom production that would imply a reflection to resolve the calls for fights. We proposed to create an alternative to the story, unique, which could be a staging of a subgroup filmed with a cell phone, a storyboard, a flowchart, or a comic. It had to contain a different way out, a solution. In addition, I had to analyze why they were fighting, what the consequences of the calls were.

They produced flowcharts, thinking that it could lead to a video game. They were students of Programming and Video Games. The following weeks there were no fights. They were scarce in the rest of the year, promoted by other groups. We must take into account that the rest of the school did not participate. Nor can we attribute this change to the activity because there may be other factors.

Conclusions

Methods for inserting emergent in the narrative universe were validated, with some corrections. The research allows us to provide inputs for canon production by new node managers. It allowed us to advance in the essential challenges prior to replication. A best practice guide and some tutorials for technical aspects are being developed. We believe that the prototypes of the other emergent will provide us with important learnings that we will incorporate into the project. It will be people from each place who will create the narrative pieces and activities, following the guidelines we developed in this testing.

It is a problem to prototype and test within the classroom a project designed to be applied outside formal education. It is necessary to have the contests in place and the YouTube channels in operation for the intended motivators to operate. If students perceive that they are being given just another task, we are not testing the main thing. The objective is to gradually turn the Project into a proposal that will be applied completely outside the classroom, in the virtual and face-to-face spaces of adolescents and young people. The experience gained so far shows that this point is not easy. The protagonists of the educational system have shown difficulties in understanding it working outside these structures. Students, on the contrary, participate in transmedia universes even if some do not recognize the term, play in fangames, watch videos and create fandom products.

In all tests so far, some elements of gamification have been absent. Intrinsic motivators (the satisfaction of solving something that is affecting a colleague, a family member, society) and extrinsic motivators (being valued by others and eventually winning prizes by getting the productions exhibited in a YouTube Hall of Fame) must be taken into account. Everything suggests that taking into account the learning produced in these tests and applying the project with the gamification elements, it will be possible to obtain memorable experiences that manage to solve bonding problems, help self-realization and complete the expected results.

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Prompts structures in education audiovisual: models for Innovative Teaching

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Introduction

The irruption of artificial intelligence (AI) in the educational field has generated a significant transformation in the conception and execution of teaching strategies. Far from being a simple auxiliary tool, AI has established itself as an agent of change that redefines the interaction between teachers and students, favoring the personalization of learning and the optimization of educational processes (Cárdenas, 2023; Carrasco et al., 2023; Gao, Liu, & Yang, 2025). Within this context, *Prompts* have emerged as a key element in communication with AI models, allowing educators to structure content more effectively and adapted to the needs of students (Knoth, Tolzin, & Leimeister, 2024; Tani, Yläkujala, & Kärri, 2025). The strategic use of Prompts in AI-mediated education not only facilitates the generation of educational content, but also influences the quality and relevance of the information provided to students. In this sense, the ability to design effective *Prompts* becomes a fundamental competence for educators, as it allows them to orient AI responses towards specific pedagogical objectives, fostering the development of critical thinking and problem solving (MIT, 2024; Alier, García-Peñalvo, & Camba, 2024). Furthermore, the appropriate use of these *Prompts* can contribute to innovation in teaching methods, enhancing creativity and learning autonomy in students (Gao, Liu, & Yang, 2025; Lee, Poon, & Lee, 2025).

However, the integration of AI in education poses challenges that should be approached with caution. Ethical aspects such as data privacy, equity in access to the technology, and the risk of bias in the information generated are critical issues that require regulation and mitigation strategies (Inglada Galiana, Corral Gudino, & Miramontes González, 2024; Abulibdeh, Zaidan, & Abulibdeh, 2024). Likewise, it is imperative to consider the impact of AI on assessment methods, ensuring that its implementation guarantees fair and equitable processes for measuring learning (Martínez-Comesaña, Rigueira-Díaz, & Kreibel, 2023; Hashmi & Bal, 2024).

From this problematic, the following research question arises: **How do *Prompts* structures influence the improvement of AI-mediated educational processes?** To answer this question, case studies, empirical research, and systematic reviews examining the relationship between *Prompts* and the quality of learning in AI-mediated educational environments will be analyzed (Ali et al., 2024; Amirjalili, Neysani, & Nikbakht, 2024; ScienceDirect, 2025). Through this analysis, it is hoped to provide a comprehensive view on the opportunities and challenges involved in the use of AI in education in order to contribute to a more effective and inclusive pedagogical framework.

Research Development

The advancement of artificial intelligence has redefined the educational landscape, offering new opportunities to optimize teaching and learning processes. In this context, the formulation of structured Prompts has become a key strategy for teachers to leverage the potential of AI in planning and customizing educational activities. However, the lack of specific training in Prompt engineering limits the ability of educators to design effective interactions with these models, which can affect the quality and relevance of the content generated. Based on this problem, the following research question arises: To what extent does the implementation of Prompts structures in the design of educational activities contribute to the improvement of teaching planning and the personalization of learning?

Hypothesis: The incorporation of strategically designed Prompts in the development of educational activities favors a more effective teaching planning and enhances the adaptation of the content to the individual needs of the students, thus improving their learning experience. The present study adopts a mixed approach, combining a systematic literature review with an empirical analysis of the effectiveness of various Prompts structures in educational contexts. A desk research was conducted in high-impact academic databases, such as ScienceDirect, SpringerLink, IEEE Xplore and Scopus, selecting studies with high citation metrics and published in the last five years.

Additionally, a comparative analysis of six Prompts models applied to education was carried out, evaluating their impact on three key dimensions: accuracy of the generated content, pedagogical coherence and personalization capacity. The evaluation was carried out using standardized tests and AI performance metrics in educational environments.

To verify the statistical significance of the findings, a one-way ANOVA was applied, contrasting the performance of the models in different didactic applications.

The results show that the implementation of structured Prompts significantly optimizes the interaction with AI models, improving by 25% the semantic accuracy of the generated content and by 30% the pedagogical coherence, compared to interactions without optimized Prompts.

The ROCEF and PEACE models proved to be the most effective for lesson planning, with success rates of 85% and 82%, respectively. On the other hand, the CRISP and FIRE models excelled in assessment and personalization of learning, with efficiencies of 80% and 88%, respectively.

Likewise, the ARCO model, focused on curriculum design, showed a performance of 75%, which suggests that, although it is useful in the structuring of content, its effectiveness is lower compared to models specialized in planning or personalization. Statistical analysis by one-way ANOVA revealed significant differences between the models evaluated ($F (5, 142) = 6.83$, $p < 0.001$), confirming that the variability in their performance responds to characteristics inherent to their design and application. These findings, synthesized in Table 1, highlight the importance of selecting appropriate Prompts models for each pedagogical need, allowing for greater personalization of learning and optimization of AI-assisted instruction.

Table 1. *Comparison of the efficiency of Prompts models*

Prompts Model	Main application	Accuracy (%)	Pedagogical consistency (%)	Personalization (%)
ROCEF	Lesson planning	85%	82%	78%
PEACE	Lesson planning	82%	79%	75%
CRISP	Learning assessment	80%	84%	86%
FIRE	Personalization of learning	88%	85%	90%
ARCO	Curriculum design	75%	77%	72%

Source: Authors' elaboration

The findings of this study confirm that the incorporation of structured Prompts significantly optimizes interaction with AI models in the educational setting. It has been observed that the accuracy and consistency of the generated content improves by more than 25% compared to approaches without optimized

Prompts, underscoring the need to integrate this methodology into AI-assisted teaching.

One of the main benefits identified is the personalization of educational content, which allows learning materials to be adapted according to the individual needs of students. This approach favors differentiated instruction, adjusting the pace and style of learning to each student profile, resulting in a more inclusive and equitable experience (Gao, Liu, & Yang, 2025; Lee, Poon, & Lee, 2025).

In addition, the results highlight the role of structured Prompts in improving instructional planning. The ROCEF and PEACE models, applied to lesson planning, achieved an effectiveness of 85% and 82%, respectively, while the CRISP and FIRE models, focused on assessment and personalization of learning, achieved success rates of 80% and 88%. In contrast, the ARCO model, oriented to curriculum design, presented a moderate performance of 75%, suggesting that its usefulness depends on the pedagogical context in which it is applied.

A 25% improvement in semantic accuracy and 27% improvement in pedagogical consistency is observed with the use of structured Prompts compared to AI without optimization. The results show that the ROCEF and PEACE models are the most effective for lesson planning, allowing teachers to structure content in an organized manner and aligned with pedagogical objectives. On the other hand, the CRISP and FIRE models stand out in evaluation and personalization of learning, optimizing feedback and the adaptation of materials to the individual needs of students. In particular, FIRE obtained the highest overall performance, consolidating itself as a key tool for educational personalization. In contrast, the ARCO model, although useful in curriculum design, showed a more moderate performance, suggesting that its application could be more effective in the general structuring of educational programs than in the specific planning or evaluation of learning.

Conclusions

First, it is undeniable that the use of Prompts frameworks in education represents a key innovation in AI-mediated teaching. Models such as ROCEF, DEDIC, PEACE, CRISP, FIRE and ARCO effectively empower teachers to refine planning, assessment and personalization of learning. In fact, research has shown that the implementation of these structured Prompts not only optimizes the accuracy of the responses generated by AI models, but also facilitates the creation of high-quality instructional materials and refines the feedback process in the assessment of learning.

However, the effectiveness of these Prompts is intrinsically linked to the degree of knowledge that teachers possess about their design and application. Consequently, training in Prompts engineering emerges as an imperative need. In this sense, it becomes crucial to develop training programs that allow educators to design Prompts aligned with their pedagogical objectives and adapted to the needs of students. Thus, this training would not only strengthen the teaching-learning process, but also facilitate the effective integration of AI in education. However, the implementation of AI in education, while promising, is not without its challenges. These include the need for an interdisciplinary approach that integrates knowledge of pedagogy, technology and AI design, as well as the importance of ensuring technological accessibility and equity for all students. In addition, it is critical to address bias in AI models and to protect data ethics and privacy. Accordingly, the following lines of research are proposed to deepen knowledge about the use of Prompts in AI-mediated education:

- Long-term impact of Prompts on learning: Investigate how the continued use of structured Prompts affects the development of critical thinking, problem solving and autonomous learning skills in students.
- Designing Prompts for the assessment of complex competencies: Explore how Prompts can be designed to assess competencies such as creativity, collaboration and communication.
- Adapting Prompts to different educational levels and disciplines: Investigate how Prompts structures can be adapted to the specific needs of students at different educational levels and disciplines.
- Development of software tools for the design of Prompts: Create tools that make it easier for teachers to design and manage Prompts.
- Ethics and equity in the use of Prompts: Analyze the ethical and social implications of the use of Prompts in education.
- Integration of generative AI in formative assessment: Investigate how generative AI can be used to provide personalized and timely formative feedback.
- Comparative effectiveness of different Prompts models: Conduct comparative studies to determine which Prompts models are most effective for different learning objectives and educational contexts.
- The role of AI in teacher professional development: Exploring how AI can be used to support teachers' professional development.

Finally, the incorporation of structured Prompts in teaching represents a transcendental opportunity to improve the quality of learning and enhance a more personalized and effective education. However, to maximize its impact, it is essential to address the aforementioned challenges and ensure adequate training for teachers. In this way, we will be able to fully harness the potential of AI in education and build a future where technology and pedagogy merge to create transformative learning experiences.

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Audiovisual public policies applied in communities, towns and nationalities of Ecuador 2023

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Introduction

Public education policies are defined as the decisions and actions taken by the government to address social problems and needs; additionally, action plans are those that guide governmental decisions in response to public problems, allowing to determine how the resources of each government are organized and distributed through educational development plans, which must be articulated to the international agendas of each State. They also focus on the analysis and evaluation of governmental actions, examining how educational public policies are formulated, implemented and evaluated, by differentiating models and approaches, including the rational, incremental and actor network models, as well as the importance of citizen participation and the influence of interest groups in the policy formulation process.

As established in Article 281 of the Constitution of the Republic of Ecuador (2008), the Ecuadorian State is committed to complying with the international conventions and treaties it has signed on human rights and international humanitarian law, and to incorporate them into its domestic legal system, which is why public policies must also respond to these international treaties and conventions signed by the State. Thus, Article 85 of the Constitution of the Republic of Ecuador (2008) emphasizes that the State shall generate public policies that guarantee equality and social inclusion, considering the particular differences of individuals and groups.

In turn, Article 26 of the Constitution of the Republic of Ecuador (2008) states that education is a right of people throughout their lives and an inescapable and inexcusable duty of the State. It is a priority area of public policy and state investment, a guarantee of equality and social inclusion and an indispensable condition for a good life. Individuals, families and society have the right and responsibility to participate in the educational process.

Article 95 establishes that the State shall recognize and guarantee communities, peoples and nationalities. In accordance with the provisions of Article 1 of the Constitution of the Republic of Ecuador (2008), it states that Ecuador is constitutional of law and justice, social, democratic, sovereign, independent, unitary, intercultural, plurinational, and secular, an article that establishes the fundamental principles of the Ecuadorian State that serve as the basis for the organization and functioning of the State, as well as a guide for the creation of public policies and decision making in the country.

In this context, it is imperative to conduct an analysis of public policies aimed at peoples and nationalities in Ecuador during the year 2023, since, in Ecuador, the resident population, as indicated by INEC (2023), communities, peoples and nationalities occupy 16.6%, distributed in indigenous and montubios population in 7.7% and Afro-Ecuadorian community in 4.9%, by conditions of reparation to the historical damage suffered by processes of colonization and recolonization and large social gaps in which these groups are immersed, it is imperative to analyze public policies aimed at communities, peoples and nationalities in Ecuador 2023.

Public policies

Public policies from the governance theory focus on the interaction between the State, civil society and the market in political decision-making. It is based on the idea of governance as the capacity of public institutions to address a complex social problem, which implies coordination and cooperation between different actors to achieve the objectives set for common benefit.

Also, the theory of governance enables the decision-making process, which involves the interaction between the State, civil society and private enterprise or private business productive area, effectively activating the participation of society in decision making, seeking to address the complexity and uncertainty that the citizen has in governmental decision making.

In the same way, the theory of networks in public policy is important as the analysis of the structure and dynamics of the relationships between political, social and economic actors, from the fundamental analysis of networks to understand the complexity of political and social relations, observing centrality as a measure of importance of a node, the nodes that are the individual actors within the network Freeman et al, (1979) how they realize that interconnection and interdependence between nodes, question what are the processes of adapting and changing in response to new circumstances, considering the autonomy of nodes can act independently within the network, thus analyzing governance and public policy.

Evaluation of public policies

Public policy evaluation processes focus on analyzing and assessing the effectiveness and efficiency of government policies, from the evaluation, focusing on the systematic process to determine the effectiveness and efficiency of the same as well as the evaluation of results and impact assessment, considering the evaluation criteria include effectiveness, equity and sustainability.

In the application of evaluation methods contain data analysis, surveys, interviews and focus groups, he explains that the methods have several challenges, such as lack of data, resistance to change and politics, he says that citizen participation is of vital importance in the evaluation of public policies, to ensure that policies respond to the needs of society.

It also mentions that it will depend on the type of public policy evaluation applied, since each one has its own established objectives and approaches. As for process evaluation, it focuses on analyzing the implementation of a policy, including planning, execution and monitoring. However, it states that it is impact evaluation that analyzes the long-term effects of a policy on society or on a specific group. On the other hand, efficiency evaluation focuses on analyzing the relationship between the resources used and the results obtained. On the other hand, it states that equity evaluation analyzes the distribution of the benefits and costs of a policy among different social groups.

Public policies aimed at communities, peoples and nationalities.

In Ecuador there is a range of cultural and ethnic diversity, with numerous communities, peoples and nationalities that have contributed significantly to the country's history and culture. Since pre-Columbian times, these communities have maintained their traditions and ways of life, despite colonization and other historical challenges, the peoples and nationalities in Ecuador refer to the various indigenous ethnic groups, Afro-Ecuadorians, Montubios and others recognized by the State.

Ecuador is a signatory to several international conventions that protect the rights of peoples, such as ILO Convention 169, as well as the Constitution of the

Republic of Ecuador (2008), which recognizes the collective rights of communities, peoples and nationalities, and establishes mechanisms for their protection and promotion.

In 2023, Ecuador implemented several public policies aimed at communities, peoples and nationalities in order to promote inclusion, equity and sustainable development, such as Intercultural Bilingual Education, which seeks to strengthen the education system for indigenous nationalities, ensuring teaching in native languages along with Spanish and adapting curricula to indigenous cultures and worldviews. As well as Intercultural health that integrates traditional medicine with western medicine, promoting preventive health and respecting the ancestral practices of indigenous communities.

Labor inclusion policies, which promote the inclusion of peoples and nationalities in the labor market, ensuring respect for their labor and cultural rights. The institutionalization of the National Council for the Equality of Peoples and Nationalities (CNIPN), whose purpose is to formulate, mainstream, observe, follow up and evaluate public policies with a focus on equality and non-discrimination for peoples and nationalities. These policies reflect the Ecuadorian government's commitment to work together with the communities to ensure their comprehensive development and respect for their rights.

This research has a qualitative approach focusing on the deep and detailed understanding of the experiences, perceptions and behavior of the groups, through the systematic review method, which involves the search for scientific articles focused on public policy analysis, through the evaluation and synthesis of the literature on public policies aimed at communities, peoples and nationalities.

With a rigorous process that requires careful planning and systematic execution of the articles, identifying the objectives and scope of the articles, establishing the inclusion and exclusion criteria in the selection of the literature, by reviewing the Redalyc, Scopus, Web of Science and Scielo citation index databases, with such information the quality and relevance of the articles was evaluated, analyzing and interpreting the results and finally synthesizing the findings in this report. Using as search engines the words Políticas AND Públicas AND Pueblos; Públicas AND Pueblos; Políticas AND Pueblos; Políticas AND Públicas.

Table 1 *Distribution of articles by year and database*

Database	2020	2021	2022	2023	2024	Grand total
Redalyc	2		1			3
Scielo	3	1	1	3		23
Scopus	5	6	3	7	3	57
Grand total	**10**	**7**	**5**	**10**	**3**	**83**

Note: Distribution of articles according to database and years of publication.

Exclusion criteria: those that do not have open access, those that correspond to years prior to 2020 and those that do not contemplate the variable according to that required in the objective of this research are excluded.

Table 2 *Database of articles included for the investigation*

Database	2020	2021	2022	2023	2024	Grand total
Redalyc	1		1			2
Scielo	3	1	1	3		8
Scopus	5	7	3	6	3	23
Grand total	**9**	**7**	**5**	**9**	**3**	**33**

Note: Database in which the number of articles per year for the research is detailed.

The different reforms of public and economic policies in Latin America are not enough to have good ideas and well-designed policies, since there are multiple factors that can influence the implementation and success of these policies, such as implementation, elaboration and political parties, these elements are key in the role they play and the incentives are the characteristics of the scenarios in which they interact and the nature of the transactions in which they are involved, which vary significantly in each country and help to explain the variety of reform experiences in the region in recent years.

Likewise, (Almeida & Carissimi, 2024) , indicates that public policies should improve coordination between the countries involved, to maximize the benefits and more effectively address the challenges associated with infrastructure development, with a reasonable approach to the implementation of policies that consider environmental sustainability and the welfare of local communities, to avoid negative impacts and thus ensure that development is inclusive and equitable, so as to reduce social transformations in the territories affected in their ecosystem. In agreement with what is indicated by (Bustos, 2021) regarding the need to consider cultural practices in the formulation of health policies to avoid conflicts and ensure respect for cultural diversity, which will reduce the tension between traditional cultural practices and modern health regulations.

Critical views on spaces and discourses of subalternity, explains that political processes, particularly when there are actors from peoples and nationalities, can expose ways of understanding their reality, in terms of conflict, (Calleros Rodríguez, 2022) , explains that a system of governance allows a deep understanding of the political dynamics of peoples and nationalities, which imply unique methodological challenges. Regarding public policies on psychoactive substances can have disproportionate effects on communities as indicated by (Arcia Grajales, 2023) , which is why it is important to integrate intercultural and participatory approaches in the formulation of policies on psychoactive substances to ensure protection and respect for the rights of communities, peoples and nationalities.

One of the main concerns at the international level is food security, for which different policies are formulated in this regard, it is not possible to visualize the need for food security without considering community health and its violation, which directly affects the quality of life of communities, for (Calderón Farfán et al., 2023) , it is necessary to strengthen the food sovereignty of communities, peoples and nationalities, through public policies that respect their traditional knowledge and production systems. Likewise, for (Santos et al., 2023) , health policies have had a mixed impact on communities, peoples and nationalities, reflecting some improvements and at the same time great challenges, being insufficient to meet the needs of communities perpetuating a social liability, (Weiss, 2023) . Community health programs are relevant aspects, it is the promotion of health in communities.

Within the same line Catepillán Tessi, (2024) , indicates that different liberal policies contributed to the disarticulation of communities, peoples and nationalities, which promoted the subjugation or commercialization in the form of auction by means of control and assimilation by communities, peoples and nationalities. To this end, institutional support for the health assistants of communities, peoples and nationalities is important to ensure effective and culturally appropriate health care, as history reflects the need to reconsider policies to repair historical damage and promote the self-determination of communities.

Local power dynamics played and play a crucial role in the way in which policies are implemented, often distorting the original objectives of such policies for García-Moral, (2023) , the consequences of colonial, neocolonial and post neocolonial policies have been significantly shaped by power relations, which highlights the importance of considering the specific contexts in the formulation of policies. This is related to what was analyzed by (Loayza, 2022) , when it indicates that political and social tensions start from the figure of the mestizo as a symbol of struggle and resistance, making communities, peoples and nationalities invisible, this criticism of the social and political structures of their time, underlining the need to recognize and value cultural diversity.

On the other hand, (Ovalle Almanza & Vásquez Salazar, 2022) , mentions that, from the viewpoint of multilateral policies, they often limit the effective participation of communities, peoples and nationalities, restricting their capacity to influence decisions that affect them, policies that should guarantee a more equitable and effective participation of communities, peoples and nationalities in decision-making processes. (Barbeyto Rodríguez, 2021) , tells us that, policies should provide support to women leaders of communities, peoples and nationalities, allowing to recognize their central role in the defense of the rights and resilience of their communities, that these women leaders, all those who are part of this minority, do not go through any of the multiple forms of violence.

Communities, peoples and nationalities use models of community self-management that strengthen social cohesion and equitable distribution of resources citizen, that the self-construction of the governance of common goods, which enhance equity and participation can improve the reduction of gaps. As well as identifying gaps and significant losses in the management of archives, it affects the management of land, which is why it is important political networks and the ideology of equality, says that, should be considered rigorously archival policy to preserve the history and effective management of communities, peoples and nationalities (Cecchi, 2024) .

Tourism policies are intended to attract tourists, however, in this search can distort the original identity of the space in which it is implemented, which is why public policies must balance the promotion of tourism with the protection of the identities and rights of communities, peoples and nationalities (De La Maza-Cabrera et al., 2021) , also, this tourism policy is used in an ambivalent way, which allows the vindication through the exploitation of the identity of communities, peoples and nationalities.

The spaces of communities, peoples and nationalities, have been a multifaceted concept influenced by the policies and dominant culture of different times, a dynamic concept, reflected in the struggle for their rights and recognition over time according to (Figueroa Romero and González Pérez, 2021) ,. Which is related to what is expressed by Mendoza, P et al., (2024) , that the youth of communities, peoples and nationalities face multiple forms of discrimination, but also shows resilience and capacity for representation, for which it is imperative to adopt intersectional public policies that recognize and address peoples and nationalities as representation in previous centuries and the current one, being a reflection of cultural and political complexities.

It is important to indicate that the Theology of communities, peoples and nationalities is a unifying factor that provides a shared moral and ethical framework among them, which plays a crucial role in the cohesion and identity of these communities .

Calderón and Pérez, (2023) , indicate that a more inclusive and contextualized approach to language teaching is necessary to promote interculturality and respect for cultural diversity, which will improve the effectiveness of public policies, being crucial in closing the gap between theory and practice, through a more pragmatic and adaptive approach, for which it is important what is expressed by Pardo Porto, (2022) , regarding the representation in literature of communities, peoples and nationalities, as it reflects cultural and political tensions of a historical moment.

This construction of gender stereotypes about the Amazon that have endured in the international perception (Sarah Sarzynski, 2021) , with the different institutional reforms should be more inclusive and responsive to the demands of the movements of communities and peoples, to ensure effective representation (Velasco, 2021) , allowing communities, peoples and nationalities to represent their interests, but the strongest challenges are the structural barriers in the reform of institutional. As well as Intercultural Bilingual Education (EIB): One of the most important policies is education. Its implementation in Ecuador has increased significantly in recent years, highlighting its impact on improving the quality of education and strengthening the cultural identity of indigenous peoples.

It is important to point out that social movements are key agents in the configuration of territories and in the implementation of inclusive public policies (Caniguan Velarde, 2020) , for which, it is necessary to strengthen the practical implementation of intercultural education in Ecuador to improve its effectiveness and scope.

Public policies of inclusion of peoples and nationalities in Ecuador, in which the Ecuadorian legal framework in the 2008 Constitution, has influenced the inclusion and protection of the collective rights of peoples and nationalities in Ecuador, so it can be said that there is formal recognition of rights, however, the implementation and challenges are latent, the impact on communities is not that of strengthening cultural identity. (Gomez Lee et al., 2022) , tells us that they must be prepared to face global challenges, which are directed to the planetary emergency and diversities are issues that, when incorporated into the formulation of public policies, would allow for the integration of diversity.

The need for a substantial change in public policies and in the legal framework to improve people/State relations, according to (Lucas Garín, 2020) , to that extent the legal framework presents advances in the recognition of rights, but there are gaps in its implementation, for which it is necessary to strengthen the implementation and supervision of public policies with a differential approach to ensure the protection of the rights of all women of peoples and communities (Figueroa et al., 2020) .

Theoretical discussion

The theoretical discussion of the text on public policies, based on the theory of governance and its relationship with the evaluation and implementation of policies aimed at communities in Ecuador, from the theory of governance and networks, evaluation of public policies, and public policies aimed at communities, peoples and nationalities.

From the theory of Governance and networks focused on the interaction between the State, civil society and the market to address complex social problems, it agrees with what is expressed by (Almeida & Carissimi, 2024) , in the importance of coordination to integrate those involved and thus maximize the benefits in an effective way for development. Carissimi, 2024) , in the importance of coordination to integrate those involved and thus maximize the benefits effectively for development, as well as considering the implementation of guidelines that consider environmental sustainability and the welfare of local communities, as does (Bustos, 2021) , when indicating that it is essential to consider cultural practices in the formulation of policies to avoid conflicts and ensure respect for cultural diversity.

Governance implies coordination and cooperation among diverse actors to achieve common objectives, this cooperation among diverse actors, as mentioned by (Arcia Grajales, 2023) , is the viable self-construction of governance of common goods, enhancing equity and citizen participation in turn, (Calderón Farfán et al., 2023) , sees the need to strengthen the sovereignty of the peoples through public policies that respect their traditional knowledge and production systems. This includes the need to incorporate the specialists of peoples and nationalities in different areas such as health and the environment, so that they can incorporate their ancestral knowledge with the respective recognition and valuation of diversity.

In addition, network theory examines the structure and dynamics of relationships between political, social and economic actors, analyzing aspects such as centrality and interdependence between nodes, for (De La Maza-Cabrera et al., 2021) when it indicates that the promotion of tourism is related to culture, (Espinoza Freire & Leyva, 2020) says that the practical implementation of intercultural education in Ecuador should be strengthened and its effectiveness and scope should be improved. As well as guaranteeing the rights of women (Figueroa et al., 2020) , for which it requires adaptive approaches to the specific contexts mentioned (Calleros Rodríguez, 2022) .

Freeman et al., (1979) , highlights the importance of collaboration between different actors, as expressed by (Gómez Lee et al., 2022) , indicating that the integration of diversity and planetary awareness in public policies is crucial to address the challenges in Latin America, for which it is essential to improve communication and collaboration between communities and public policy makers, (Santos et al., 2023) , however, in practice and effective coordination may be limited by conflicts of interest and structural barriers. The theory idealizes a system of fluid cooperation that may be difficult to achieve in contexts where actors have divergent interests or unequal levels of power, for which (Weiss, 2023) expresses that it is urgent to review and improve public policies and effectively address the needs of communities.

For networks, they offer useful insights into how actors interact and adapt their strategies in response to changes. However, this theory can simplify the complexity of node autonomy, since in some contexts, actors may have significant limitations in their ability to act independently due to political or economic constraints.

This public policy evaluation focuses on the effectiveness, efficiency, equity and sustainability of government policies. It includes various methodologies such as data analysis, surveys and focus groups, but faces challenges such as lack of data and resistance to change. Citizen participation is crucial to ensure that policies respond to the needs of society. Drawing from the variety of evaluation approaches (process, outcome, impact) allows for detailed analysis, but each has limitations. For example, impact evaluation can be difficult because of the need to measure long-term effects, while process evaluation may not fully capture the final results of a policy.

Where citizen participation is vital, but its effectiveness may be restricted by institutional barriers or lack of access to information. The evaluation should consider these challenges and seek methods to foster genuine and effective participation. Ecuador has implemented policies to promote the inclusion and development of indigenous communities, such as Intercultural Bilingual Education and intercultural health. These policies seek to respect and revitalize cultural traditions while promoting sustainable development mentions Freire & Leyva, (2020) .

The 2008 Constitution and ILO Convention 169 establish frameworks for the protection of collective rights. Although public policies have had positive impacts, such as in education and health, persistent challenges include variability in implementation and effectiveness according to local context. Public policy theory must address how to adapt and adjust policies to address these specific challenges and ensure equitable implementation (Gómez Lee et al., 2022) .

In Ecuador the Constitution and international conventions provide a solid basis for the rights of communities, but the actual effectiveness of these policies can be variable. Policies must be continually evaluated to ensure that they translate into practical and sustainable improvements in communities, a comprehensive view of governance theory and its application in the formulation and evaluation of public policies can be identified, especially in the context of communities and nationalities in Ecuador.

While governance theory and network theory offer useful frameworks for understanding the interaction and adaptation of actors, public policy evaluation highlights the importance of diverse methods and citizen participation to ensure effective and equitable policies. Policy implementation in Ecuador shows significant progress, but also underscores the need to address contextual challenges and ensure effective and adaptive policy implementation.

Conclusions

In conclusion, the definition and analysis of public policies highlight their central role in the management and resolution of social problems by the government. Public policies are action plans that guide government decisions, organizing and distributing resources to address public problems, focused on the evaluation of the formulation, implementation and results of public policies, encompassing various models and integrative approaches that allow understanding how citizen participation and interest groups influence the creation and evaluation of policies.

In the Ecuadorian context, the 2008 Constitution establishes a commitment to international human rights conventions, reflecting a normative framework that orients public policies towards equality and social inclusion. Articles 85 and 95 of the Constitution underscore the need to generate policies that guarantee equality and recognize communities, peoples and nationalities, highlighting the intercultural and plurinational nature of the Ecuadorian State. This legal framework is crucial for understanding how public policies should be aligned with constitutional principles and international commitments.

The analysis of public policies aimed at communities, peoples and nationalities in Ecuador during the year 2023 shows a significant effort to address historical inequalities and promote inclusion. The implementation of policies such as Intercultural Bilingual Education and intercultural health programs exemplify an attempt to integrate cultural diversity into public management. These programs seek to strengthen cultural identity and improve access to essential services, showing a commitment to sustainable development and respect for ancestral traditions.

The qualitative methodology employed in public policy evaluation research reveals a detailed understanding of the experiences and perceptions of affected groups. Through content analysis and scientific literature review, both successes and challenges in policy implementation are identified. Citizen participation and ongoing evaluation are key elements to ensure that policies effectively respond to the needs of communities and promote equity and social justice.

While public policies in Ecuador have made significant progress in terms of inclusion and respect for cultural diversity, challenges persist in their effective implementation. The theory of governance and networks provides a valuable framework for understanding these dynamics, but practice reveals the need to overcome barriers and adjust strategies. Ongoing evaluation and adaptation of policies are essential to ensure that they translate into concrete and sustainable improvements for communities, thus ensuring a positive and lasting impact on Ecuadorian society.

It is imperative to review, control and care in the implementation of public policies that allow from the formulation the participation of the actors of the communities, peoples and nationalities, the implementation of these policies should be focused in a differential way to each community, considering the processes of self-construction of the communities, the social cohesion that exists in them, which include the factors of integration and ancestral and cultural knowledge of them, with the respective recognition and invisibility of their representation and their participation in decision making.

It is also concluded that not only intercultural bilingual education and ethno-education are necessary, but also that in the areas of basic, primary, secondary, high school, university and postgraduate education, the production of research in each area of knowledge based on peoples and nationalities should be considered in order to show the reality of their experiences and the contributions they can provide for their improvement in their territories and to face the planetary challenges to which they are and will be exposed.

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Evaluation of the use of social networks as a didactic tool in higher education in Arequipa

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Introduction

Research question: do social networks strengthen the didactic processes of professional training or, on the contrary, do they generate spaces of procrastination in communication science students?

The topics of analysis are focused on social networks and university didactics, which are addressed throughout this chapter; considering that virtual social networks have generated a new scenario that should be exploited from a knowledge perspective, directing its use so that it becomes a didactic tool, otherwise it could become a procrastinating element that harms the student.

In the context of professional training of communicators, it is perceived that virtual social networks absorb necessary time in the training process, so some questions arise, do social networks strengthen the didactic processes of professional training or on the contrary generate spaces of procrastination in students of communication sciences? , In a detailed analysis Iglesias(2020) points out that "There is no doubt that the world is changing and the way in which university education is conceived must be transformed or it will be in serious danger of failing to keep up with the current circumstances" (p.106), especially if we are talking about students who have a predilection for the use of networks because of the professional discipline they aspire to.

In a broad analysis, it is recognized that "Most social networks are 100% interactive, as they allow greater connection and relationship between users, brands, companies and anyone who is present in each of them" (Ibo, 2024) , considering that digital social networks constitute "a structure composed of a set of actors who are connected by interpersonal ties, which can be interpreted as relationships of friendship, kinship or learning, among others" (Ormart & Navés, 2014 , p.175), for the study seven networks were taken into account, Facebook, Instagram, TikTok, YouTube, Messenger, Twitter and WhatsApp;

however, in the analysis of results only four networks were considered, as they were more significant, the other networks were of little relevance.

One aspect to take into account is the analysis proposed by Luis Natividad who in his doctoral thesis points out that procrastination does not mean not doing anything, but can be seen as a failure before the intention to do it (Natividad Sáez, 2014, p.16), which strengthens the idea that students in their proactive stage, use long periods connected to different networks that do not necessarily have academic purposes.

In recent years the need for the use of communication technologies in their various manifestations is discussed, however, Gutiérrez makes a pertinent comment, "Both in the curricular integration of multimedia technologies and in teacher training, the emphasis is placed on the mastery of technologies and the socio-communicative competencies that these allow and condition are forgotten" (Gutiérrez-martín et al., 2022 , p. 22); regarding the use of tools that could procrastinate and run the risk of obscuring the objective of the academic message, generating perceptive communication fallacies. Also, "The participation subsystems consist of a discussion forum, course grading and class assignment. The impact of each of these subsystems is evaluated in terms of behavioral, emotional and cognitive aspects" (Ayub et al., 2021 , p. 567); strengthening the capabilities that networks can offer to professional training.

Another aspect to take into account is time management, some authors point out that "time management is a learned skill and, therefore, susceptible to intervention, which multiplies its importance to prevent procrastination, and also academic failure and abandonment" (Garzón & Gil Flores, 2017 , p.9), the first years of training, university work methodologies show weaknesses in procedures, however as academic routines are consolidated, more disciplined ways of working are consolidated.

The inappropriate use of time can generate spaces of academic dysfunction, which in the long run can become procrastinating elements "In the educational field, academic procrastination (AP) constitutes an irrational postponement in the performance of academic tasks, leading the individual to states of anxiety and subjective discomfort" (Vacacela Villagómez et al., 2023 , p.44), so it will be necessary to review the rational use of academic time, university didactics is recognized "as the set of knowledge that allows those who study it to carry out the art of teaching", (Lira Apaza, 2007 , p.48), regardless of the fact that many university teachers do not have pedagogical training, which affects in greater concern for the analysis of the inappropriate use of time.

In this analysis it is necessary to review the literature regarding procrastination understood as "a pattern of behavior characterized by voluntarily postponing the completion of activities that should be delivered at an established time" (Quant & Sanchez, 2012 ,p.1); and separated by a very thin thread, this "social networks as a new communicative ecosystem in steep growth, it is essential to study them" (Fondevila-Gascón et al., 2011 , p.499); the more we have this analysis the better will be the decisions of the use of networks in the university didactics of communicators.

Abello Llanos & Madariaga Orozco(1999) , consider that social networks have the function of supplying two aspects in youth life, emotional support and instrumental help, in the first case people in situations of sadness or sensitive loss, cover gaps of those who are their friends, part of the network; in the other case when there is any need, information, even for business (p.122), which has an impact on a better identification of the deterrent factors of the concentration of the scientific discipline. "technology seems to advance faster than it is possible to adapt to it, but we must keep in mind that we are not in a race with it, but we must work together with technology and see it as a tool, an instrument, an ally and not an enemy" (González Arreola & Katiusca, 2024 , p.13).

One aspect that should be taken into account is the collaborative work of university students, Hernández et al.,(2021) , point out that cooperative learning "enhances teamwork, social relations and mutual support among students, motivates the learning process and allows the achievement of successful academic results" (p.252). Another concern is the characterization of collaborative work, "should be established through the design, development and evaluation of collaborative work among students, mainly through dynamics that are related, fundamentally, to the nature of the subject and the characteristics of the group of students" (Compte Guerrero & Sánchez del Campo Lafita, 2019 , p. 139). Thus also, the use of information technologies, and specifically social networks in the better performance of university students through collaborative learning should be considered as part of the innovative process in pedagogical strategies, university teachers should consider them as innovative practices (Amadu et al., 2018) , as proposed in this article.

The research is proposed in a multistage way, as a first aspect we analyze the theoretical foundation referred to social networks as a tool for innovation, didactics as a procedure of the teaching-learning process and procrastination as an element that could hinder the formative development of communicators or become a complementary motivating element to cognitive development, then we developed a survey to students of Public Relations and journalism of the National University of San Agustin in order to confirm the premises raised in the use of networks in the teaching-learning process; In the third part of the study, we elaborated the instrument through a questionnaire in Google forms, previously we dialogued with the students about the objectives of the research. Regarding the type of research, it is of the correlational type with a quantitative approach (Bernal, 2022) , with variables that analyze the use of social networks in the teaching-learning process of university students of the Professional School of Communication Sciences. according to its depth it has a correlational character, temporarily it is transactional; the sample taken is 181 students enrolled, both in the Public Relations and Journalism programs.

The validation processes were carried out by teachers who teach research methodology at the Professional School of Communication Sciences, both from the perspective of content, criterion and construct, in turn, the Likert scale was applied, having applied a pilot of 20 surveys to show the reliability with Cronbach's Alpha, resulting within favorable ranges. Regarding the application of the questionnaire, it was not mandatory, so students who were willing to fill out the form did so; the research did not consider exclusion criteria for students of communication sciences.

Social Networks

Networks before being pedagogical tools are "the set of individuals belonging to a population connected to each other by some specific criteria, such as friendship, interest in a particular topic, nationality, fondness for a sport, to name a few" (Mansilla Corona, 2017 p.129), in turn, a recent study points out that through "social networks they identify themselves, create subcultures; exchange knowledge, information, clarify, inquire, and build resources, which is why social networks are an important factor to boost educational productivity" (Martinez Campos et al., 2020 , p.7); in this sense, virtual social networks accompany the evolutionary process of students on a daily basis.

The purpose of the analysis proposal is to evaluate to what extent networks can be didactic tools in professional training, however some authors point out that "digital social networks as a space for leisure and entertainment, but not with education, so they prefer to separate both activities" (Angulo-armenta et al., 2021 , p.31), considering that networks do not constitute didactic tools in professional training. The discussion could be endless if the positions remain as two limited circumstances, however, if the use of networks is directed in an intelligent way, Acurio et al.,(2019) point out that "there are several pedagogical mechanisms that have helped to foster the growth of research" (p.26), on the other hand, "social networks represent a technological alternative of the 20th Century1 that allows improving the current conditions of the educational process" (Salas Rueda et al., 2017 , p. 63), in that sense, it is convenient to assume networks as a collaborative element in the didactics of higher education.

As already mentioned, networks can become harmful elements in professional training, much depends on how the teacher manages to channel the use of networks, considering that it is a tool inherent to the daily activities of students, "The integration of visual culture in teacher training improves skills and perspectives. However, challenges are pointed out, such as the need for a constructive use of image-based social networks and the diversity of platforms on Instagram and YouTube" (Peña-Acuña & Alfonso Jaramillo, 2024 , p. 61), so it is necessary to identify strategies for an efficient didactic organization.

Finally, virtual social networks end up being an instrument that the university teacher can channel in a favorable way, on the contrary, avoiding a technological tool could be a prey to procrastination, Espuny Vidal et al, (2011) Espuny Vidal et al. affirms that "social networks can help us to a great extent to consolidate forms of cooperative work that are much more profitable from the learning point of view" (p. 183), the authors emphasize that we must be able to set out on the path towards the massive use of active and participatory methodologies, considering that for today's youth the use of networks is an everyday communication.

University Didactics

The evolution of the term has been developing teaching and learning strategies in the university, for example, the behaviorist method where knowledge is only based on what the educator transmits and not the students and if the student did not understand what was exposed by the teacher it was inconvenient for him, however, other methods such as the "teaching and learning method" have emerged.

The structural approach that focuses on the fact that everything must be investigated before a structure generally exposed in linguistic areas; Didactics in this century was more focused on the student to focus on the surrounding environment and minimize a little the place of the educator, thus being able to develop skills that will also be necessary for their growth and adapt to other societies and ways of life, thinking about achieving a better future for humanity, Sanchez Delgado (2005) argues that "Didactics is not prescribing what should be done, or apply what others say should be done, but to reflect on what is done and why it is done" (p. 225).

The didactic processes in the university have changed a series of pedagogical forms, sometimes focused on the curricular area of the universities, so that didactics has been constantly improving and evolving as part of learning and the different areas in society. Didactics has been evolving and has thus tried to adapt to the needs of both students and teachers, in order to meet the optimal development of learning; at the same time, the instruments used have been renewed as information technology has substantially contributed, De Pablo Gonzales(2017) , points out that "thanks to the evolution of the Internet, ICT and how they have affected learning scenarios, we can speak of more open and participatory models" (p. 45).). Likewise, Gonzales Rivera(2016) , states that "the efficient use of internal networks of university institutions can favor the processes of acquisition and consolidation of knowledge in central topics of theory and practice" (p. 33).

Results

Among the significant findings, it is perceived that university students of communication sciences, those in their second and third year, show their preferences for social networks as preferred for distraction and leisure, however, those in their fourth and fifth year lower this predilection and use it to a lesser extent, on the contrary, the preferences are given by the use of networks as sources of information, self-realization, spaces for interaction with peers, proportionally there are samples that as professional responsibilities require it, their use is more academic.

The processes currently proposed outline a greater dedication to pedagogical procedures in the university, which shows improvement in the quality standards of professional training, however, the conditions in which educational activities are developed must be taken into account, "the conditions of infrastructure, services, equipment, resources and safety are conditions that circumscribe the range of teaching and learning activities that the teacher can deploy in their daily practice" (Guerra et al.., 2019 , p.146), so the conditions must be taken into account to modify the didactic processes.

The research showed that students, regardless of the perception they have of the use of social networks, do not use it intentionally as a didactic tool; in turn, it can be noted that the preferences in the content are little valued in terms of their use. Reason that allows us to point out that knowing that certain networks are not useful, they keep them preferentially, because they meet other expectations that students seek.

"University students make little use of social networks as a didactic tool for the development of their teaching-learning process, and strategies should be implemented to promote their use in Higher Education" ((Rodríguez Revelo et al., 2021 , p.164).

In a comparative analysis of the use of Facebook during class lectures using contingency tables, between Journalism and Public Relations students at a significance level of 0.05% applying the chi-square test statistic for qualitative variables where:

H0: There is no relationship between the use of Facebook by journalism students and Public Relations students during class lectures.

H1: There is a relationship between the use of Facebook by journalism students and Public Relations students during class lectures.

The decision is not to reject the null hypothesis (Ho), because the calculated value of the chi-square test statistic$\left(\chi^2{}_C = 8{,}98215826\right)$ is not greater than the critical value of the chi-square test statistic$\left(\chi^2{}_{0,05}(4) = 9{,}488\right)$ with a significance level of 0.05 (**α** = 5%). According to the objectives stated in the research, there is no relationship between journalism students and Public Relations students.

On the other hand, with respect to the preferences of the social network as a recreational, distracting element, it is clearly perceived that in the second year there is an 18.78 preference for Facebook as a network of preference in the selected sample, in the third year there is an 8.28 and in the fourth year of professional training there is only a 0.55 preference for this network; in the fifth year it increases again to a 7.74 percent preference. With respect to the use of Instagram as a network of preference in recreation and leisure or entertainment, in second years it reaches a 13.26 percent preference, in third year it is perceived as 11.6 percent, the fourth year again drops to 2.26 percent and in fifth it rises to 6.08 percent, thus configuring that in the years of less formation, the preferences for its use in terms of distraction, both Facebook and Instagram; the interviews conducted with students point out that it is much more entertaining and on more than one occasion show that it generates delay in their academic responsibilities, although it is not a licentious addiction, if unusual entertainment of Communication Sciences students is perceived. In turn in the contrastation through interviews with university students, they point out three attractions for which they prefer, first is the "gossip" information, in some cases false, but they are aware of its falsity however, circulates in the form of gossip, another reason is the interaction with other classmates, friends known and unknown physically, the network allows that fluid interaction; and the third element is the current news, either conventional media and other digital media that are placed in these networks for greater rapprochement with the public. The scopes suggested by students of communication sciences at the Universidad San Agustín regarding the use of social networks, demonstrating some relevant aspects as a tool for didactic innovation in pedagogy, as well as showing weak aspects that are highlighted throughout the research. In the preferences as elements that contribute to professional training, we have considered four relevant aspects, first as a source of innovative information of knowledge, second as a collaborative element in the interaction with peers, third for the social presence as an element of personal self-realization and fourth as a platform that generates controversy on interesting topics.

It is necessary to take into account that the use of information technologies through networks implies the use of tools often little explored by teachers and even students, it is necessary to underline what Azofeifa and García(2023) pointed out "that the level of digital competence from a technopedagogical perspective of teachers, as well as the resistance to the use of ICT" (p. 234), on the other hand, it should be assumed that social networks have a permanent starting point of innovation "from the propagation and evolution of social processes, the study of the dynamics of networks has been integrated to ARS. 234), on the other hand, it must be assumed that social networks have a starting point of permanent innovation "from the propagation and evolution of social processes, the study of network dynamics has been integrated to ARS and also to the development of new software tools" (p.104); this implies that network processes have an accelerated vision of permanent change and innovation.

In other research on professional training, it is proposed that "the tools and strategies that have been helpful to mediate the teaching and learning process become fundamental stages to give continuity to education, where the game, the active pause, the design of visual and interactive material, the generation of participatory spaces", (Bohorquez Alvarez & Otálora Calderón, 2022 , p.22), that is, not to leave them to the free will of the students, but rather to incorporate them in the teaching-learning process as a complementary tool in professional training.

In turn, Fonseca Chiu proposes didactic strategies in university education, specifically recommends the use of Facebook as a collaborative tool where the teacher requests to develop a software project and disseminate it through the platform so that it is supervised by the teacher (Fonseca Chiu et al., 2014) , in the results of the students it is shown that 95 percent indicate as a good way of working excellent and very good.

Figure 1

Preference of Facebook recreational use

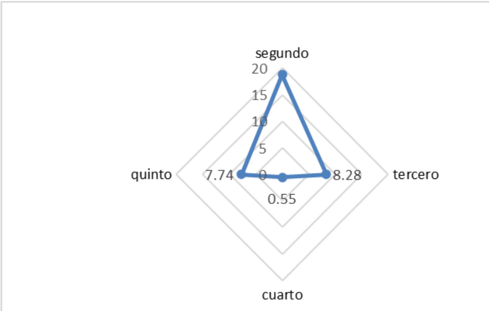

Figure 2

Preference of Instagram use.

Facebook and Instagram are the most preferred networks among communication science students, both as entertainment networks in class and in recreational moments at home. A similar study concludes that "from these data we can conclude that the use of Facebook in the studies

university will be more successful than using other social networks" (García-ruiz et al., 2018 , p.297), much will depend on the contexts to determine which of the networks is more appropriate, probably in some sectors it will be another network. Likewise, it should be taken into account what is pointed out by Asencio Peralta(2016) who notes that "most university teachers were trained under traditional teaching schemes, so they do not have experience in teaching models with constructivist approaches and replicate in their classes, the way in which they themselves were taught" (p.129).

With respect to the preferences making use of Tik Tok, the behavior is very similar to the previous ones, second and third year students show greater preference, fourth and fifth year students are somewhat more resistant to the use of these networks, although the differences are not so distant especially when it comes at home, in classrooms their use is very similar, the differences range between 11 and 16 percent, which shows is that in all social networks have characteristics not very differentiated with respect to the use given by communication students.

Figure 3

Preference of Tik Tok recreational use

Figure 4

Preference of You Tube use

In proportional terms, the use of the networks as recreational use according to the years, it can be seen that in Tok Tok in the second year it reaches 19.89 percent, in the third year it drops to 8.83 percent and in the fourth year it reaches 2.21 percent, to rise in the fifth year to 7.63 percent. The oscillations in their analysis are not so differentiated; with respect to YouTube, the oscillations are the same, 16.02 in the second year, 7.18 in the third, 1.65 in the fourth and 7.63 in the fifth.

In relation to the preferences for social networks as elements that help professional training, we have associated the second and third years as a study group and the fourth and fifth years as the second study group, with the data obtained we present the following.

Table 1. *Percentage preferences of social networks as innovative tools by groups of university students*

Year	Social networks			
academic	Facebook	Instagram	Tik Tok	YouTube
Second and third	17.66	18.22	17.66	12.14
Fourth and fifth	61.31	69.61	60.21	51.37

It is evident that, considering the network as a coadjuvant element to knowledge innovation, the fourth and fifth groups show a higher level of preference than the second and third groups; it should be taken into account that this is a voluntary sample, however, the preferential differences in each group are distant. Assuming the proposal pointed out by Rodriguez in educational innovation, concentrating the transcendent motivations, he points out that innovation produces alterations in the educational fact (Rodriguez-Rodríguez, 2024 , p.175), according to what has been studied, the modifications in the didactic tools in the pedagogy of the communicators' formation, taking into account the participation of the university students themselves, are required.

Conclusions

According to the objectives and the question posed in the research, the use of social networks was analyzed, in this case gave greater importance to the four networks that in the academic training of communication students were relevant, Facebook, Instagram, Tik Tok and YouTube; these four networks were of greater significance; among the findings found, the innovative proposals of the knowledge of the networks four considerations are identified, firstly, they are recognized as sources of innovative information in the specialized training of communicators, secondly, the capacity of the platform for the interaction of the university students with their academic peers, the possibility of coordinating academic activities, thirdly, the personal visibility of the university students as an element of the academic training of the students, and thirdly, the personal visibility of the university students as an element of the academic training of the students, thirdly, the personal visibility of university students as an element of social self-realization, university students perceive themselves as important when they receive favorable emoticons through the social network and fourthly, the platform's capacity to generate controversial topics, communication students have a predilection for raising issues and so much to see and many times be protagonists of the debate generated by social networks.

On the other hand, three criteria are recognized as procrastinating elements: firstly, gossip as an attractive element of distraction; secondly, the news that spreads, often false and sometimes true, entertains the murmuring of the networks; and thirdly, the interaction with people known and unknown physically, is a subliminal attraction.

The research shows that second and third year students give more preferences for recreational, distraction and entertainment networks, while fourth and fifth year students show their preferences based on better sources of information, interaction with their peers, debates and their own self-realization; the recommendations imply that the use of networks should be tools that contribute to professional training, i.e., they should be part of the tools and methods proposed in the corresponding syllabuses; it is not possible to conceive that networks are not part of professional training; their use could improve the academic performance of Communication Sciences students.

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Analysis of communication dedicated to the purchase decision in urban contexts

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Introduction

Analyzing behavior is a more important tool in the areas of marketing and economics because it allows companies to understand the factors that drive customers' purchasing decisions (Gonzales, 2021). Globally, the market has become highly competitive and extremely globalized; therefore, the success of companies is linked not only to good quality products or excellent services offered, but also to having the ability to anticipate and meet the needs of consumers plays a key role (Muñoz, 2015). As indicated by the authors, a thorough understanding of consumer behavior is key for companies when developing marketing strategies that effectively capture the attention of buyers and thus differentiate themselves from their competitors.

When making a purchase, people do not limit themselves to selecting a product; they also take into account a series of factors that intervene in this decision, such as the place and time they choose to buy (González, Guiracocha and Cueva, 2024; Macías, Barquer-Arenas and Yambay-Aucancela, 2024). In addition to the aforementioned, there are other internal variables that influence the moment of purchase such as: attitudes, perceptions, own- or third-party experiences and emotions that cause them to buy, there are also external variables such as market trends, social influence and marketing strategies employed by companies. The combination of all these variables results in a complex process that companies must understand in order to design shopping experiences that meet the buyer's expectations and enable brand loyalty (Saravia-Ramo, Carhuancho-Mendoza, Vasco-Mora and Orihuela-Ríos, 2022).

Understanding customer buying patterns enables companies to calibrate their sales strategies and obtain the expected financial results (Díaz, Solano, Aguilar, Otiniano and Calvanapon, 2022). A detailed and deep understanding of the aforementioned factors is a crucial step that very few companies achieve, and those that do are able to personalize their offers, thus increasing customer satisfaction and maintaining their competitiveness in the market. Likewise, data analysis gives companies the ability to predict customer preferences and even influence those preferences.

As mentioned above, in the cities of Guayaquil and Milagro, which are important urban centers in Ecuador, market interactions are influenced by demographic, social, cultural and economic factors. In the case of the city of Guayaquil, one of the most populated cities in the country with approximately three million inhabitants according to data from the National Institute of Statistics and Census (INEC, 2010), this city has a wide range of options at the time of where to make the necessary purchases for the home such as large supermarket chains or municipal markets. On the other hand, the city of Milagro has a population density of approximately one hundred and sixty thousand inhabitants, this city presents a different scenario in commercial activity since municipal markets are the main places where citizens obtain basic necessities, followed by supermarkets.

For shoppers, choosing a place to shop depends on several factors such as product availability, product quality, prices and customer service (Ortega-Vivanco, 2020). Safety, cleanliness within the establishment and offering local products also play a crucial role for consumers when choosing where to shop. As cities grow, consumers' needs are changing, so it is essential for all companies to conduct a detailed analysis of volatile customer behavior to influence the final purchase decision (Romero, Cuba, Ramírez and Vásquez, 2024).

As mentioned, consumer trends change as time goes by and currently technology has a great impact on customers when deciding whether to buy or not. These days, access to information through social networks and mobile applications have significantly changed the way consumers shop (Avendaño and Guacaneme, 2016). An example of this is the offers and promotions that reach consumers in various ways, whether through social networks, emails or text messages, particularly in the city of Guayaquil, where technological penetration is high and consumers are increasingly aware.

For the given context, gaining an understanding of those factors that influence consumers' purchasing decisions is of both theoretical and practical importance. Understanding these factors is critical for retailers and local businesses when implementing or adapting marketing strategies that meet customer needs and wants. Thus, research not only provides knowledge about consumer behavior but also provides tools to improve the competitiveness of businesses, specifically in municipal markets.

The decisions that customers make regarding where to shop are not a random process, but are linked to several interacting variables. Due to the competitive nature of the market, it is essential to understand what the decisive factors are when choosing where to shop, so the question guiding the research is: What factors determine the choice of place of purchase between supermarkets and municipal markets in the cities of Guayaquil and Milagro?

The research is divided into several parts. The first part provides a theoretical perspective that enriches existing knowledge on consumer behavior. Most previous studies have focused on general consumer behavior, but few studies have examined in depth the different factors involved in the decision of where to shop, whether in supermarkets or municipal markets.

The second part explains the choice of a binary logistic model to analyze the factors, in this case the dependent variable is the place of purchase of the customers, which can be supermarkets or municipal markets. The chosen method allows analyzing how the independent variables, which are: frequency of purchase, type of product purchased, available payment options, preferences for local or imported products and the city of residence, influence when choosing where to buy. The described allowed us to appreciate which variables influence the purchase decision.

The findings of the study have direct implications for retailers and businesses in the cities of Guayaquil and Milagro. By identifying the most influential factors at the point of purchase, vendors can implement improvements to their marketing strategies, improve key aspects such as the services offered, and retain customers. An example of this is that if hygiene and safety are considered key factors, municipal market traders should focus on improving these aspects to compete effectively with supermarkets.

The study serves as an input for public policy making, as the Decentralized Autonomous Governments (GADs) of the cities of Guayaquil and Milagro can use the results to create policies that improve the shopping experience in municipal markets, thus stimulating the local economy. By encouraging commerce to align with consumer preferences, both the merchant and the customers benefit.

The objective of the research focuses on identifying and quantifying the impact of the different independent variables already mentioned on the customers' purchase decision. In order to reach the objective, a binary logistic regression model was used to estimate the probability that the consumer will choose a place of purchase based on the following regressor variables: frequency of shopping, type of product purchased, payment options available, preference for local or imported products, and in which city the buyer resides.

The structure of the article is presented as follows: first, the literature review based on previous research on purchasing decisions and the use of binary logistic regression models. This is followed by the methodology describing the design of the study, the data collection and the model proposed. Then the results and discussion of the results are shown. Finally, a conclusion and its implications for retailers and companies are provided.

Literature review

An exhaustive review of the literature revealed that most of the studies indicate that factors such as quality, price, demand, access to credit, staff friendliness, among others, have an impact on customers' purchasing decisions.

Factors such as quality, price and advertising are constant factors that customers take into account when deciding where to make their purchase (Antosova, Psurny and Stavkova, 2023). Likewise, other research indicated that having a price that fits the customer's budget, quality that meets their demands and recommendations from other people are indispensable factors in selecting where to buy (Moreno, Ponce and Moreno, 2021). On the other hand, access to credit and personalized attention are factors that customers take into account when making their purchases in the Colombian context (Espinel, Monterrosa-Castro and Espinosa-Pérez, 2019). In turn, the speed of service, incentives and the friendliness of the staff are desirable for a large part of the customers at the time of establishing in which establishment they make purchases (Badajoz, Jaime, Martínez and Conde, 2023).

Technology has revolutionized communications, access to information and the purchase decision process, as mobile shopping applications that use cutting-edge technologies with artificial intelligence are now being used, allowing consumers to make informed and personalized decisions. This is why (Tomsa, Romonti-Maniu and Scridon, 2021), indicated that technologies not only improve the user experience, but also increase the likelihood of consumers adopting ethical and sustainable shopping behaviors, which is fundamental to the differentiation of municipal markets from supermarkets.

Cultural and socioeconomic disparities significantly impact purchasing decisions, particularly in the choices between supermarkets and municipal markets. One study noted that municipal markets are more popular in lower-income communities due to lower prices and access to fresh food. These disparities are important to understand the dynamics in consumption for different cultural and economic contexts (Luchs and Miller, 2014; Kou, 2024). In a country like Ecuador, which recognizes cultural diversity and marked economic differences, it is essential to take such factors into account to develop effective business strategies to attract consumers.

As we have seen, factors such as quality, price and shopping experience condition customers' purchasing decisions. In addition, other factors, such as word of mouth or also known as recommendations and the knowledge of customers about what they are going to buy, help to condition their decisions, especially when it comes to food. Therefore, the research seeks to determine whether the variables mentioned above influence the decision of where to make their purchases.

Below are the theories on the factors that affect the customer's purchasing decision:

- **Maslow's Theory of Motivation:** The present theory implies that purchasing decisions are driven by the satisfaction of hierarchical needs, the most basic of these needs being food and security, while the most advanced is about self-actualization (Healy, 2016; Nether, 1991).
    - Maslow's theory of motivation is relevant because consumers seek to satisfy basic needs, such as food, in a municipal market or supermarket, as well as factors such as security and belonging influence the choice of place of purchase.
- **Skinner's Operant Conditioning Theory:** Decisions on where to make purchases can be preset by operant conditioning, where rewards or punishments influence future choices (Peter and Nord, 1982). A clear example is that if your previous purchase experience was positive, the customer is more likely to repeat the purchase.
- **Perceived Value Theory:** the theory indicates that purchase decisions are influenced by the evaluation of the value that a customer assigns to the product or service compared to its cost (Sánchez-Fernández and Iniesta-Bonillo, 2007). Perceived value includes not only product functionality, but also perceived emotional, social and cultural factors. Customers weigh these characteristics to determine whether a purchase is valuable to them (Sánchez, Callarisa, Rodríguez and Moliner, 2006).

Model Evaluation

To measure the overall significance of the model, the omnibus tests of the coefficients were used. Additionally, the quality of the model was evaluated with the-2 log likelihood and R-squared values. Moreover, the predictive ability of the model was also evaluated using the league table, which would indicate how well the model can predict shopping location choices.

The formula that best represents the binary logistic regression model used in the study is as follows:

$log\left(\frac{P(Y=1)}{P(Y=2)}\right) = \beta_0 + \beta_1 * FRECOMP + \beta_2 * PRODUC_1 + \beta_3 * PRODUC_2 + \beta_4 * PRODUC_3 + \beta_5 * PRODUC_4 + \beta_6 * PRODUC_5 + \beta_7 *= OPCPAGO + \in$

- P(Y=1)= probability that a customer will choose supermarkets.
- P(Y=2)= probability that a customer will choose municipal markets.
- $log\left(\frac{P(Y=1)}{P(Y=2)}\right)$= is the logit of the probability of choosing supermarkets.
- $\beta_0$es= model constant.
- $\beta_1, \beta_2 \ldots. \beta_7$= coefficients of the independent variables of the regression.
- FRECOMP= frequency of purchase.
- $PRODUC_1, \ldots PRODUC_5$= represent the dummies for the different types of products purchased
- OPCPAGO= payment options available.
- $\in$= error term.

Table 1 shows the overall validity of the model, showing the chi-square values for each step along with the degrees of freedom and significance values. The aforementioned tests are used to determine whether the set of independent variables contribute significantly to explaining the variability of the dependent variable (Tinoco, 2008).

The omnibus test shows that the chi-square is high and the significance value is ,000, suggesting that purchase frequency, product type and payment options have a significant contribution in predicting the purchase decision. From step 2a to step 7, it is observed that the chi-square value of "step" varies and decreases, indicating that additional adjustments to the model do not contribute significantly, suggesting that the model is stable and that the significant variables were identified in the first steps.

Table 5 . *Omnibus tests of model coefficients.*

		Chi-square	gl	Sig.
Step 1	Step	107,563	17	,000
	Block	107,563	17	,000
	Model	107,563	17	,000
Step 2a	Step	,000	1	,998
	Block	107,563	16	,000
	Model	107,563	16	,000
Step 3a	Step	-,008	1	,927
	Block	107,555	15	,000
	Model	107,555	15	,000
Step 4a	Step	-,026	1	,873
	Block	107,529	14	,000
	Model	107,529	14	,000
Step 5a	Step	-,763	1	,382
	Block	106,766	13	,000
	Model	106,766	13	,000
Step 6a	Step	-,884	1	,347
	Block	105,882	12	,000
	Model	105,882	12	,000
Step 7a	Step	-3,680	3	,298
	Block	102,202	9	,000
	Model	102,202	11	,000

The omnibus test was used in order to identify and evaluate the factors that influence the decision of where to buy. The significance of the model shows that the selected factors are significant to the model, which provides strong evidence that the regression variables explain where to buy decisions.

Table 2 summarizing the model instead provides an overview of the quality and explanatory power of the binary logistic regression model at each step of the analysis. The Log Likelihood of Likelihood (-2LLL) is a measure that assesses the overall fit of the model. A lower value of -2LLL indicates a better fit of the model to the observed data (Fernandez, 2010).

In Step 1, the value of -2LL is 234.653, indicating a reasonable fit at the start of the model. However, as the steps progress, this value gradually increases, reaching 240.014 at Step 7. This increase suggests that, although the model still fits reasonably well, the addition of variables in the later steps may be introducing some complexity or noise rather than improving the fit.

Table 6 . *Summary of the model.*

Step	Logarithm of the likelihood -2	Cox and Snell R-square	R square of Nagelkerke
1	234,653a	,353	,471
2	234,653a	,353	,471
3	234,662a	,353	,471
4	234,687a	,353	,471
5	235,450a	,351	,468
6	236,334a	,349	,465
7	240,014b	,339	,452

The Cox and Snell R-squared is a measure of the amount of variation explained by the model, similar to the R-squared in linear regression. Its value varies between 0 and a maximum that is less than 1 (Sansores and Granados, 2017). In this model, the Cox and Snell R-squared value starts at 0.353 in Step 1 and decreases slightly to 0.339 in Step 7. This slight decrease indicates that, as the model is refined, the proportion of variability explained by the model is slightly reduced, but still remains in an acceptable range.

The Nagelkerke R-squared is an adjusted version of the Cox and Snell R-squared, scaled so that its maximum is 1. This value provides a more intuitive measure of the amount of variability explained by the model (González-Jiménez et al., 2017). In this case, the Nagelkerke R-squared starts at 0.471 in Step 1 and decreases to 0.452 in Step 7. Like the Cox and Snell R-squared, this small decrease suggests that, although the model is still useful in explaining variability in the purchase decision, its explanatory power decreases slightly as one moves through the steps.

In summary, Cox and Snell and Nagelkerke's R-squared values suggest that the initial model in Step 1 explains between 35.3% and 47.1% of the variability in the purchase decision between supermarkets and markets. While these values are not extremely high, they are reasonable in social and consumer behavior studies, where decisions are often influenced by multiple unmeasured factors (Gârdan and Gârdan, 2015). Although there is a slight decrease in explanatory power in the later steps, the model remains robust and provides a solid basis for analyzing the factors influencing the purchase decision

In summary, the R-squared values confirm that a significant proportion of the variability in the purchase decision can be explained by the selected factors, such as purchase frequency, product type and payment options. Although the model fit shows a slight degradation in the subsequent steps, the results are still robust enough to justify the inclusion of these factors in the final analysis. This reinforces the validity of the study's conclusions and provides a solid quantitative basis for recommendations and decisions based on these findings.

Classification Table 3 provides a critical assessment of the predictive performance of the binary logistic regression model used in the study. This table details the model's ability to correctly classify cases into the categories of "Supermarkets" and "Municipal Markets" it is observed that, in the first three steps of the analysis, the model correctly classifies 71.7% of the cases that actually correspond to "Supermarkets" and 81.1% of the cases that correspond to "Municipal Markets", with an overall percentage of 76.5%. This performance remains constant during the first three steps, suggesting that the model has a stable performance in classifying the categories from the beginning. This early stability is an indication that the variables selected from the beginning have a solid and consistent influence on the prediction of the purchase decision. Different from what happens in the fourth step, a slight improvement is observed in the classification of the "Municipal Markets" cases, where the percentage correct rises to 81.9%. This improvement raises the overall percentage to 76.9%, which could indicate that the model fit in this step better captured some distinguishing factors of shoppers in municipal markets. This reinforces the hypothesis that certain additional characteristics included in this step improved the model's ability to differentiate between purchase options.

Table 7. *Leaderboard.*

	Observed		Forecast LUGCOMPR Supermarkets	Municipal Markets	Percent correct
Step 1	LUGCOMPR	Supermarkets	86	34	71,7
		Municipal Markets	24	103	81,1
	Overall percentage				76,5
Step 2	LUGCOMPR	Supermarkets	86	34	71,7
		Municipal Markets	24	103	81,1
	Overall percentage				76,5
Step 3	LUGCOMPR	Supermarkets	86	34	71,7
		Municipal Markets	24	103	81,1
	Overall percentage				76,5
Step 4	LUGCOMPR	Supermarkets	86	34	71,7
		Municipal Markets	23	104	81,9

	Overall percentage				76,9
Step 5	LUGCO MPR	Supermarkets	85	35	70,8
		Municipal Markets	20	107	84,3
	Overall percentage				77,7
Step 6	LUGCO MPR	Supermarkets	85	35	70,8
		Municipal Markets	22	105	82,7
	Overall percentage				76,9
Step 7	LUGCO MPR	Supermarkets	80	40	66,7
		Municipal Markets	22	105	82,7
	Overall percentage				74,9

The fifth step stands out as the point where the model reaches its highest accuracy, with a correct percentage for "Supermarkets" of 70.8% and 84.3% for "Municipal Markets", resulting in an overall percentage of 77.7%. This increase in overall accuracy suggests that the modifications or adjustments made in this step optimized the model, improving its predictive ability. This result is significant as it represents the maximum performance of the model in terms of correct classification.

However, in the subsequent steps, specifically the sixth and seventh, a slight decrease in the model's effectiveness is observed. In the context of the study The ability of the model to maintain an overall high percentage of correct classification throughout most of the steps reinforces confidence in the conclusions of the study. Furthermore, the changes in accuracy along the different steps underline the importance of careful tuning of the model to maximize its predictive power without compromising its simplicity and efficiency. In summary, the results obtained suggest that the model developed is reliable and can be used to better understand consumer preferences.

Table 4 was summarized and provides a detailed view of how the selected variables influence the purchase decision. The regression coefficients (B), significance values (Sig.), and odds ratios (Exp(B)) allow us to interpret both the direction and magnitude of these effects. The variable FRECOMP (Frequency of Purchase) shows a negative coefficient of -0.673, indicating that as frequency of purchase increases, the probability that a consumer will choose municipal markets over supermarkets decreases. This result is statistically significant with a p-value of 0.005, which reinforces confidence in this finding.

The odds ratio (Exp(B) = 0.510) suggests that, for each increase in the frequency of shopping category, the option to choose municipal markets is reduced by about half. This suggests that consumers who shop more frequently tend to prefer supermarkets, possibly due to the convenience and consistent availability of products in these establishments.

On the other hand, the different types of products purchased, represented by the PRODUC variable, turn out to be highly significant factors in predicting the purchase decision. All the coefficients associated with the product types have positive values, indicating that preference for these products significantly increases the probability that a consumer will choose municipal markets over supermarkets. For example, the product type with the highest odds ratio is PRODUC(5) - Tubers, with an Exp(B) of 49.561, which suggests that consumers who purchase tubers are almost 50 times more likely to choose municipal markets. This trend is consistent for other products such as eggs, fruits and vegetables, meat and fish.

These results underline that municipal markets are preferred by consumers for the purchase of fresh and perishable products, which may be related to the perception of greater freshness or lower price in these environments.

The variable OPCPAGO (Payment Options) also plays an important role in the purchase decision. The positive coefficient of 0.626 indicates that the availability of payment options, such as electronic payments, increases the probability that a consumer will choose municipal markets. This finding is highly significant (p = 0.000), and the odds ratio (Exp(B) = 1.871) suggests that consumers are approximately 1.87 times more likely to opt for municipal markets when additional payment options are offered.

This highlights the importance of affordability and convenience in the choice of place of purchase. The modernization of municipal markets in terms of payment facilities could attract a greater number of consumers, especially those who value convenience and efficiency in their transactions.

Table 8. *Variables in Equation.*

Variable	Coefficient (B)	Sig.	Exp(B)
FRECOMP	-0.673	0.005	0.510
PRODUC(1)	3.206	0.000	24.680
PRODUC(2)	2.700	0.000	14.872
PRODUC(3)	1.986	0.005	7.284
PRODUC(4)	3.428	0.000	30.824
PRODUC(5)	3.903	0.000	49.561
OPCPAGO	0.626	0.000	1.871

Table 5 details how qualitative variables were transformed into binary variables for inclusion in the binary logistic regression model, allowing for statistical analysis. For example, "Fruits and Vegetables" was used as the reference category for product type, facilitating interpretation of how other products influence the likelihood of consumers choosing municipal markets over supermarkets.

This coding is essential to ensure that the statistical analysis is accurate and reflects meaningful comparisons. The results indicated that products such as "Tubers" and "Eggs" had significant positive coefficients, suggesting a preference for these products in municipal markets. In addition, the coding of preferences for local products and city location allowed for a detailed examination of how these specific factors affect purchasing decisions, providing valuable insights into consumer preferences in Ecuador.

Table 9.*Coding of categorical variables.*

		Frequency	Parameter coding				
			(1)	(2)	(3)	(4)	(5)
PRODUC	Fruits and vegetables	70	1,000	,000	,000	,000	,000
	Meat and fish	39	,000	1,000	,000	,000	,000
	Dairy products	43	,000	,000	1,000	,000	,000
	Eggs	17	,000	,000	,000	1,000	,000
	Tubers	34	,000	,000	,000	,000	1,000
	Others	44	,000	,000	,000	,000	,000
PROLOCEXT	Premises	115	1,000	,000	,000		
	Imported	17	,000	1,000	,000		
	Indifferent	115	,000	,000	1,000		
CITY	1	134	1,000				
	2	113	,000				

Conclusions

The conclusions of the study can be summarized in several key points, based on the results obtained through binary logistic regression analysis:

The study reveals that several factors significantly influence the purchase decision between supermarkets and municipal markets in Ecuador. Among these factors, the types of products purchased, the frequency of purchase and the payment options available emerge as the most important determinants.

The results indicate that consumers tend to prefer municipal markets when buying fresh and perishable products, such as tubers, eggs, fruits and vegetables, and meat and fish. These products have positive and highly significant regression coefficients, suggesting that municipal markets are perceived as more suitable for the purchase of these types of food, possibly due to a perception of greater freshness or lower price. Frequency of shopping negatively influences the probability of choosing municipal markets, indicating that consumers who shop more frequently tend to prefer supermarkets. This could be related to the convenience offered by supermarkets, such as longer opening hours, a greater variety of products available, and the possibility of quick and efficient shopping.

The availability of payment options, such as electronic payments, is also a significant factor in the purchase decision. Municipal markets that offer additional payment options may attract more consumers, suggesting that modernizing payment methods in these markets could improve their competitiveness vis-à-vis supermarkets.

Some variables, such as preference for local or imported products, did not show a significant impact on the purchase decision. This indicates that other factors, such as those mentioned above, play a more crucial role in the choice between supermarkets and municipal markets.The use of binary logistic regression allowed for a detailed and robust analysis of the data, providing clear insights into how various factors affect the purchase decision. The applied model was able to explain a significant part of the variability in consumer decisions, which reinforces the validity of the findings. The results of the study have important implications for the design of marketing strategies and public policies. Supermarkets can focus on convenience and offering a wide variety of products to capture consumers who shop more frequently. On the other hand, municipal markets could benefit from improvements in product freshness and modernization of payment options to attract a wider audience. The study also suggests that future research could further explore other potential factors, such as the impact of geographic location within cities, the influence of specific marketing campaigns, and the perception of quality and price on the purchase decision.

In summary, this study provides an in-depth understanding of the factors that determine choice between supermarkets and municipal markets in Ecuador. The findings highlight the importance of fresh produce, frequency of purchase, and payment options in consumer decisions, providing a solid basis for informed decision-making at both the business and public policy-making levels.

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Research Ethics and Research Culture in the Age of Artificial Intelligence: Preparation of Postgraduate Teacher-Researchers

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Introduction

In this first quarter of the 21st century, academic research has undergone significant transformations driven by digitization and the advance of new technologies. Artificial intelligence (AI) has undergone a significant evolution and is now used in various areas of research, optimizing processes, but also raising ethical and academic responsibility challenges.

The integration of AI in higher education together with scientific production requires a critical analysis of its impact on the research culture and on the collaborative spaces of knowledge generation that are being promoted in universities. This situation benefits the quality of education as it encourages teachers to strengthen their preparation in ethics, academic responsibility and critical thinking in the use of these technologies, enriching the research culture with new organizational dynamics in the generation of knowledge.

The development of the research culture requires that each institution establishes certain conditions as guidelines and actions that identify it as an institutional dimension. In particular, a flexible curriculum that facilitates research processes and helps to generate new knowledge during the academic process, with scientific products as a result. In this sense, it is essential the critical and humanistic orientation in research training and, the promotion of a research pedagogy (Rojas Betancur & Méndez Villamiza, 2017) with an approach that favors all the actors involved. In this context, the integration of artificial intelligence offers both opportunities and challenges.

From the curricular perspective, it is considered a good practice to cultivate the habit of inquiry by planning systematic routines in research, promoting good practices, product generation and technological development (Marina, 2012). Regarding the role of students, the development of research competencies is fundamental, giving priority to interventions aimed at active participation in research, development and innovation projects with concrete results (Carrillo-Larco & Carnero, 2013). However, the use of AI in research still presents urgent challenges, such as the lack of clear regulation on its use, which raises concerns about authorship, academic integrity and the possible uncritical automation of knowledge.

Loján et al. (2024) emphasize that research training should be oriented to the development of skills that allow critical reflection and rigorous analysis of information, avoiding dependence on automated tools that can influence the objectivity of research processes. In this sense, the integration of AI in higher education requires strategies that balance its potential with the need to preserve the intellectual autonomy of researchers.

But it must be taken into account that everything that guarantees the responsibility of the academy in seeking routes or implementation models for the consolidation of research, (Grijalva Verdugo & Urrea Zazueta, 2017), favors the idea that the research culture must be considered integral, transversal and cultural, as an imperative and ethical element, necessary for economic, social, political, educational and cultural development in all sectors. (González, 2018). Therefore, in this context, the academic community faces the challenge of incorporating AI in a way that strengthens scientific production without compromising the fundamental values of research, such as rigor, transparency and personal reflection.

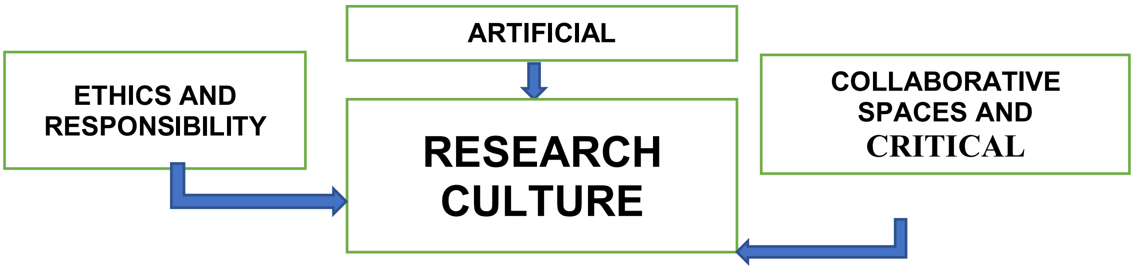
At the postgraduate level, teacher-researchers can benefit from continuing education with systematic updates on AI, strengthening their research culture. Since they play a key role in the training of future academics and professionals, their preparation in the ethical and responsible use of AI is essential to ensure that new generations of researchers develop critical skills and participate in collaborative spaces that foster the production of original knowledge. However, the incorporation of AI in these environments still faces barriers, such as the lack of specific training, which of course, gives way to some extent to resistance to change, also the digital divide and the absence of clear institutional strategies for its implementation in research.

As a result of the above analysis, it is understood that the research culture in higher education is a fundamental pillar for the generation of rigorous and ethical knowledge. With the rise of AI, there is a need to ensure that its application in research does not compromise the essential values of academic work.

The automation of analytical processes and information management through AI can represent a valuable resource, as long as its use is oriented towards strengthening critical thinking and academic responsibility.

This chapter addresses the relationship between AI, research culture and ethics in the post-graduation context, in order to identify strategies for their responsible integration. This is described in Figure 1, below.

Figure 1. Ethical integration of AI in postgraduate academic research.



Source: Own elaboration

The figure above shows that artificial intelligence has a direct impact on research culture, which is based on two fundamental pillars: ethics and academic responsibility, on the one hand, and collaborative spaces and critical thinking, on the other. This interrelation allows understanding the importance of regulating and guiding the use of AI in higher education to ensure its ethical and effective integration in scientific production.

Based on these approaches, we seek to answer the following research question:

"How can artificial intelligence be ethically integrated into the collaborative spaces of research culture in graduate school without compromising critical thinking and academic responsibility?"

The exploration of this question will satisfy the objective of identifying both the challenges and opportunities offered by AI in academic research, as well as proposing strategies that facilitate its ethical and effective use in the training of researchers in higher education, thus benefiting the development of the research culture in its different institutional collaborative spaces.

In order to answer this question, the chapter is structured in three main thematic axes. First, it analyzes the development of research at the postgraduate level, addressing the evolution of research culture, its relationship with ethics and knowledge production, as well as the impact of critical thinking on research training. Second, the role of collaborative spaces in academic research is examined, exploring their benefits, challenges and the role of AI in these environments. Finally, the ethical challenges of the use of AI in scientific production are discussed, as well as the opportunities for its ethical integration into the research culture through institutional and normative strategies.

The variable of study in this chapter focuses on the ethical integration of artificial intelligence (AI) in the research culture in the context of postgraduate education. It analyzes how AI impacts knowledge production, collaborative spaces and academic responsibility in the training of teacher-researchers. This approach allows identifying both the challenges and opportunities that arise in the incorporation of AI tools in research processes, highlighting its influence on critical thinking and intellectual autonomy of researchers.

From a methodological perspective, the study is based on a documentary review and qualitative analysis of recent scientific literature, including indexed articles, regulations and case studies on the use of AI in academic research, mainly from the years 2023, 2024 and 2025, revealing the strong current concern in this area. This methodology makes it possible to examine the current state of knowledge on the relationship between AI, ethics and research culture, while facilitating the identification of trends, limitations and good practices in higher education.

This analysis will provide a comprehensive understanding of the influence of AI on academic research, highlighting the importance of adopting critical and ethical approaches to its implementation.

Throughout the chapter, we will argue the need for educational institutions to establish clear regulations and training programs in the use of AI, ensuring that its integration in research does not weaken the fundamental values of scientific work, but rather contributes to its strengthening in postgraduate education.

Research culture and ethics in scientific research

Research culture has been consolidated as a fundamental pillar in the production of knowledge within higher education. It is understood as the process that involves the development of habits, attitudes, creation, production and appropriation of knowledge, where a set of values and practices that ensure the acceptance and recognition of good research practices are shared. Its purpose is to generate, systematize and disseminate scientific information in a rigorous and ethical manner, linking these processes with the solution of social problems from a collaborative perspective in higher education.

One of the main challenges in this context is the uncritical automation of knowledge. Researchers have pointed out that the indiscriminate use of AI tools can generate technological dependence, affecting the ability of academics to formulate innovative research questions and critically evaluate the results obtained. Loján et al. (2024). To counteract these risks, a balanced approach that combines technology with a solid background in research ethics is required.

The main purpose of all these actions is to generate, systematize and disseminate scientific information in a rigorous and ethical manner. Its development is closely linked to the training of researchers capable of formulating questions, analyzing data, reflecting critically and constructing new contributions to knowledge in their respective disciplines. AI has begun to play a key role in this process, facilitating access to information and optimizing data analysis. However, it is essential to ensure that its use does not replace critical reflection and research creativity.

Ethics is a key challenge in AI integration. According to Padilla-Caballero et al. (2023), research ethics is the set of principles and moral values that guide research practice, ensuring that it is conducted in a responsible, respectful, and socially beneficial manner. This involves obtaining informed consent, citing and properly referencing sources, and respecting ethical regulations to address the ethical challenges of AI, always seeking the social benefit and welfare of the people involved in the research.

Naranjo et al. (2023) emphasize that institutional responsibility in research suggests a commitment to ethical training in technology, highlighting the importance of preparing the educational community for the proper use of these tools.

Evolution of the concept of research culture and its relation to knowledge production

The evolution of the concept of research culture is linked to the process of obtaining knowledge over time. The evolution towards a research culture has been marked by the transition from traditional modes to more collaborative and transdisciplinary approaches.

Puentes (2015), highlights the evolution of knowledge production over time and its epistemological, economic and social implications. Initially, knowledge was produced in isolation, focused on theories that sought to control and predict phenomena, which limited the interaction between disciplines. However, with the emergence of mode 2, the practical application of knowledge in social and economic contexts began to be valued, fostering collaboration between universities, industries and communities.

This change has allowed research to be oriented towards solving real problems, promoting a more inclusive and responsible model of knowledge production. Currently, mode 3 proposes a democratization of knowledge, where communities are not only recipients, but active co-producers, which enriches the research culture and makes it more relevant and applicable to contemporary social needs.

All this makes it clear that historically, academic research has evolved from traditional models of knowledge generation towards more collaborative and multidisciplinary approaches. In this context, research culture is not only limited to the search for information and production of scientific articles, but also involves the adoption of rigorous methodologies, critical thinking and validation of results through different processes.

With the advancement of technology, artificial intelligence (AI) has begun to play a key role in the systematization and processing of large volumes of data. Since its beginnings in the 1950s, AI has evolved into a tool that facilitates the analysis of information, the automation of repetitive tasks and the optimization of search strategies in scientific databases (Menacho et al., 2024).

However, its incorporation into the research culture raises questions about the relationship between the use of technology and the construction of authentic knowledge. Among them:

- To what extent can artificial intelligence be considered a neutral tool in knowledge production?
- Does automation of data analysis compromise creativity and critical reflection in research?
- How to ensure that the use of AI in the research culture does not replace human judgment in the interpretation of results?

These questions highlight the need to reflect on ethics and academic responsibility in research, ensuring that the integration of AI strengthens, rather than weakens, the fundamental principles of scientific production.

Ethics and academic responsibility in research

The development of a strong research culture requires a firm commitment to ethics and academic responsibility. The latter plays a crucial role in preserving scientific integrity and the fundamental values of education and research. In the current context, teachers have the responsibility to foster critical digital literacy, both for their training and for transmission to students, thus promoting research competencies where critical thinking becomes a preventive axis in the face of the challenges of artificial intelligence (AI). Educational institutions should take an active role in the creation of spaces for AI literacy, academic debate and the exchange of criteria on its ethical implementation. At the curricular level, it is essential that teachers incorporate pedagogical strategies that favor collaboration, the development of professional knowledge and research autonomy, thus guaranteeing an effective and reflective integration of AI in educational processes.

Scientific integrity is based on principles such as honesty, transparency and correct attribution of sources. In this sense, the use of AI tools in research has raised concerns about the originality of the knowledge produced, the reliability of the data and the possible uncritical automation of research processes (Gómez Cárdenas et al., 2024).

One of the main challenges in the AI era is to ensure that emerging technologies do not replace the analytical and reflective skills of researchers. While AI can enhance personalization of learning and optimize access to scientific information, it is essential that it be used as a complementary tool that fosters fundamental research skills, such as hypothesis formulation, data interpretation, and informed decision making.

The debate on ethics and responsibility in AI research reflects a central concern: the fine line between its use as a support tool and its potential to replace essential processes of human reasoning. While AI offers opportunities to improve data systematization and access to information, its implementation must be guided by principles that safeguard the intellectual autonomy of the researcher and methodological rigor in scientific production.

The true ethical integration of AI lies in its ability to enhance knowledge generation without weakening the analytical and reflective skills of researchers. This raises a fundamental question: how to ensure that AI does not erode the development of critical thinking in research training? This question becomes a starting point for reflecting on the relationship between AI and the strengthening of intellectual autonomy in research, an aspect that will be explored in the following section.

Critical thinking and the influence of AI on research training

Critical thinking is a fundamental ability that allows individuals to observe, question, analyze and evaluate situations objectively. Developing this skill empowers students to make judgments on their own and to make decisions based on a reflective and analytical process. However, with the advent of artificial intelligence (AI), which provides automated responses in reduced times, there is a risk of reducing cognitive effort and generating a technological dependence under the premise that "the machine solves it" (Navarro Guaimares, 2024).

Since critical thinking is an exclusively human competence, its strengthening should be a priority in educational processes at all levels. Academic institutions play a key role in its development, promoting pedagogical strategies that encourage informed decision-making and problem-solving skills at both the individual and collective levels.

It is important to recognize that AI, as a product of technological progress, has the potential to optimize tasks and streamline processes through the use of algorithms that provide answers in reduced times. All intelligence always tries to go beyond what is taken for granted, to improve what is established, to discover what is new and to better substantiate what is known (Baca, et al. 2015). For such reason, its use must be conscious and balanced to avoid the substitution of essential cognitive skills in academic training. Rather than a threat, AI can become a valuable tool to strengthen critical thinking in education, provided that its implementation is carried out in an ethical and equitable manner, minimizing risks and enhancing its benefits (Navarro Guaimares, 2024).

In the field of research, critical thinking becomes an essential component, as it allows scholars to question the validity of information, contrast sources and build solid arguments. The introduction of AI in research processes presents both opportunities and challenges in this regard. On the one hand, it facilitates the automation of routine tasks and the processing of large volumes of data in less time; on the other hand, it could generate a technological dependence that reduces the researcher's initiative to develop analytical and reflective skills.

To avoid this risk, graduate programs need to implement strategies that integrate the use of AI without compromising the intellectual autonomy of researchers. Digital literacy, the development of critical competencies and the promotion of good practices in AI research are key aspects to strengthen the research culture in this new technological scenario. In this sense, AI should not replace the researcher's capacity for analysis, but rather enhance his or her ability to interpret information, formulate hypotheses and generate knowledge based on critical reflection.

Collaborative Spaces for Research in times of AI

Scientific research has undergone a significant shift in recent decades from a predominantly individual effort to an increasingly collaborative and interdisciplinary endeavor. In this context, collaborative research spaces have emerged as fundamental environments for the exchange of knowledge, the co-creation of ideas and the optimization of research processes.

Conceived as a set of interactions between entities and organized relationships, collaborative spaces for research constitute a mental and symbolic representation that facilitates the connection between students, professors and researchers. These spaces provide a structure for participation, interrelation and the development of commitments oriented to the solution of problems based on the values provided by scientific activity. They also play a key role in business and technological innovation and in the training of human resources, contributing to the strengthening of a solid research culture.

In general terms, in these spaces, learning is encouraged through exchange, debate and discussion. This collaborative learning is based on consultation and the search for mutual help (Carrasco & Delfín, 2023).

Regarding students, these authors emphasize that collaborative projects promote a new learning model, where the completion of various tasks requires the intervention and cooperation of all members of the working group (Flores et al., 2020). In this modality, students work in an organized manner, seeking to fulfill their purposes through collaboration. This approach has been enhanced with the development of digital technology, social networks and online platforms (Zabidi & Wang, 2021; Jiménez, 2023).

Carrasco and Delfín (2023) quote Ñaupari (2021) in pointing out that learning becomes more collaborative when the virtual environment allows sharing ideas, facilitates mutual help and motivates participation. Different studies agree that these aspects strengthen academic interaction and teamwork.

Regarding teachers, González et al. (2023) argue that they play a fundamental role as process facilitators. Their work is oriented to manage thoughts, feelings and aptitudes to develop research skills and potentialities in students, from a collective and collaborative perspective. In addition, teachers create cooperative relationships, plan appropriate strategies for collaboration in different contexts and play guiding roles in the research activity.

They are professionals with a solid background in their respective areas, in charge of directing the flow of discussions and fostering a respectful dialogue in the implementation of innovative activities. Their role includes removing obstacles, synthesizing different perspectives and fostering a positive and productive attitude towards collaborative research (Vialart Vidal, 2020).

In general terms, collaborative research spaces have become more relevant in contemporary scientific production. These environments, both physical and digital, are designed to facilitate teamwork, interdisciplinarity and co-creation of knowledge. AI has begun to be integrated into these spaces, optimizing the organization of research work and information management. AI-based tools allow real-time co-authoring, automation of literature reviews and analysis of trends in different disciplines.

An example of this integration is AI-based collaboration platforms, designed to facilitate joint work on artificial intelligence projects. These platforms provide a common space where team members can share resources, tools and knowledge, promoting a more fluid and effective collaboration (Blanco Bejarano, 2024). In education, teachers and educational technology developers use these tools to create personalized learning solutions, analyze student data and improve the operational efficiency of academic institutions.

While AI can strengthen academic collaboration, it also poses ethical and methodological challenges. Unequal access to these technologies represents a barrier to equity in knowledge production. Furthermore, the use of AI in collaborative research can generate dilemmas around authorship and attribution of ideas. To mitigate these risks, educational institutions need to implement clear policies on the use of AI in research and promote digital literacy among researchers.

Definition and characteristics of collaborative research spaces

Collaborative research spaces are defined as physical or virtual environments designed to foster teamwork, the integration of different disciplines and the production of collective knowledge. These can take various forms, from research laboratories to digital platforms that allow real-time co-authorship.

In relation to collaboration, it is very accurate to share the idea of Guerra, Ramos & Meizoso (2016), when they admit that the success of educational innovations depends largely on the existing collaboration between the parties, which generates the necessary exchange of knowledge and experiences between work teams that include members of the program faculty, students and their managers.

In the idea of collaborative spaces for research, in the university, from the curricular point of view, work sessions are developed to discuss and familiarize students with research collaboration, through the provision of research tools and techniques, teamwork for the characterization of ecosystems according to the object of study. The methodology of scientific research is encouraged, as a transversal knowledge discipline of the basic unit, favoring the development of scientific thinking.

Through AI-based collaboration tools, such as online learning platforms or learning management systems, students can collaborate in real time on learning projects and activities. As we can see, AI can facilitate communication, teamwork, organization, and task planning, allowing students to work together efficiently and effectively. In addition, AI can analyze how teamwork is observed in our students, identifying roles and group dynamics, and providing feedback on how to improve collaboration and team effectiveness. Vera (2023)

From the institutional action space, as part of the scientific culture, the implementation of integrated research projects is promoted, the ecosystem of demand from stakeholders or companies is investigated, to carry out the execution of real projects; teachers and students identify with the line of research to be developed. Therefore, from this possibility it can be identified that artificial intelligence (AI) can facilitate communication between researchers, improve data management and optimize the organization of academic work.

Outside the university walls, but relying on the organizational activity of the institution, the development of the research culture leads to formal interactions between various stakeholders, managers, teachers, and students from various institutions of higher education, to strengthen technical and scientific knowledge, and contribute to the production and transformation of new knowledge. It promotes the exchange of experiences in scientific research among the research community in order to project new studies of impact on society.

All this work sized from the university institution is benefited by AI because among the main characteristics of collaborative spaces in relation to AI integration are:

- **Interdisciplinarity**: They facilitate interaction between researchers from different areas of knowledge.

- **Access to shared resources**: They promote the collective use of databases, analysis software and digital libraries.

- **Synchronous and asynchronous interaction**: They allow collaboration in real time or through tools that store research progress.

- **Efficient knowledge management**: Through emerging technologies, they improve the structuring, analysis and visualization of scientific information.

In this context, collaborative spaces in research not only strengthen interdisciplinary work and the production of collective knowledge, but also represent an essential means for educational and scientific innovation. The incorporation of artificial intelligence in these environments has made it possible to optimize processes, improve information management and enhance interaction among researchers.

But its implementation must be accompanied by strategies that guarantee an ethical and reflective use, ensuring that technology complements research work without replacing essential human skills. In this sense, educational institutions play a key role in the consolidation of a research culture that takes advantage of the benefits of AI without compromising the fundamental values of scientific work and the critical training of researchers.

Benefits and challenges of AI in collaborative research

AI has revolutionized the way researchers interact with knowledge and with each other. Its ability to process large volumes of information, identify patterns and optimize workflows has facilitated collaboration in academic production, and is beneficial for the promotion and development of research culture in its different collaborative forms.

Benefits of AI in collaborative research:

- **Personalization of learning and research assistance**: AI systems can analyze academic performance and adapt work methodologies to the individual needs of researchers (López et al., 2025).

- **Optimization of the organization and knowledge management**: AI-based tools allow structuring, analyzing and visualizing information more efficiently, facilitating collaboration between multidisciplinary teams (Atencio, 2024).

- **Automation of administrative and data analysis processes**: AI can take over repetitive tasks, allowing researchers to focus on creative and analytical aspects of their projects.

However, its implementation is not without its challenges:

- **Digital divide and inequality in access**: Not all researchers have the same opportunities to access advanced AI tools, which can generate disparities in scientific production (Borja et al., 2025).

- **Technological dependence and risk of excessive automation**: While AI can optimize processes, its use without adequate supervision could weaken the critical and creative capacity of researchers.

- **Ethical issues about authorship and academic integrity**: The use of AI in collaborative research raises dilemmas about attribution of the knowledge generated and transparency in the use of data.

These are challenges that imply that the institution, during the development of the research culture, has the responsibility to create both objective conditions and to contribute to subjective conditions in the research cultural imaginary of its community so that, above all, the last two challenges mentioned above do not reach an excessive level of measurement.

Strategies for AI to support collaboration without replacing human thinking.

To take advantage of the benefits of AI without compromising the essence of collaborative research, it is essential to establish strategies that regulate its use and strengthen critical thinking in researchers. Some proposals include:

- **Fostering digital literacy in AI**: There is a need to train researchers in the ethical and critical use of AI tools, ensuring that they understand their scope and limitations.

- **Complementary use of AI in research**: AI should be seen as a support tool and not as a substitute for human thinking. This implies setting limits on its use and encouraging manual validation of the results generated.

- **Development of regulatory frameworks in academic institutions**: Universities should implement clear regulations on the use of AI in research, ensuring that its integration does not compromise scientific integrity.

Cases where AI has favored collaboration and examples of ethical dilemmas

Technological development has allowed artificial intelligence to transform the way researchers collaborate, optimizing access to information, knowledge production and scientific project management. However, its implementation is not without ethical and methodological challenges. Below are some concrete cases where AI has favored collaborative research, as well as dilemmas that have arisen in its application.

There are multiple instances where AI has enhanced collaborative research:

- **Co-authoring platforms with AI**: Tools such as intelligent word processors and automatic reference generation systems have enabled researchers from different countries to work together in real time. These platforms improve the consistency of scientific texts, optimize style correction and facilitate the integration of multiple versions of the same document, reducing editing and review times.

- **Academic search assistants**: AI algorithms have revolutionized access to relevant literature, streamlining the background review phase of collaborative projects. Platforms such as Semantic Scholar or Connected Papers allow researchers to discover connections between previous studies, facilitating the construction of robust theoretical frameworks and favoring interdisciplinary work.

- **Translation and natural language processing:** AI tools such as DeepL or Google Translate have eliminated language barriers in international collaborative research, enabling more fluid communication between researchers from different regions. In addition, natural language processing systems have enabled the automation of scientific abstracts, facilitating the analysis and organization of key information for working teams.
- **Collaborative data analysis platforms:** AI has facilitated the management of large volumes of data in multi-participant research. Tools such as IBM Watson or Google AutoML allow data to be processed, visualized and shared in real time, ensuring that all team members have access to up-to-date information and can make evidence-based decisions.

With all these advances, ethical dilemmas have also arisen, such as:

- **Biases in content generation**: Some AI systems may reproduce implicit biases in the data they were trained on, affecting the objectivity of the research.

- **Lack of recognition of human labor**: In some cases, the results generated by AI have been presented by researchers as their own, without an adequate differentiation between human labor and technological contribution.

Some people hastily disqualify generative AI as a co-author, arguing that it is not a "subject of rights," a legal term that refers to a natural or legal person with legal rights and obligations. For this reason, companies that own generative technologies state in their terms of use that the user is responsible for his or her use of the content generated by the technology (Pimentel; Carvalho, 2024).

The integration of AI in collaborative research spaces represents a great opportunity to optimize academic production, but its implementation must be accompanied by an ethical and critical approach that guarantees its responsible use.

Ethical challenges of the use of AI in scientific production

The increasing use of artificial intelligence (AI) in scientific research has opened up new possibilities for process optimization and access to knowledge. However, its integration has also raised ethical concerns that require deep reflection on academic responsibility and regulation of its application. Issues such as authorship, data protection, algorithmic biases and the dehumanization of education are some of the emerging challenges facing researchers in the AI era.

The use of AI in scientific production has reopened the debate on originality, authorship and academic integrity. Recent research has pointed out that AI influences the way scientific articles are conceived and written, which calls for the implementation of clear regulations on its use. Protection of student data, prevention of algorithmic bias and transparency in the use of AI tools are fundamental aspects to ensure ethics in academic research.

According to Gimeno-Ballester and Trigo-Vicente (2024), chatbots such as "Consensus", along with platforms such as "Scite" and "SciSpace", facilitate accurate searching of scientific databases, providing answers backed by evidence and references.

"SciSpace" allows the generation of comparative tables and the formulation of study questions, while "ResearchRabbit" maps the scientific literature to identify trends. In addition, tools such as "DeepL" and "ProWritingAid" improve the quality of writing by correcting grammatical and stylistic errors and possible cases of plagiarism.

In the area of reference management, "A.R.I.A." optimizes the organization of bibliographic sources, while "Jenny AI" helps to overcome writing deadlocks. Likewise, Python libraries such as "LangChain" allow advanced semantic searches and the creation of intelligent agents for research.

With all these benefits, artificial intelligence raises ethical concerns related to the generation of bias, the spread of misinformation and the risk of plagiarism. Therefore, responsible use of these tools, accompanied by critical review by experts, is essential.

The authors warn that the rise of AI in scientific writing raises crucial questions about the integrity and validity of research. While AI tools promise efficiency and speed in article generation, they also carry significant risks. The ease of plagiarism, the possibility of incorporating undetected biases, and the generation of false information threaten to undermine confidence in science. This challenge requires careful evaluation of how to integrate AI into research, establishing safeguards to protect the quality and ethics of scientific knowledge.

One of the biggest challenges is the attribution of authorship in AI-generated texts. The academic community must define criteria that establish when AI-generated content can be considered a legitimate contribution and when ethically questionable practices are involved. The promotion of best practices in research is key to ensuring that AI is used as a complementary tool and not as a substitute for human intellectual effort.

Authorship in times of AI: Who is the real author when an AI contributes to an article?

One of the most significant dilemmas in the use of AI in scientific production is the determination of authorship in papers generated with the assistance of automated tools. Although AI can facilitate writing, data analysis and synthesis of information, the lack of clarity in the attribution of responsibility has generated debates about the legitimacy of the knowledge produced.

Recent research has reopened the debate on plagiarism and originality in academic production, questioning to what extent a researcher can claim authorship of a text partially generated by AI (Gómez Cárdenas et al., 2024).

The distinction between human input and AI-derived product remains blurred, raising the need for clear rules on authorship and intellectual contribution in scientific research.

Responsible use of AI in data collection and analysis

Another critical challenge in the use of AI in scientific production is manipulation and bias in data analysis. Artificial intelligence has proven to be a powerful tool in data collection and analysis in scientific research. Advanced algorithms allow the analysis of large volumes of information in reduced times, facilitating the processing of qualitative and quantitative data. However, their application must follow criteria of methodological rigor and respect fundamental ethical principles, because the reliability of these results depends largely on the quality of the input data and the design of the algorithms.

In addition, risks have been identified regarding privacy and the protection of student data, especially in research that handles sensitive information (Borja et al., 2025). The automation of data analysis processes without adequate human supervision can lead to biased interpretations, affecting the validity and ethics of the results obtained.

To ensure responsible use, it is vital that researchers understand the potential algorithmic biases in AI systems and implement strategies to mitigate them. In addition, transparency in data collection and source validation are essential aspects to avoid manipulation of results and ensure the reliability of the research (Gonzalez et al., 2023).

Preventing uncritical automation and strengthening academic accountability

The automation of research poses the danger of researchers delegating analytical and creative tasks to AI without thinking critically about the results obtained. This phenomenon, known as uncritical automation, can lead to a proliferation of studies with little reflective depth and theoretical grounding.

The risk of uncritical automation is one of the most relevant concerns in the use of AI in research. The ease with which these tools generate content can reduce the researcher's intervention in the analytical process, undermining the development of critical thinking skills.

To strengthen academic responsibility in the use of AI, it is necessary to foster a research culture that combines the use of technological tools with rigorous evaluation of their impact on scientific production. This implies the implementation of protocols that oblige researchers to manually verify the results generated by AI before publication.

Academic institutions should encourage strategies that promote the thoughtful use of AI. This includes training in research methodologies that combine automated tools with human analysis, ensuring that AI does not replace academic judgment and research creativity. The creation of institutional codes of ethics on the use of AI is a key measure to strengthen academic responsibility in this area (Borja et al., 2025).

Current regulations and their impact on academic research

The rapid advance of AI has outpaced the regulatory capacity of many academic institutions and research organizations. Currently, there is a regulatory vacuum that prevents effective oversight of its use in scientific production. Clear regulation is required to define the limits of AI integration in research, establishing guidelines on authorship attribution, data use and transparency in methodology (Nevarez Moncayo et al., 2023).

The regulatory framework for the use of AI in research is still developing, which generates uncertainty about its application in academia. In several jurisdictions, regulations have begun to be implemented to oversee transparency in the use of AI, data protection, and attribution of authorship in scientific work (Cruz et al., 2024).

The development of institutional policies in universities and research centers is essential to ensure that AI is used in an ethical and responsible manner, promoting its adoption without compromising academic integrity.

Universities and accreditation bodies should establish clear guidelines on the use of AI in scientific production, promoting practices that guarantee academic integrity. In addition, it is necessary to encourage the creation of research ethics committees to oversee the use of AI and propose regulations adapted to technological advances.

Opportunities for Ethical Integration of AI in Research

While the integration of AI into scientific research poses challenges, it also offers significant opportunities to improve academic production and strengthen the research culture. The key to an ethical and effective adoption of AI lies in the implementation of institutional strategies, the training of researchers, and the development of regulatory frameworks that adequately regulate its use.

With this in mind, higher education institutions play a fundamental role in the consolidation of a research culture that encourages the responsible use of AI, promoting collaborative spaces that allow the integration of these technologies without compromising the fundamental values of academic work.

Even with the challenges, AI also offers valuable opportunities for improving the research culture. Its ability to analyze large volumes of information, identify patterns and optimize the organization of projects can enhance the efficiency of scientific processes. Therefore, its implementation must be accompanied by institutional strategies that regulate its use and foster a culture of academic responsibility.

Universities and research centers play a key role in the ethical integration of AI. Training in digital skills, creating regulatory frameworks and promoting transparency in the application of AI are essential measures to ensure that these tools contribute to the quality of research without compromising its integrity.

Institutional strategies to regulate the use of AI and train critical thinking researchers.

Academic institutions have the responsibility to train researchers in the ethical use of AI, promoting digital literacy and the development of critical skills. To this end, it is essential that these institutions not only establish clear regulations, but also generate spaces for reflection and learning that encourage critical thinking and collaboration in the use of these technologies.

From the perspective of research culture, it is essential that universities implement programs that integrate AI as a support tool in the production of knowledge, without this implying a technological dependence that limits the creativity and intellectual autonomy of researchers.

In this context, collaborative spaces in research play a key role, as they facilitate the exchange of ideas, the co-creation of knowledge and the construction of shared ethical criteria on the use of AI.

To move in this direction, institutions can adopt various strategies, such as:

- Design specific training programs on the responsible use of AI in research, providing tools that allow researchers to understand its scope and limitations (Cruz et al., 2023).
- Include subjects on the ethics of artificial intelligence in postgraduate curricula, promoting a deep understanding of its implications for scientific production.
- To create spaces for debate on the ethical implications of the use of AI in scientific production, encouraging collective reflection and critical analysis of real cases in the academic environment.
- Strengthen collaborative research spaces, integrating AI platforms that optimize the organization of work without replacing human analysis or interaction between researchers.

Teacher training in AI is key to its effective integration into research and education, as it allows academics to understand the scope and limitations of these tools and to use them in a critical and reflective manner.

In this sense, the development of a research culture that considers AI as a complementary resource and not as a substitute for human thinking is a challenge that must be addressed from an interdisciplinary and collaborative approach. By promoting digital literacy, generating clear regulations and consolidating spaces for academic exchange, educational institutions can contribute significantly to the ethical and effective integration of AI in research.

Regulatory frameworks and best practices in AI research culture

The establishment of specific regulatory frameworks is essential to ensure that AI is used ethically in academic research. Some good practices include:

- Transparency in mentioning the use of AI in scientific articles.
- The development of regulations on liability in the generation of AI-assisted content.
- The creation of ethics committees to oversee the application of AI in research projects.

The implementation of these measures will contribute to consolidate a research culture that incorporates AI without compromising academic integrity.

The establishment of sound regulatory frameworks is essential to ensure the ethical and responsible use of AI in the research culture. Regulation should address issues such as authorship of papers using AI tools, transparency in data collection and analysis, and prevention of automated plagiarism.

Good practices in the integration of AI in research include training in digital literacy, the implementation of methodologies that balance the use of technological tools with critical review by the researcher, and the promotion of collaborative spaces that facilitate discussion on the application of AI in different scientific fields.

The creation of clear institutional codes of conduct and guidelines will allow the consolidation of an ethical framework for AI-assisted research, ensuring that this technology strengthens the research culture without compromising the integrity of the knowledge generated.

Recommendations for promoting good practice in the use of AI in collaborative research

For AI to enhance collaborative work without replacing the creativity and critical judgment of researchers, it is recommended:

- Implement AI tools that facilitate the organization and management of research projects, without replacing the analytical role of the researcher (López et al., 2025).
- Establish mechanisms for supervision and validation of the results generated by IA.
- Encourage a hybrid approach in which AI complements human research rather than fully automating it (Rios et al., 2023).

In short, the ethical integration of AI in academic research requires a balanced approach that combines the use of technology with the training of critical and responsible researchers. Although AI can optimize processes and facilitate scientific production, its implementation must be guided by ethical principles that guarantee the quality and originality of the knowledge generated.

Conclusion

The integration of artificial intelligence (AI) into academic research represents both an opportunity and a challenge for research culture. Throughout this chapter, we have reflected on the importance of maintaining a balance between taking advantage of AI and preserving the fundamental values of research: ethics, academic responsibility and critical thinking. Although AI can facilitate scientific production and optimize research processes, its use without adequate supervision and training could compromise the quality and originality of the knowledge generated.

A balance between AI, ethics and research culture is seen as a challenge that requires a comprehensive approach, because although AI can optimize research processes and strengthen scientific production, its use must be aligned with principles of academic responsibility and critical thinking.

One of the main findings is that AI, when incorporated in an ethical and reflective manner, can strengthen the research culture in graduate programs, promoting collaboration and facilitating access to advanced tools for analysis and knowledge management. However, its implementation must be accompanied by strategies that avoid the uncritical automation of research and that foster the intellectual autonomy of researchers.

Thus, it is essential to promote a critical and responsible use of AI in higher education, ensuring that teachers and researchers in training develop skills that allow them to rigorously evaluate the results generated by these technologies. Digital literacy in AI, training in academic ethics and the implementation of appropriate regulatory frameworks are key elements to consolidate a research model that combines the use of technological tools with the preservation of analytical judgment and research creativity.

The research question posed in this chapter -How can artificial intelligence be ethically integrated into the collaborative spaces of the research culture in postgraduate studies, without compromising critical thinking and academic responsibility? - finds its answer in the need for a regulated and pedagogical approach that allows the development of research competencies without falling into an indiscriminate technological dependence. It leads to the need to strengthen training and regulation strategies at the university level. It is essential that educational institutions adopt an active role in AI regulation and training, establishing clear guidelines on its use in scientific production.

Finally, it is not idle to reiterate the call to universities, research centers and regulatory agencies to develop clear regulations and training strategies on AI in academic research. And especially to promote the development of skills that enable researchers to use AI in an ethical and reflective manner. The consolidation of a solid research culture in the digital era will depend on the ability of the academic community to integrate technology without losing sight of the fundamental values of scientific endeavor.

The consolidation of a solid and ethical research culture in the AI era depends on the capacity of the academic community to integrate these tools in a responsible manner, ensuring that technology complements the research process, but taking care not to replace human reflection and commitment to the quality of the knowledge generated.

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The Teaching of Political Science: Challenges, Critical Approaches, Assessment, and Pedagogical Innovations

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Political Science as a Public, Critical, and Applied Discipline

Binder (2023) reflects on her professional experience as an academic who regularly interacts with political system actors and asserts the value of a political science that does not confine itself to specialized language or intra-academic debates. She strongly defends the need to promote public-facing scholarship, understood not as a vulgarization of academic content but as a form of civic responsibility and social relevance of knowledge. Although this approach remains marginal in many university departments—where internal academic productivity metrics still dominate—Binder emphasizes its potential to enrich not only the public's understanding of politics but also political practice itself. From this perspective, political science can—and should—become a tool of interpretation, critique, and guidance for citizens, journalists, public officials, and social actors.

In line with the defense of political science's public engagement, an essential question that challenges the entire academic community is: "So what?"—that is, why should anyone outside academia care about political science? This seemingly simple question compels us to rethink the goals of our research and the language we use to communicate it. Many scholars focus on methodological sophistication or niche theoretical contributions, but overlook the real-world impact of their findings on public life. Doing political science with a public purpose means anticipating and explaining why research results matter to citizens, institutions, media, or civil society actors. This orientation not only enhances the social legitimacy of the discipline but also contributes to a more open, democratic, and socially engaged university.

One of the most persistent tensions in the academic practice of political science is the supposed sharp division between "objective" analysis and "normative" opinion. According to Binder (2023), this distinction is unsustainable, as all research is inevitably influenced by the researcher's convictions and values—from the choice of topic to the interpretation of results. Rather than hiding these influences under a false veil of neutrality, Binder proposes acknowledging them openly as part of the critical exercise, arguing that such transparency does not weaken analysis but strengthens its credibility. Along these lines, Honeyman (2025) notes that outside the academic sphere, there remains a widespread misconception that political science is merely a sophisticated form of "political opinion," which devalues the discipline by equating it with activism or ideological commentary. This confusion ignores the fact that political science relies on rigorous theoretical frameworks, systematic methodologies, and empirical validation criteria. Therefore, both authors agree that political science can—and must—address controversial and normative issues without losing its scientific character, provided it upholds conceptual clarity, methodological rigor, and openness to reasoned debate.

For instance, many public policy scholars simultaneously serve as advisers, technocrats, or hold managerial positions within the state. This dual engagement between academia and government can enhance the practical utility of political science and strengthen its impact on public decision-making. However, it may also erode its critical function if clear boundaries are not maintained between autonomous research and subordination to state or partisan interests. This phenomenon raises an important dilemma: how can a political scientist maintain analytical independence when directly involved in the formulation or implementation of public policies?

Policy studies, as an applied subfield of political science, demonstrate how academic knowledge can generate tangible transformations in the public sphere. According to Manga Edimo (2024), such research bridges the gap between universities, governments, and civil society by providing evidence useful for the design, monitoring, and evaluation of public policies. Its value lies not only in the knowledge produced but also in its ability to make political science visible as a discipline with real impact on social issues. In democratic contexts, this connection reinforces citizen oversight, institutional transparency, and innovation in public management.

Blair et al. (2024) conclude with a clear call: the academic community cannot remain passive in the face of contemporary challenges. Teaching political science in times of crisis, democratic backsliding, or conflict demands an ethically and pedagogically committed stance. Faculty must embrace an active role as defenders of critical thinking, democratic values, and reasoned debate—both inside and outside the classroom. This call is not only to renew content or methods, but to reaffirm the university's public role as a space for civic education, political deliberation, and intellectual resistance to simplification, intolerance, or authoritarianism.

Rethinking the Teaching of Political Science

Political science plays a fundamental role in shaping critical, informed, and democratically engaged citizens. Beyond its academic dimension, this discipline provides tools to distinguish between verifiable facts and subjective opinions, contributes to the development of logical thinking by identifying argumentative fallacies, and enables critical interpretation of power discourses that shape public policies, the media, and institutional narratives (Honeyman, 2025). In an era marked by post-truth, polarization, and the proliferation of misinformation, political science education becomes a safeguard for rational public deliberation. Therefore, graduates of this discipline are better equipped to actively participate in civic life, demand transparency, and promote accountability—key elements for consolidating active citizenship and substantive democracy.

Since the end of the Cold War, political science has been reconfiguring itself as an increasingly global and interdisciplinary discipline. The collapse of the bipolar world gave rise to new research and teaching agendas focused on topics such as sustainability, the environment, global governance, migration, populism, and transitional justice. This shift has encouraged university programs to incorporate more critical perspectives and mixed methodologies, broadening the field of study beyond institutional politics (Blair et al., 2024). Moreover, this transformation has spurred growing interest in improving pedagogical practices, recognizing that how politics is taught directly influences students' capacity to interpret complex phenomena and act as agents of change in increasingly unstable and challenging contexts.

According to Banjac (2023), current political science teaching suffers from an excessively positivist, abstract, and hierarchical orientation that limits active student participation and reproduces depoliticized knowledge. This technocratic model, centered on the vertical transmission of content and the accumulation of data without critical reflection on power, reflects a neoliberal logic that prioritizes employability, productivity, and efficiency as the ultimate goals of higher education. In this context, the university risks becoming a "skills factory," neglecting its emancipatory function and its potential as a space for questioning structures of domination. The critique calls for rethinking not only what is taught, but how and why political science is taught.

For instance, in the German context, Blum et al. (2024) initiate a critical discussion about the actors responsible for teaching political science and the pedagogical approaches used in universities. This questioning becomes even more relevant in an era marked by accelerated digitalization, the aftermath of the COVID-19 pandemic, and the emergence of disruptive technologies such as generative artificial intelligence (e.g., ChatGPT), which are transforming teaching and learning dynamics. This suggests that teaching can no longer remain within traditional formats if it is to meet new student expectations, student body diversification, and the epistemological challenges of the digital age. The debate involves not only a revision of content, but also of professional roles, infrastructure, and conceptions regarding the social function of political science education. In response to the commodification of knowledge driven by neoliberal logic, Banjac (2023) proposes a deep rethinking of pedagogy in political science. This implies moving away from the model of unilateral, top-down knowledge transmission—centered on the figure of the professor as the sole authority—and adopting horizontal, dialogic, and participatory approaches. The goal is to recover the transformative dimension of education, where learning becomes a critical and collective practice oriented toward social justice and the strengthening of democracy. The classroom should be a space for co-construction of knowledge, where students' experiences are acknowledged and intellectual autonomy, political agency, and ethical commitment to social realities are fostered.

Sensitive topics such as identity, colonialism, gender, human rights, or conflict—far from being avoided due to their emotional or political charge—should be addressed with pedagogical responsibility, as they represent valuable opportunities for developing critical thinking. Honeyman (2025) argues that engaging with these issues allows students to examine their own biases, formulate arguments based on evidence, and cultivate active empathy toward different realities. Instead of avoiding conflict, the classroom should be a safe but not neutral space—one that promotes informed debate, structural analysis, and intercultural dialogue, contributing to a political education that encourages both personal reflection and collective transformation.

The relevance of political science becomes even more acute in contexts marked by political crises, armed conflicts, ideological polarization, or democratic backsliding. Blair et al. (2024) emphasize that teaching this discipline in times of instability not only enables analysis of institutions and political actors, but also helps identify the conditions that allow their erosion or strengthening. In this sense, the classroom becomes a key space to prepare future citizens and professionals to understand the fragility of democracies, question authoritarian narratives, and actively participate in the defense of democratic values. Thus, teaching political science in such contexts is not a technical task but an ethical and civic commitment to the preservation of the public sphere.

Pedagogical Innovations in the Teaching of Political Science

The teaching of political science is undergoing a renewal process driven by innovative approaches aimed at connecting learning with contemporary challenges. The integration of the Sustainable Development Goals (SDGs) into the curriculum—as seen in courses such as Global Governance—enables the contextualization of theoretical content and fosters a critical global citizenship. In contexts like China, "Great Ideology and Politics" courses are reinforced to shape political identities grounded in socialist values. At the same time, the importance of dynamic teaching is emphasized, with a focus on teacher-student interaction, pedagogical diversity, and adaptation to students' diverse backgrounds. The use of experimental methods, simulations, applied ethics through mock IRB committees, and community-based research experiences fosters active, situated, and transformative learning. Additionally, the value of incorporating intersectionality as both an analytical and pedagogical tool is highlighted, along with the use of political science databases to develop practical skills in empirical analysis. Together, these strategies contribute to a more critical, participatory, and socially engaged teaching approach—one that equips future political scientists with rigorous knowledge and ethical awareness to impact their environment. The following are the main pedagogical innovations in the teaching of political science:

- **Integration of the SDGs in university-level political science education.** Incorporating the Sustainable Development Goals (SDGs) into political science curricula represents an innovative strategy that connects theoretical content to concrete global challenges. The SDGs are introduced as cross-cutting themes in courses like Global Governance and Comparative Politics, allowing for critical analysis of the social, environmental, and economic impacts of political decisions (Pastor-García et al., 2023). This integration promotes a holistic view of political action, enhances students' sense of social responsibility, and encourages the development of a globally engaged citizenry committed to justice, equity, and sustainability.

- **Emphasis on dynamic teaching.** Dai & Kang (2024) found that the most influential factors in students' positive perception of the educational process are the dynamism of teaching and the preparedness of faculty. This indicates that students particularly value classroom interaction, the use of active methodologies, teacher engagement, and up-to-date content. Improving these aspects not only boosts academic performance but also contributes to a more meaningful and motivating educational experience.
- **Teaching experimental methods in political science.** Teaching experimental methods not only provides rigorous methodological tools but also transforms how students understand the discipline. According to Bennion (2024), experimentation encourages intellectual curiosity, critical thinking, and causal reasoning. It enables students to apply concepts to real-world situations, appreciate the value of research design, and make evidence-based decisions. This approach enhances scientific literacy and strengthens democratic citizenship by training future political scientists to evaluate public policies and political phenomena through empirical evidence. For example, using the CREATE pedagogical framework (Consider, Read, Elucidate hypotheses, Analyze and interpret data, and Think of the next Experiment) as a tool to teach students how to read and interpret scientific research fosters a critical and collaborative understanding of experimental logic, enabling students to develop research competencies and generate their own projects with greater autonomy and theoretical depth.
- **Pedagogical diversity for diverse student audiences.** Bennion (2024) highlights the need to adapt political science teaching to the diversity of the student body. This includes recognizing differences in prior experience, levels of anxiety about quantitative methods, thematic interests, and sociocultural backgrounds. To address this diversity, differentiated pedagogical strategies are proposed, ranging from role-playing and simulations in introductory courses to the design of original research projects at more advanced levels. Such curricular flexibility allows for broader student inclusion, lowers barriers to entering the discipline, and fosters a more inclusive, engaging, and personalized learning experience.
- **Linking teaching, research, and service through field experiments.** Michelson and Ostfeld (2024) propose a model in which students actively participate in applied research projects, such as electoral mobilization campaigns in real communities. These experiences link teaching with research and community service, generating meaningful learning. Students not only develop data collection and analysis skills but also

engage directly with political realities, strengthening their civic sense and social commitment. This integration of knowledge consolidates a transformative and action-oriented pedagogy.

- **Teaching research ethics through simulated IRB committees.** Ethics education in research should not be limited to theoretical classes but should be experiential and contextualized. Mann (2024) introduces the use of simulated Institutional Review Boards (IRBs), where students take on different roles and evaluate research proposals using ethical criteria. This practice helps them understand real-life dilemmas, fosters academic responsibility, and develops critical awareness of the moral implications of fieldwork, informed consent, confidentiality, and the impact on studied communities.
- **Intersectionality and power in political science education.** Banjac (2023) proposes using intersectionality not only as a theoretical framework but also as a powerful pedagogical tool to analyze how power relations are structured through multiple identities such as gender, race, class, or sexuality. Integrating this perspective into political science curricula helps problematize social structures and question the neutrality of academic knowledge. Furthermore, it contributes to the creation of more inclusive learning environments where students' diverse experiences are recognized as legitimate sources of knowledge.
- **Use of databases in political science education.** Mate (2024) argues that the use of empirical databases (such as Afrobarometer, V-Dem, IIAG) has revolutionized political science teaching in Southern Africa. These resources enable students to develop practical data analysis skills, compare political contexts, and understand phenomena such as democratization or governance quality. Integrating such tools moves teaching beyond the purely theoretical and fosters active, research-centered pedagogy that promotes critical information use. This approach improves students' employability and strengthens their role as informed citizens.

Improving Teaching: Faculty Development and Structural Reform

Blum (2024) argues for a comprehensive reform that recognizes university teaching in Political Science not as a secondary task subordinate to research, but as a scientific practice in its own right—with epistemic, methodological, and social value. This proposal calls for the development of clear pedagogical quality standards that allow for the systematic evaluation and improvement of teaching, as well as the implementation of specific faculty training programs in university pedagogy. Furthermore, the need to rethink how faculty workload is measured is emphasized. Instead of relying solely on contact hours, a more flexible and realistic approach is proposed—one that includes essential activities such as individualized mentoring, instructional innovation, material development, student assessment, and ongoing professional development. This shift would allow for a proper valuation of the complexity of academic work and elevate the role of teaching within academic career trajectories.

However, a critical structural limitation remains: the lack of empirical data on university-level teaching in political science. Unlike scientific research, which benefits from consolidated metrics, indicators, and evaluation systems, the teaching dimension remains largely undocumented. This absence of information makes it difficult to understand who teaches, how many hours are devoted to instruction, what types of content are covered, under what material and contractual conditions teaching is conducted, and what impact it has on student learning. The lack of such data hinders the development of evidence-based public policy, limits the strategic planning capacity of institutions, and perpetuates inequalities in workload distribution within departments. Addressing this information gap is an essential step toward building a more transparent, equitable university that is focused on educational quality. Although pedagogical innovations are necessary, they are insufficient without a corresponding structural transformation of the academic system. Changing methodologies—such as implementing active learning, hybrid models, or student-centered approaches—requires institutional conditions that ensure their sustainability. This includes rethinking the hierarchy between teaching and research, ensuring job stability for faculty (especially for adjunct and temporary staff who bear much of the teaching load), improving hiring conditions, reducing administrative overload, and formally recognizing teaching in academic evaluations and promotions. Only then can high-quality, committed, and effective instruction be consolidated—where teaching is no longer an invisible effort but occupies a central place in the university's mission.

Evaluating Teaching in Political Science

Evaluating educational quality in political science courses presents a significant challenge due to the inherent complexity of the teaching-learning process in this field. This complexity lies in the fact that the content is deeply connected to the development of civic, critical, and ethical competencies, which are not always measurable through traditional tools. Wang (2023) argues that the multifactorial nature of these courses involves cognitive, attitudinal, contextual, and relational variables, many of which are ambiguous, difficult to operationalize, and do not follow linear patterns. Moreover, conventional evaluations tend to rely on subjective perceptions, introducing biases into measurement and making it difficult to produce valid and reliable assessments of the real impact of teaching.

Therefore, new methodological approaches are needed that acknowledge and address this complexity in a more rigorous and context-sensitive manner.

Teaching Evaluation Models in Political Science

As part of the efforts to improve the quality of political science education, several evaluation models have been proposed to more accurately and rigorously capture teaching performance and the impact of the teaching-learning process. The hierarchical system proposed by Wang (2023) organizes indicators into three levels—objective, guiding, and elemental—allowing for detailed evaluation of dimensions such as clarity of presentation, teaching attitude, and student satisfaction. Complementarily, Dai and Kang (2024) propose an objective system based on empirical data collected from students and experts, integrating structural and pedagogical factors to produce a more comprehensive diagnosis of the educational environment. These authors also develop a model featuring three main indicators: teacher preparation, dynamic teaching, and learning outcomes—each with specific sub-indicators, enabling a more granular evaluation focused on continuous improvement. Together, these approaches offer solid and adaptable analytical frameworks aimed at professionalizing and enhancing teaching practice in higher education. The main teaching evaluation models in political science are outlined below:

- **Hierarchical Indicator Evaluation System (Wang, 2023).** The hierarchical evaluation model structures educational quality indicators into three levels: the objective level (the ultimate purpose of the educational process), the guiding level (intermediate factors that direct teaching), and the elemental level (observable components in the classroom). These levels include key dimensions such as basic teaching quality (e.g., clarity of exposition, conceptual mastery), teacher attitude (e.g., motivation, responsibility, empathy), and outcomes of the educational process (e.g., learning achievement, student satisfaction). Each dimension is broken down into more concrete sub-indicators, such as the use of multimedia technology, classroom discipline, or student participation. This structure enables a more systematic, detailed, and adaptable evaluation across different educational contexts.
- **Objective Evaluation System (Dai & Kang, 2024).** Unlike methods based on subjective judgment, this system relies on objective data provided by the main actors in the educational process: students and academic experts. Empirical, quantifiable data is gathered through validated instruments, and input from trained evaluators is integrated to ensure greater rigor and balance in interpreting the results. This approach recognizes that teaching quality is not determined solely by instructor

performance but also by the content delivered, the institutional environment, and the classroom's material conditions. Therefore, the system incorporates both structural and pedagogical dimensions, which are jointly analyzed to generate a more comprehensive and accurate assessment of the educational process.

- **Three-Indicator Evaluation Model (Dai & Kang, 2024).** This model is structured around three major evaluative axes: A1: Teacher Preparation, which assesses aspects such as planning, clarity of objectives, and the quality of prepared materials; A2: Dynamic Teaching Process, which evaluates classroom interaction, the use of active methodologies, integration of technology, and adaptation to group pace; A3: Teaching Effect, focused on learning achievements, knowledge transfer, and students' perceptions. Each axis includes specific sub-indicators—13 in total—that allow for a more granular evaluation of key components of the educational act. This structure facilitates not only evaluation, but also feedback and the continuous improvement of teaching performance

Limitations of Traditional Evaluation Methods

Traditional methods used in educational evaluation—such as the Analytic Hierarchy Process (AHP) or fuzzy evaluation models—although useful in considering multiple factors simultaneously, present significant limitations in capturing the real and dynamic relationships between educational variables. These approaches often assume linear or simplified relationships between indicators, overlooking the fact that teaching-learning processes are highly contextual and may depend on nonlinear interactions, feedback loops, and latent variables. Additionally, the assignment of weights and judgments often relies on subjective criteria or weakly justified estimates, which undermines the objectivity of the resulting evaluations (Wang, 2023). As a result, the pedagogical decisions derived from these assessments may not accurately reflect the actual state of teaching or effectively guide necessary improvements.

In Conclusion: Reflections on the Teaching of Political Science

The teaching of Political Science is undergoing a profound transformation, driven by structural changes, growing social demands, and a renewed appreciation of its role as a tool for critical understanding of political processes. Despite notable pedagogical advances, multiple challenges remain in civic and political education at the university level: inadequate or irrelevant teaching materials, weak interdisciplinary integration, limited institutional support, and low valuation compared to STEM fields—all of which hinder its educational effectiveness (Dai & Kang, 2024; Honeyman, 2025). In this context, rethinking the teaching of Political Science requires acknowledging both its current limitations and its immense democratic, formative, and transformative potential.

One of the core tensions lies in the underestimation of the discipline in relation to the hard sciences, a situation fueled by technocratic discourses that obscure the civic, ethical, and social value of the social sciences (Honeyman, 2025). This is further exacerbated when political science is reduced to mere ideological opinion, disregarding its theoretical foundations and methodological rigor. To counter this, it is essential to reassert the value of Political Science in cultivating critical citizenship. Honeyman (2025) emphasizes its contribution to understanding power, institutions, and contemporary crises. Similarly, Pastor-García et al. (2023) argue that political science thinking enriches the analysis of public policy by revealing the interests, beliefs, and processes that shape its design and implementation.

From a critical perspective, Banjac (2023) contends that education is neither neutral nor apolitical, but rather a practice embedded in power relations. In this vein, the classroom should be a space for resistance, questioning, and social transformation. Critical pedagogy, in dialogue with intersectionality, enables the creation of supportive learning communities where diverse experiences and identities are recognized and valued. In this regard, Ahedo Gurrutxaga et al. (2024) demonstrate how gender inequalities persist in political science education, affecting task distribution, recognition of competencies, and student participation. To address this, they propose incorporating a feminist consciousness among faculty and students, as well as training in gender equality as a cross-cutting pedagogical competency. In response to these challenges, various innovative strategies are being adopted to revitalize the teaching of Political Science. These include pre-professional internships with academic components designed to connect practical experience with the educational objectives of the discipline (Lucas, 2020); the use of simulations and active learning (Murphy et al., 2023); the experiential model implemented in New Hampshire (Reckendorf et al., 2024); and the incorporation of classroom experiments to promote research skills from the early stages of study (Bennion, 2024). All of these approaches share a central idea: teaching should be meaningful, applied, and student-centered.

In the digital realm, MOOCs in political science represent an opportunity to democratize access to political science content on a global scale, but they also face serious limitations related to interactivity, student motivation, and the digital divide (Vieira Costa et al., 2024). The implementation of connectivist models—which promote horizontal interaction, collaborative knowledge-building, and high-impact in-person events—has proven to be a promising path to enhancing online learning. Moreover, in contexts such as Africa and Latin America, the decolonization of Political Science emerges as an urgent task. This discipline has historically been shaped by Eurocentric frameworks that fail to reflect African realities. The proposal is to build a more inclusive and dialogical political science—one that is connected to local knowledge systems and grounded in specific political contexts. Persistent barriers such as lack of resources, limited training in data analysis, and restricted access to technology demand political will and investment to be overcome (Mate, 2024).

Finally, it is essential to strengthen the institutional recognition of political science teaching. As Blum et al. (2024) point out, research continues to be more highly valued than teaching in many universities, limiting pedagogical innovation. A structural reform is needed—one that includes specific teacher training, flexible evaluation of academic workload, and formal recognition of educational work. Only then can political science teaching rise to the challenges of the twenty-first century: critical, democratic, contextualized, and transformative.

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The development of comunication training using audiovisual tools for the energy transition and the future of oil

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Introduction

The energy transition has become a global priority in the face of the climate/environmental crisis and the challenges associated with sustainable energy supply. This process involves the modification of conventional energy systems, based mainly on non-renewable energy sources, towards a cleaner and more diversified model based on natural and sustainable sources, such as photovoltaic systems, wind turbines and hydroelectric power stations. However, the future of oil, which has been one of the primary sources of energy for more than a century, is at a crossroads in the face of these changes. While some industries still rely heavily on this resource, global commitments to achieve carbon neutrality are generating significant pressure to reduce its use and seek sustainable alternatives.

According to the Intergovernmental Panel on Climate Change (IPCC), limiting the increase in global temperature to 1.5 °C requires a drastic reduction in greenhouse gas (GHG) emissions. This implies a structural change in the way energy is generated and consumed . The International Energy Agency (IEA) estimates that more than 70% of global emissions are obtained through the combustion of fossil resources such as black gold, carboniferous minerals and gaseous hydrocarbons. For this reason, the energy transition not only seeks to mitigate the impact of the climate crisis, while reducing dependence on scarce and fluctuating raw materials, but also to promote resilient and sustainable energy systems. In recent decades, technological advances, as well as public policies, have accelerated the adoption of renewable energy. Countries such as Denmark, Norway and Sweden lead the world rankings in energy transition thanks to their focus on clean energy, carbon pricing and investment in research and development. At the same time, emerging economies such as China and Brazil are increasing their capacity for clean and renewable energy, excelling in areas such as hydroelectric power and biofuels.

However, the trajectories of energy transition are heterogeneous and depend on elements such as access to natural sources, existing infrastructure, financial capacity and political will. While some countries are moving towards mass electrification and carbon capture technologies, others are finding it difficult to abandon their dependence on fossil fuels. This inequality could widen if international collaboration mechanisms are not implemented to facilitate equitable access to clean technologies and sustainable financing. Despite the growing interest in renewable energy, oil remains a key player in the global economy. In 2022, approximately 31% of global primary energy came from oil, making it a fundamental resource in sectors such as transportation, the petrochemical industry and aviation. However, the decline in demand in some markets, stimulated by the growth of electrified transportation and regulations to reduce carbon emissions, raises questions about its long-term role.

The future of oil is neither homogeneous nor uniform across all sectors. Although the transformation of the energy sector minimizes its role in electricity generation and land-based transportation, industries such as petrochemicals depend significantly on this resource for the manufacture of polymers and other material compounds (IEA, 2023). Similarly, aircraft and transport ships still lack viable and scalable alternatives that can completely replace fossil fuels in the short term. Therefore, oil is likely to retain some relevance in specific niches of the global economy, albeit with a decreasing trend.

The energy transition also has profound economic and social implications. According to the World Economic Forum (WEF), this change requires redirecting investments worth approximately 131 trillion dollars by 2050. However, it can also generate significant economic opportunities, including the creation of up to 122 million jobs in the renewable energy sector. On the other hand, economies based on oil extraction and export face considerable challenges. Countries such as Venezuela, Iraq and Nigeria, whose economic livelihoods are strongly linked to the profits from black gold, will have to diversify their economies to mitigate the impact of a possible decrease in global demand for oil. This process not only requires strategic planning, but also financial and technical support from the international community to ensure a fair and equitable transition.

Technological development is a key driver for moving towards cleaner and more efficient energy systems. AI, digital transformation and modern methods of energy conservation are revolutionizing patterns of energy generation and use. In addition, carbon capture and storage (CCS) and green hydrogen are gaining ground as promising solutions to reduce the carbon footprint in industries that are complex to clean, such as steelmaking, cement production and commercial shipping. At the same time, the growing competitiveness of renewable energies is displacing oil in several applications. The price we generate when consuming solar and wind energy has decreased dramatically in the last decade, making them viable options even in markets with limited access to subsidies or advanced infrastructure.

The role of oil in the energy transition

Fuel efficiency and energy density together are the main factors shaping the global energy system. These properties allow oil to provide efficient and versatile energy, which explains its widespread use in many areas.

Energy Density: Energy density indicates the amount of energy present in a unit of mass or volume of gas. In the case of oil, its energy density is particularly high compared to other fossil and renewable energies. For example, one liter of oil contains around 35 megajoules of energy, while one kilogram of coal produces between 24 and 26 megajoules of energy. This higher speed allows the fuel to deliver more energy and power, especially for industries such as transportation, where it is important to optimize the volume and weight of the fuel.

Energy Efficiency: The energy efficiency of a fuel is the amount of useful energy that can be used for a particular application, such as an internal combustion engine. While the efficiency of gasoline engines is between 25 and 30 percent, in diesel engines it can be between 30 and 45 percent. Although some renewable energy sources can exceed these figures in good conditions, natural gas is advantageous as it is abundant and easily converted into different types of fuel, making it an important part of many industrial and service sectors.

Versatility in Refining: Another important feature of gasoline is that it can be refined and converted into various energy products with different energy levels, such as gasoline, diesel and kerosene. These oils have special applications that increase their use and effectiveness. For example, while gasoline is suitable for light commercial vehicles due to its speed and efficiency, diesel is suitable for heavy commercial vehicles and loading machines because it has a higher density.

Comparison of the Energy Content of Petroleum Versus Other Energy Sources

Oil is recognized for its high energy content, which has made it a key factor in history and economic growth, offering a greater amount of energy per volume compared to other sources such as natural gas, coal and various renewable energies. This is important because of its widespread use in transportation, business and energy use.

Oil vs. Natural Gas

Oil is widely recognized for its high energy capacity, which has established it as a fundamental pillar in historical and economic development. It offers a greater amount of energy per unit of volume compared to other sources, such as natural gas, coal and various renewable energies; this is important because of its widespread use in transportation, business and energy use.

Oil vs. Coal

Historically, coal has been the primary energy source, especially in the early industrial era, but its energy density is less than that of oil. Therefore, more coal must be produced to produce the same level of energy. In addition, the use of electrical energy produces a lot of pollution and waste, which not only affects the efficiency of the process, but also affects the environment. Oil provides cleaner and more efficient energy, allowing it to replace coal in many industrial and energy applications.

Oil vs. Renewable Energy

Renewable energies, such as solar and wind, are more sustainable, cause less environmental impact and require less energy compared to fossil fuels. Unlike oil, these sources are inconsistent depending on the climate and terrain, which can limit their ability to generate electricity consistently. For example, the construction of solar and wind power, as well as oil refineries or fossil fuel plants, requires a lot of land. Furthermore, renewable energy sources often require advanced storage systems (such as batteries) to compensate for fluctuations in production and ensure a continuous supply, creating additional resources and commercial challenges as they evolve.

Global Dependence on Oil and its Economic Implications

Dependence of Developing and Developed Countries

Oil continues to be a crucial resource for the global economy, having a considerable impact on both developing and industrialized countries. This dependence is particularly notable in developing countries, especially those that do not have access to alternative sources of energy such as natural gas, electricity or renewable energy. In these nations, oil is essential to meet energy demand in key sectors such as agriculture, industry, electricity generation, transportation and petrochemicals. If these resources cannot be fully utilized, innovation and entrepreneurship will be severely disrupted.

Oil plays a key role in infrastructure, especially in sectors such as transportation and construction. For example, railways and railroad tracks depend to a large extent on oil for their operation, which means that any increase in its price will increase the costs of essential goods and services. Furthermore, this sector generates millions of jobs in areas such as extraction, refining and export-related activities, making oil a key driver of economic development.

Economic Impact of Oil Price Fluctuations

Fluctuations in oil prices have had a considerable impact on the global economy. Changes in the price of crude oil affect both producer and consumer countries. When prices rise, production, transportation and distribution costs also increase, which generally raises the prices of goods and services, generating inflation. This increase in prices affects consumption, which, in turn, slows down economic growth by reducing consumers' purchasing power.

Developing countries in particular face serious problems in maintaining a sustainable economy when oil prices rise because most of their resources are used for energy. In addition to being dependent on foreign exchange, this situation can also cause conflicts in the economy.

In extreme situations, high oil prices can trigger a recession, which would lead to increased unemployment, reduced investment and a fall in the standard of living. On the other hand, a decrease in oil prices could reduce investment in new technologies and complicate resource exploration, which would affect future oil production. In developing countries, falling prices could jeopardize public finances, as many countries depend on oil and gas exports. This could lead to cuts in public funding, affecting important services such as infrastructure and social services .

Energy Security Issues

The concentration of oil production in a few countries weakens the importing country in the face of geopolitical conflicts. Tensions or supply disruptions in oil-producing regions can have a direct and significant impact on the global oil supply. A clear example of this is the conflicts in the Middle East, one of the main production areas, where political and military conflicts change the stability of the product.

Countries that depend on oil imports will face price fluctuations and possible shortages that could impact their economic growth and make them vulnerable to electricity problems. The oil crisis of the 1970s is a clear example of how import or export restrictions can have a significant impact on the global economy.

Challenges facing the oil industry in the face of the energy transition

Decarbonization and Regulatory Pressure

The global energy transition has led to greater international regulations and policies focused on decarbonization, creating a major challenge for the oil industry. There are international climate agreements, such as the Paris Agreement, which aim to limit the global temperature increase to below 2°C in order to reduce greenhouse gas emissions. These agreements have led many governments to implement stricter regulations on CO_2 emissions, directly impacting the most polluting industries, including the oil industry .

Carbon reduction policies mean that oil companies must modify their operations and adopt more sustainable practices. This involves improving energy efficiency in oil extraction and refining processes, as well as investing in technologies to capture and store carbon emissions (CCS technologies). The industry, which has historically been one of the main producers of greenhouse gases, now faces growing pressure from both governments and environmental groups to reduce its environmental impact. Regulations are also pushing companies to explore clean or hybrid energy alternatives and to reconsider their traditional business model in favor of a more sustainable energy transition.

Competition with renewable energies

Competing with renewable energies has become one of the biggest challenges for the oil industry. In recent years, clean energy sources such as solar, wind and hydrogen have not only improved in performance, but also in cost. The price of solar and wind energy has decreased, making them attractive options for large-scale energy production. At the same time, government subsidies and incentives to promote these technologies are accelerating their adoption.

This has boosted the development of the energy sector, promoting the integration of renewable sources and the partial substitution of fossil fuels.

Increasing investment in clean energy projects, including systems to produce and distribute renewable energy, is key to this process .

Impact of Environmental Awareness on Consumption

Growing interest in environmental issues and climate change is rapidly changing consumer preferences. The use of clean technologies, especially electric vehicles, is becoming widespread and consumers prefer products with lower carbon emissions. This environmental awareness is changing consumption and reducing the demand for petroleum products, especially in areas such as transportation and mobility. an important role.

Through awareness campaigns and pressure on governments and companies, they have led a strategic change that places sustainability and environmental protection at the center of the most recent political and economic beliefs.

The social and political development towards reducing oil dependence is forcing companies to rethink their approach and adapt to consumer needs and new requirements. This change directly affects expansion plans and the future of new oil projects (Urpí, 2004b).

New Technologies to Reduce Environmental Impact

In response to rapid growth, the oil industry has invested in the development and implementation of new technologies to reduce polluting emissions and the environmental impact of its operations.

One of the most important is carbon capture and storage (CCS), which consists of capturing the carbon dioxide emissions generated during oil extraction and refining and storing them safely in deep geological formations to prevent them from being released into the atmosphere.

The technology has the potential to reduce industrial emissions, but its large-scale use will face economic and commercial challenges. Remove more oil. The technology not only optimizes oil extraction, but can also reduce the environmental impact because it can be combined with carbon capture systems to achieve a good and clean effect again.

Strategies for integrating oil into a sustainable energy future

Optimizing and using oil efficiently

One of the main strategies for reducing the environmental impact and increasing the sustainability of the oil industry is to optimize the use of oil throughout its life cycle, from extraction to final consumption. To achieve this, new processes and improvements are being developed that will increase the potential for recovery, while reducing waste and greenhouse gas emissions. This approach not only increases the efficiency of fuel consumption, but also reduces the pressure on the environment, especially in terms of industrial waste and harmful emissions.

The integration of the circular economy in the oil industry has been presented as an important strategy for achieving these objectives. The circular economy suggests that, instead of treating waste as simple waste products, they can be reused and recycled to create new products or energy. For example, used oils such as bitumen and coke can be used in infrastructure or energy production, helping to reduce waste and better manage resources. In this way, the industry can continue to reap the benefits of oil while reducing its impact on the environment.

Diversification of Oil Companies

Oil companies are diversifying their strategies to remain competitive in an industry that is moving towards a cleaner and more energy-efficient environment. In this context, many major oil companies, such as Shell, BP and Total Energy, are actively involved in the development and implementation of renewable energy projects. These include the construction of wind and solar power plants, as well as investments in new technologies such as green hydrogen and ocean energy .

Innovation in Biofuels and Synthetic Fuels

Innovations in biofuels and synthetic fuels have become one of the most promising ways to reduce dependence on fossil fuels. Biofuels, being produced from renewable energy sources such as agricultural waste, vegetable oils and algae, represent a more sustainable option compared to fossil fuels. Unlike the latter, biofuels release very little carbon dioxide when burned, as the carbon they emit is part of the natural photosynthesis cycle of plants.

But biofuels also face challenges. One of the worst is competition with food, because some foods are also important for feeding people, such as the corn or soybeans used as biofuels. This could cause a crisis in food prices and affect global food security. In addition, the fact that biofuel production is expensive compared to fossil fuels limits its size in the global market.

Integration of carbon capture technologies

Carbon capture, utilization and storage (CCUS) is gaining attention as a technology to reduce the impact of CO2 emissions from the oil industry. Thanks to this technology, the carbon generated during oil extraction and refining is captured and stored in deep geological formations, preventing it from being released into the atmosphere and causing climate change. The use of carbon monoxide is also a good option because it can be used to produce pharmaceutical products, synthetic oil or to make oil extraction more efficient .

Global alliances and collaborations for sustainable change

The transition to a more sustainable energy future requires collaboration between governments, businesses and non-governmental organizations (NGOs). International cooperation is essential to solving the environmental and energy problems facing the oil industry. An important example of international cooperation is the Paris Agreement, which creates an international agreement to limit global warming and reduce greenhouse gas emissions. The agreement promotes cooperation between countries and encourages the implementation of national and regional policies aimed at energy transition. The new energy contract is worth investing in. In this sense, cooperation between the public and private sectors and international cooperation agreements are important to support the energy transition and ensure success in the future .

Public policies and their influence on the energy transition

In recent years, it has become almost impossible to address the energy problem without taking the concept of energy transition into account. This principle is present in political discourse, academic studies, the demands of environmental activism and corporate publications (Arraña et al., 2022). Naturally, this variety of interpretations of the concept cannot be separated from various interpretations of it. Due to this polysemic characteristic, the concept has definitions as varied as the diversity of individuals or social groups that use it.

Policies worldwide focus mainly on local hydrocarbon extraction, encouraging investment in unconventional oil and gas. However, it is important to mention that each oil-producing country has its own government policies.

The concept of a just energy transition was proposed to reconcile the climate objective of the new model of reducing greenhouse gas (GHG) emissions with other climate objectives aimed at reducing inequality and improving the quality of life of the most disadvantaged social groups.

In neighboring Latin American countries such as Colombia, within the proposed context, the regulatory framework contemplates the implementation of benefits and tax incentives for energy projects as non-traditional sources of renewable energy (FNCER), including:

- Reducing by 50% the income from total investments destined to the execution of renewable energy projects.
- Include Value Added Tax (VAT) on the purchase of goods and services to implement energy generation projects with the FNCE and efficient energy management.
- Increase import duties on machinery, equipment, materials and raw materials used solely for reinvestment and investment in these projects. Take advantage of the accelerated depreciation system applied to machinery, equipment and machinery.

In the context of Ecuador, the country still depends on the use of fossil fuels and therefore the integration of renewable energies is not fully developed. Thanks to its geographical location, Ecuador is rich in renewable resources, the exploration and development of which requires the use of the latest technologies. These sources, such as solar, wind, geothermal and natural gas, must be incorporated into the energy matrix. This is already the case if we consider the hydroelectric system, which constitutes 95% of the country's energy matrix. On May 1, 2023, the Ministry of Energy and Mines (EMM) unveiled the Galapagos Energy Transformation Plan 2050, developed in conjunction with the IDB and other entities in the energy sector, local authorities, industry agencies and the Galapagos Islands. Islas Galápagos issues this document to promote the renovation of the network and develop new policies and measures aimed at reducing greenhouse gas emissions.

Public reports are important for learning how to use energy better in different sectors and for promoting the use of clean and environmentally friendly energy. A plan to create environmentally friendly technologies will be available in 2023. As for how the program works, it is important to mention that it has five fundamental parts.

- Using more clean energy such as solar and wind, and storing that energy to reduce pollution.
- Improve plans to control the amount of products or services that people want in a very effective way.

- Create technological systems that combine different tools to efficiently manage energy use.
- Encourage people to participate in the decisions and organization of society.
  Create a new form of credit called CO2 to help reduce the amount of gases that damage the atmosphere.

In Ecuador they are making changes to use less energy that harms the planet. They want to stop using fossil fuels, like oil, quickly by 2025, a little more slowly by 2030 and in the end use very little. To achieve this, they are going to follow some strategies for action.

By the year 2030, we want 85% of the energy used to be renewable and clean. To achieve this, we are going to use different energy sources such as the sun or the wind, improve energy efficiency, store energy and use systems to convert it into electricity. All this will help us take care of the environment and have more sustainable energy.

- Establish a comprehensive bus and train plan for an environmentally friendly transportation system in the city.
- Make a comprehensive plan to improve maritime transportation and create incentives to promote fuel economy on ships and their replacement with cleaner options in the future.ç

According to (Castro Yupangui, 2022), the southeastern part of the country in the Ecuadorian Amazon should be explored or considered, where there are still renewable resources that have not yet been explored and developed and should be included in Ecuador's energy plans for at least 50 years.
The contribution of the Amazon region to the forecast of the launch of new renewable energy power plants and to the development of regulations for the construction of new plants allows us to explore the possible reality of the use of totally renewable energy resources in 2050.

Adaptation Strategies for the Oil Industry

In the oil sector, efficient project management is crucial to ensure on-time delivery as planned in the scope and proposed goals, so the Ecuadorian state needs to develop policies that reduce possible effects in various sectors, particularly on the possibility of employment in the oil industry. The main challenge is to ensure a fair transition, in which green jobs are fundamental in the development of the country's sustainable and climate-resilient production structure. Within this framework, it is proposed to evaluate strategies relevant to Ecuador to achieve an effective metamorphosis towards an inclusive socioeconomic model that can bring about the required transformation of the labor market.

According to (Sentis, 2024), the oil industry is a sector that is facing significant challenges in the current landscape with very rapid and complex transformations. Constantly changing elements, such as energy demand, environmental concerns, difficulties in the availability of resources and geographical challenges, force oil companies to reevaluate all their strategies to adjust their orientation towards sustainability and the environment for long-term prosperity.

Among the primary adaptation strategies of the oil industries is pollution, the poor management of such waste has triggered situations of soil and water pollution, putting the health of local communities at risk and threatening the integrity of various ecosystems

The oil industry, the foundation that sustains Ecuador's economy, is an essential pillar, contributing considerable figures to the Gross Domestic Product (GDP) and generating a large number of jobs in various regions, particularly in the vast Amazon. However, this apparent economic progress is hampered by an environmental challenge of worrying proportions. The extraction and processing of hydrocarbons produces a range of chemical waste products which, if not managed properly, can cause irreparable damage to the environment and the individuals who inhabit it. As a result, several researchers are stressing the importance of addressing this problem, which is devastating other natural resources such as water and soil

Long-term prospects for the oil industry in a context of climate change

The current energy model is mainly focused on fossil fuels, with oil being the most important. The process of acquiring and burning oil generates environmental and human costs that are not considered and therefore remain hidden.

Climate change is frequently analyzed in terms of its scientific aspects and its consequences for public policy, as well as its influence on decision-making in the international entities that deal with this issue. The predominant conception argues that the progress achieved by climate science1 constitutes a firm basis for the formulation of public policy

Almost always the main argument of the oil industries is the low price of energy sources such as oil, coal and gas. However, drilling for extraction involves the use of numerous explosives, and even regulated nuclear charges have been used and tested, all of which, together with these drilling techniques and the subsequent siting of oil platforms, contaminate, modify and decompose ecosystems. In addition, in the process of oil extraction, it is common to find underground deposits of naturally occurring radioactive substances.

In oil extraction, among other negative effects, the use of resources such as large amounts of water and the waste generated must be taken into account. The ecological impact is varied as it includes heavy metals and toxic compounds such as lead, mercury and volatile aromatic hydrocarbons (benzene, toluene and hexylene), which are capable of replicating hormones and, therefore, negatively affecting the development and reproduction of animals and humans .

According to (Delgado Ramos, 2011) in global terms, it is estimated that, in onshore oil production, waste in the mud ranges from 270 thousand liters to just under one and a half million liters per day. On offshore platforms, spills exceed 2 million liters per day. Taking these statistics into account, possible scenarios for the future must be considered.

In response to this, the strategies implemented are divided into three categories:

• Environmental impact assessment
• Social responsibility
• Governance and ethics

Within these categories are specific activities such as:

• Annual Reports and Accounts
• Reduction of gas emissions
• Investment in Renewable Energies
• Restoration of Deforested Land
• Implementation of Reforestation
• Implementation of global corporate development programs

All these strategies and more should be used in a high percentage of oil industries since they are the main cause of the phenomenon known as "Environmental Impact".

In Ecuador, the most notable cases of environmental impact are the devastating oil spills in Sucumbíos and the growing accumulation of drilling debris in Orellana. These situations underline the urgent need to implement effective mitigation strategies. Therefore, it is considered important to adapt new perspectives that indicate changes.

Ecuador has a regulatory framework designed to effectively deal with chemical waste from the oil industry. The Comprehensive Solid Waste Management Act dictates a set of rules for the categorization, management and disposal of this waste, ensuring that companies operate under conditions that reduce their impact on the environment. On the other hand, hazardous waste is specifically regulated by regulations such as the Environmental Management Regulations for Petroleum Activities, which requires companies to implement environmental management plans and conduct environmental impact assessments.

Finally, it is important to emphasize that, in addition to implementation activities, it is also important to try to change production processes towards cleaner methods, as this can have a significant impact on chemical waste reduction. The implementation of adequate chemical waste disposal methods in the oil industry is essential to reduce environmental impact and protect the health of neighboring communities. The implementation of green technologies and the promotion of reuse and recycling can significantly reduce the generation of hazardous waste, thus contributing to a more sustainable growth of the industry.

The complexity of the energy transition and the challenges it faces were analyzed, highlighting that this structural change is crucial to mitigate the effects of climate change and reduce global dependence on fossil fuels. This movement not only involves the incorporation of renewable energy sources such as solar, wind and hydroelectric, but also a significant reconfiguration of the role of oil in current energy systems.

It is worth noting that, although oil remains essential for sectors such as transportation and petrochemicals, its position is changing due to political, economic and social factors. Through international policies such as the Paris Agreement and the COP26 commitments, industries are under increasing pressure to adopt sustainable practices. In this sense, decarbonization and investment in technologies such as Carbon Capture and Storage (CCS) are identified as fundamental strategies. However, these solutions have significant limitations, as their massive implementation faces logistical challenges and high initial costs.

Furthermore, technological advances and the reduction in the cost of renewable energy have made it a direct competitor to oil. Despite this, our analysis shows that the intermittency of renewable sources and the current infrastructure limit their widespread adoption. This highlights the urgency of strengthening energy storage systems and expanding electricity transmission networks, especially in countries with fewer resources. Likewise, the economic differences between developed and developing countries amplify the gap in the capacity to implement renewable technologies. Therefore, the importance of effective international collaboration to ensure that the transition is fair and inclusive is emphasized.

On the other hand, the oil sector could adapt to these changes by integrating circular economy practices and diversifying its business models. Strategies such as material recycling, efficient use of resources and the development of biofuels can provide a bridge between current energy needs and long-term sustainable objectives. However, it is also emphasized that the adoption of hybrid models, combining the strengths of fossil fuels with innovation in clean energy, will require an active commitment from both governments and companies.

Finally, there is agreement that the energy transition is not only a technical challenge, but also a social and political one. The creation of inclusive policies and the design of strategies that consider global inequalities will be key to moving towards a more sustainable and equitable energy system.

Conclusions

In conclusion, the energy transition is a crucial challenge of the 21st century and an opportunity to transform global economic, social and technological systems. This change is inevitable given the urgency of mitigating climate change and ensuring the sustainable use of resources. However, the diversity of energy systems and economies demands adaptive and collaborative approaches.

Although its role is diminishing, oil remains essential in sectors such as petrochemicals and aviation, where alternatives are not yet mature. Its use should be rethought in terms of energy efficiency and technologies such as carbon capture. On the other hand, renewable energies have made extraordinary progress, but challenges such as intermittency and the need for robust infrastructure persist. A diversified strategy, temporarily combining fossil fuels and renewables, is key to ensuring energy stability during this transition.

Economically, the transition generates tensions in oil-dependent economies, but it also opens up opportunities in green jobs and technological innovation. Global cooperation, led by developed nations, is essential to support developing countries with financing and technology transfer. Agreements like the Paris Agreement are fundamental to ensure a fair and equitable transition.

In short, the energy transition is a paradigm shift that redefines how we produce and consume energy. Sustainability must be the central axis, aligning economic prosperity with environmental protection and social well-being. Although complex, this transition is a unique opportunity to build a fairer, more resilient and more sustainable energy system

This version eliminates redundancies, simplifies the ideas and keeps the message clear and direct.

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Audiovisual analysis of the contribution of rural women to the Latin American economy

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Introduction

In the current context, women represent 49.7% of the world's population and constitute the majority of the inhabitants of countries with the exception of China and India, where men greatly outnumber women. They play a key role in economic growth and in the labor force, yet women continue to be neglected in science, research and many aspects of their health that are poorly understood, requiring more funding and favorable positions for women to improve their quality of life (Carneiro, 2023).

Women have been subjected to or undergone various changes from being allowed to work, to the present day where they are still subjected to labor changes. The ILO indicates that women represent a total of 41% of the rural labor force, rising to 49% in low-wage countries. They are family breadwinners, businesswomen and livestock breeders, they have an important participation in agribusiness and even with their social and economic contribution, it is widely underestimated. Women in agriculture are concentrated in low-quality, inefficient or neglected jobs with long working hours, limited social security and precarious working conditions (Lakhawat & Singh, 2022).

Since the late 1970s, rural women in Canada, New Zealand and Australia have developed new networks and organizations in response to changes in the agricultural industry and how women's organizations are responding to changes in rural society to counter their marginalization and alienation in the agricultural industry by establishing representation at the government level, which requires flexibility and adaptability to address changing economic and social issues, so the establishment of organizations that can speak on their behalf and get quick responses to social and economic problems was suggested (Teather, 1996).

In 1975, the United Nations held the first International Women's Year Conference in Mexico City, due to the growing concern for the social and economic problems faced by women in the Third World, which attracted the attention of many international organizations. In the works reviewed, the need to convert women into cooks, water carriers, more efficient child rearing and food producers is evidenced, but the elimination of the sexual division of labor is not discussed or requested (Benería & Sen, 1983).

In this sense, women are positioned with disadvantages in most societies, due to the limited access to resources they have, unlike men (Namdar-Irani & Aracena, 2014). This is why different countries have positioned women as agents of change through the implementation of forms, programs and public policies, as well as various institutions that are oriented towards strengthening skills in household decision-making, favoring access to public space and enhancing their economic conditions (Osorio, 2011).

Although their functions are on a par with those of men, women suffer more aspects of poverty and marginalization, maintaining a scarce access to land tenure and some resources such as a decent job that is with overloaded workloads that are not remunerated or with favorable conditions, for this reason, this work is carried out through a literature review in which the situation faced by rural women and their contribution to the economy is studied in order to make known the advances and shortcomings with respect to improvements in their living conditions.

In order to achieve the proposed objective, information was sought to analyze the economic contribution of rural women throughout history, identify the labor and social vulnerabilities of rural women, and their importance in the preservation of natural resources.

Over the years, women's work has been undervalued in various contexts, especially in the workplace. In fact, Kliksberg (2003) mentioned that in a detailed UN diagnosis of the situation of women in "The World's Women 2000", women are actively discriminated against in terms of wages. In 27 out of 39 countries with available data on women's pay, women's salaries were 20 to 50% lower than men's. Cases that particularly affect women: poverty, inequality, exclusion, lack of access to technological opportunities that are more prevalent among women and the consequences of inequality in health.

At least half of the women working in sectors other than agriculture work in the informal sector in 7 out of 10 Latin American countries and in 4 Asian countries, 90% of women working outside agriculture and in the informal sector are found in two of the world's most populous countries, India and Indonesia. Seven studies conducted between 1995 and 1999 for 7 different countries show that women spend more time in unpaid work than men even as they get older, one of the factors being young children, who require women to spend more time in this type of work (United Nations, 2000).

Rural women constitute a fundamental part of the labor force, essential to agriculture and rural communities. According to FAO reports presented at the 1966 congress on food security, it was estimated that women contributed, on average, 50% of agricultural production, and this figure is especially relevant in developing countries. In the desert areas of Africa, between 70 and 80% of the labor force are women; in Asia, 65%; in Latin America, 45%; and in the Caribbean and Tunisia, 89%. In Iran, more than 50% of the agricultural labor force is made up of women. Most of the tasks performed by rural women are carried out outside the home (Badragheh & Abedi, 2011).

Although they are silent workers and major contributors to the rural economy, they are not always recognized for their economic participation. According to Chowdhury et al. (2013) in Bangladeshi households with different income levels (low, middle and high), they showed that women in these households contributed significantly to the family income (35.18%, 25.11% and 14.20%, respectively). Through this study, it was possible to see the contribution of women in generating household income and it was evident that female participation in low and middle income households is higher in non-agricultural activities, compared to high income households.

Despite this importance, they face social vulnerabilities, limited access to education, low salaries and jobs that are not recognized, so policies are needed to help mitigate this problem, which is still evident to date. The research conducted by Neves et al. (2022) which was carried out through a quantitative approach in the rural area of Nazarezinho, Paraíba, Brazil where 87 rural women participated. In the analysis carried out by means of descriptive statistics, the social vulnerability suffered by women is evidenced, which must be addressed immediately to improve their quality of life and guarantee their rights.

Their roles have historically been significant, but unfortunately underestimated, with extensive participation in agriculture through labor that is sometimes unpaid, coupled with discrimination and low access to resources. As indicated by the Inter-American Development Bank (2014), gender perspectives can promote equality and strengthen women's empowerment, thus creating opportunities and addressing challenges that enable their participation in rural development interventions, this report identifies the opportunities and challenges of gender perspectives.

According to Deere (2009) since 1970, the dominant trends in rural Latin America include new strategies for household livelihoods, increasing women's economic participation, evidenced by a concentration of rural women in non-agricultural work and both rural and urban women in agricultural production. It indicates that economic restructuring has a significant impact on women's roles in rural Latin America, which may lead to an increase in women's economic participation rates and a higher percentage of women in agricultural production.

For Draper (1985), there are two types of work in which most Latin American women participate: domestic service and informal work such as the production and sale of agricultural products. In her work she examined these two to understand in a broader structure the configuration of women's employment. The main assumptions of modernization is the improvement in women's living conditions, but these are not confirmed by actual employment trends that reveal the persistence of women in domestic work, informal jobs and paid service jobs, often not included in employment statistics and therefore ignored in development studies.

In Latin America, women play a very important role through their participation in projects, entrepreneurship and access to credit, thanks to which they are able to enhance their economic autonomy, self-esteem and empowerment, being self-sufficient and capable of making free decisions regarding their lives. In this sense, Villafuerte-Pezo et al. (2022) conducted a systematic review with the prism methodology to detail the causes that determine women's economic independence, among which the aforementioned stand out. Income generation allows women to empower themselves, self-evaluate and reflect on their gender roles.

They are more recognized for their contribution to family farming and sustainable development, although it is necessary to emphasize that they still face problems related to gender and the division of labor, they are gaining space in the debates for the formulation of public policies, as well as recognition in family farming and sustainable development. In the study conducted by Schneider et al. (2021) for the municipality of Vitorino, Paraná, Brazil, challenges are noted which include the departure of young women to urban centers due to the precariousness and separation of gender roles in the workplace.

Jelin's (1977) work studied the migration of Latin American women from the countryside to the city and the labor and domestic alternatives in the cities. The study of women's economic participation and family organization has been neglected by the social sciences and studies focused on urban areas. With respect to the labor market, domestic work presents characteristics in both supply and demand. This is normally the important means for the individual migrant and occupies a special place in urban economies as it shares features with wage labor, although there are times when domestic production is both paid and unpaid.

In rural central Chile, the trajectories and meanings of rural work in agriculture are undergoing a transformation due to rural/urban mobility, the product of modernization and the globalization of societies, which have also had an influential change. Fawaz et al. (2015) argues that female rural labor trajectories associated with work and family undergo transformations which impact on labor, education and consumption reconfiguration. The study highlighted the increasing feminization of agricultural work, greater numbers of women in productive and social organizations at the local level, and restructuring in rural families that present a similar trend to urban ones.

The agrarian transformation of recent decades in Mexico and Latin America has led to an increase in the time spent in unpaid work and a drop in the levels of nutrition, health and an increasing outflow of peasant women to the cities. As a consequence of the unequal capitalist agrarian development, which revealed the heterogeneity of the situations in which rural women find themselves. They, as members of their households, see their incomes decrease and choose to increase their working hours without being recognized. Women substitute for men when there is a shortage of workers, but men never substitute for women when there is a shortage of female workers (Arizpe, 1986).

In a study conducted on agrarian reforms in Chile, Peru and Cuba, Deere (2019) mentioned that rural women in Latin America faced exclusions which produced a strong impact on their socioeconomic conditions. Analyzing the Peruvian agrarian reform of 1983, she indicates that the processes do not have gender equity and mentions an assumption that the gender neutrality of the reforms can have a negative impact on the position of women, the results obtained are that few women in Peru and Chile are benefited unlike Cuba and that there is a negative impact on the position of women and cooperative success.

Deere (1985) mentioned in previous studies that agrarian reforms often only benefit men; only in cases where they are explicitly included in the reforms do rural women benefit and obtain access to land or participation in agribusinesses. The author indicated that this is sustained by the common designation of households and the incorporation of only male heads of household in the agrarian reform structures. Both men and women should be given access to land or the opportunity to participate in agrarian cooperatives, and women should also be assigned as beneficiaries.

Other challenges faced by rural women, which are mentioned in the work of García De Mercado et al. (2022), are disadvantages in education, limited access to financing and time management, despite the fact that there is female leadership within certain communities. The study was carried out through research and contributions from international organizations such as the United Nations (UN), the Economic Commission for Latin America (ECLAC) and public entities in Peru. It is highlighted that women have significant gender gaps compared to men.

With respect to gender roles and relations in the processes of rural transformation, emphasizing the role of the different institutions or organizations in shaping rural gender relations, these are subject to negotiation and redefinition, limiting women's empowerment due to the influence of institutions on social and cultural norms. State interventions in rural areas of Latin America have been based on a model that places the man as head of household and breadwinner of the family, while women are limited to being housewives, which has led to their exclusion in rural development projects and agrarian reform programs (Forstner, 2013).

Despite the many obstacles for women, they actively participate in associative organizations, which allows them to empower their economic autonomy by asserting their identities while still navigating traditional gender roles. According to Guerrero et al. (2019) in La Araucanía, Chile the participation of rural women in these programs enhances their personal and social development, helping them to have independence and participation in associative organizations. Participation in these programs is highly valued as it helps develop self-esteem and economic autonomy.

Despite the varied and extensive participation of women in Latin American agriculture Radel (2011) mentioned that their recognition is largely invisible and this is partly due to the discursive construction of male farmers. Through quantitative and qualitative methods and interviews with women in Calakmul, Mexico, she demonstrated the material implications of gender identities in agriculture for women's control of resources, including land, development and conservation projects. It highlighted the possibility of women's collective action to change the local invisibility of women in rural Latin America as agricultural actors.

Korzeniewicz (2000) mentioned that women in Latin America and indigenous peoples are the groups most affected by rural poverty according to the empirical evidence examined in the study, although there is also debate that explains the greater vulnerability to poverty as market expansion or economic growth of these groups. Through the works reviewed, the key mechanisms that can explain these phenomena that lead women and indigenous peoples disproportionately to rural poverty were identified and the debates surrounding the issue were analyzed.

This is why there is a need to prioritize the role of women and individual rights to land and forest care as evidenced in the cases of rural women in coffee agroforestry and indigenous women's rights in Bolivia. This study indicated that women are needed for a better understanding of communal land and forest care in Latin America, presenting empirical case studies to assess the current dynamics on rural women's property rights and Quechua indigenous women's rights to forest land for crops (Bose, 2017).

Inequality of female labor force participation in developing countries is influenced by economic structures, historical economic differences and persistent gender values, yet even with improvements, female labor force participation has been quite heterogeneous. Historical differences in economic structures still limit women's opportunities, and these depend on the economic conditions of their households as well as the type of employment that is considered appropriate for them. If female employment is promoted, women are able to break occupational barriers within the sectors where they predominantly work (Klasen, 2019).

A study conducted in Ecuador showed that the existing wage disparity hinders women's full development within society. This was corroborated by means of a study carried out to determine the salary gaps of students graduating as economists from the Agrarian University of Ecuador using data collection through surveys of 472 graduates between 2000-2021, in which the existing gender discrimination in the Ecuadorian labor market is noted and these disparities are due to cultural issues and not to the lack of preparation of the graduates (Bucaram-Leverone et al. 2023).

Gasparini & Marchionni (2017) mentioned that especially among vulnerable married women in Latin America, a slowdown in their labor force was noted based on a large database of micro data and household surveys. It indicates that rapid economic growth in the 2000s such as, for example, lower unemployment and higher incomes of male partners managed to reduce the need for vulnerable women to access low quality jobs by adding the increase in social assistance, which led to a decline in the female labor force, showing evidence on its determinants.

The work of Serrano et al. (2019) pointed out that married, with children and vulnerable women follow a countercyclical pattern in female labor force participation, in this sense, by means of a fixed effects model at the country and population group level with household surveys of 18 Latin American countries it was found that in female labor participation the existence of an inverse effect of additional work is denoted thanks to the deceleration of labor supply in the 2000s same that presented a high level of economic growth making the PLF go from 0.91 points between 1992 and 2002 to 0.35 between 2004 and 2014.

Within the theoretical framework of the works found for the literature review, the importance of rural women in family economies and agricultural activities is evident, demonstrating a significant participation in the contributions to the economy of the countries, to this we add the care of the home, This is why different studies show that the role of women is undervalued and even if they have access to resources, these are insufficient to give women the place they deserve.

Conclusion

The literature review concludes that rural women play a crucial role in economic and social development, particularly in agricultural areas, where their contribution is fundamental. Despite this, rural women face major challenges, such as wage inequality, job insecurity, limited access to resources and education. These obstacles are persistent and the invisibility of their work, both in the domestic and agricultural spheres, which underestimates their impact on the sustainability of rural economies, can be recognized and mitigated with the help of public policies in order to promote real change.

Furthermore, it is evident that rural women are key agents in agricultural production, especially in developing countries, where they constitute more than 50% of the labor force in the sector. However, despite their important role, rural women remain vulnerable due to lack of access to land ownership, credit and other resources. This situation reinforces gender gaps and limits opportunities for economic and social empowerment, reflecting the need for comprehensive approaches that promote their active participation in rural development processes.

The studies reviewed demonstrate that the empowerment of rural women is not only based on their participation in productive activities, but also on their organizational and leadership capacity within their communities. Through participation in cooperatives and local networks, women have found a way to strengthen their economic and social autonomy. However, it is essential that agrarian reforms and rural development policies include gender approaches to ensure that women have access to the same rights and opportunities as men, thus promoting greater equity and social justice.

Finally, the work provides that public policies should be formulated to improve the living conditions of rural women, recognizing their essential role in the agricultural economy and in sustaining rural communities. The findings point to the urgent need to design programs that promote their access to resources, such as land ownership, financing and education, as well as the creation of decent and remunerated jobs. This research can serve as a guide for implementing actions that not only reduce gender gaps, but also strengthen women's empowerment, promoting their full participation in sustainable rural development processes.

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Audiovisual strategies applied to the use of AI to promote healthy eating, physical activity and psychological well-being in students

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Introduction

Scientific reality indicates that school nutrition is considered one of those elements that increases the risk of illness (Aurino, Fernandes & Penny, 2017). Currently, it is notable for the overweight caused by the excessive consumption of calories and sugars (López, Navarro et al., 2013). This poses a significant risk to the population's ability to grow and develop fully, as children and young people are at a stage where their needs for essential nutrients (energy, protein, vitamins and minerals) are increasing and a nutrient-rich diet is particularly important. Another element that stands out for its ability to have various beneficial physiological and psychological effects is physical activity (PA). It can have a variety of positive effects on physical and mental health, including an increase in self-esteem, a more positive perception of the body, stress reduction, improvements in social relationships and the transmission of values, as well as a decrease in the percentage of body fat.

On the other hand, in recent decades information and communication technologies have generated significant changes and innovations in society due to their interactive capacity (Jasso, López & Díaz, 2017), transforming both the way people communicate and their ways of relating to each other, becoming deeply integrated into their lives (Villanueva-Blasco & Serrano-Bernal, 2019). The web has become a tool for everyday use for teenagers, and social networks are their most prized instrument (Pastor, Martín & Montes, 2019). Mobile devices are the most widely used in Mexico, where they account for 90% of Internet use.

Young people's access to mobile devices and social networks is starting at an increasingly early age (Garitano, Garrido & Andonegui, 2019). Platforms such as Facebook, YouTube, TikTok, Instagram, Pinterest, Twitter and even WhatsApp are extremely popular worldwide and represent powerful means of reaching large audiences (Kubheka, Carter & Mwaura, 2020). Social networks have become an irreversible phenomenon that offers numerous opportunities for interaction in constant development (Hernández, Yanez & Carrera, 2017), allowing users to create, modify and share self-generated content in an accessible way (O'Reilly et al., 2018). Its success lies in its ability to adapt to users' changing social contexts and evolve with increasingly sophisticated technology (Stellefson et al., 2020).

Zueck-Enríquez et al. (2020) suggest the potential for programs that use social media and information and communication technologies to promote healthy behaviors among young people, backed by evidence. This could include creating videos to promote health, recommending websites with reliable health information or connecting with other professionals through social networks (Fernández & Lafuente, 2016). However, despite the existence of these initiatives, the effectiveness of audiovisual strategies in promoting healthy habits is still an unexplored area of research, which justifies the need for this study.

Consequently, educating adolescents about the value of a balanced diet, regular exercise and psychological well-being becomes a crucial intervention to reduce the likelihood of developing additional chronic diseases. The present study aims to evaluate the effectiveness of audiovisual strategies in the promotion of healthy eating, physical activity and psychological well-being among students. It is hypothesized that the implementation of such strategies will have a positive impact on the lifestyle habits of adolescents.

Using a pre-experimental design, the research question was addressed: What is the effect of audiovisual strategies on the eating habits, physical activity and psychological well-being of students? Specifically, the following was proposed: a) to describe the sociodemographic characteristics of the study population; b) to describe the results of the study sample in the dimensions addressed; and c) to establish the differences between before and after the application of audiovisual strategies on healthy eating, physical activity and psychological well-being in fifth-year secondary school students.

The work is based on an original plan for the development of research activities at the Universidad Nacional Hermilio Valdizán (Peru), and therefore the procedure established in the original project was followed. This consisted of selecting students aged 15 to 18 years old, who, for a period of 1 month, carried out audiovisual activities using educational videos, websites and dissemination on social networks for each of the variables. On the other hand, in this selection, the purposes and conditions under which the study was being carried out were explained, and the informed consent for participation was attached. In case of not consenting, the instrument was not applied and the participant did not take part in the implementation of the audiovisual strategies.

Regarding the ethical aspects of the study, informed consent was taken into account according to the model of the National Institute of Health (INS) of Peru, which included ethical aspects that are considered in the Code of Ethics of the College of Nurses of Peru, which are: Beneficence, as strategies were provided to improve eating habits, physical activity and psychological well-being; non-maleficence, given that the integrity and data of each student will not be put at risk; autonomy, because it was carried out on a voluntary basis, with the option of stopping participation in the study process without any penalty. And finally, justice, given that all are presented with the same conditions to be able to participate in the study, no incentives are offered and voluntary participation is emphasized.

Data analysis

Descriptive analyses were carried out with the aim of describing the sociodemographic data of the students, and also to identify the general results for the variables before and after the implementation of the audiovisual strategies. To evaluate the effectiveness of the audiovisual strategies on the variables of diet, physical activity and psychological well-being, McNemar-Bowker tests were carried out, as they evaluate the symmetry of the contingency table that represents the responses at two different times. The tests were carried out using the statistical package SPSS (version 26.0), where the non-parametric tests were executed, given that the variables presented a non-normal distribution.

The variables of interest collected initially were quantitative, which were subsequently scored and categorized according to the test, regrouped and converted into ordinal (food, physical activity and psychological well-being) discrete.

Sociodemographic data from secondary public educational institutions

In this section, the research findings are presented, which are in accordance with the proposed objectives. First, it begins with a descriptive analysis and then the inferential analysis to validate the proposed hypotheses.

Table 1. Sociodemographic data of 5th year secondary school students

Sociodemographic data		Frequency	Percentage
Age	15 age	52	34,7
	16 age	60	40,0
	17 age	33	22,0
	18 age	5	3,3
	Total	**150**	**100,0**
Sex	men	84	56,0
	woman	66	44,0
	Total	**150**	**100,0**
Origin	Rural Zone	18	12,0
	Urbana Zone	132	88,0
	Total	**150**	**100,0**

With regard to sociodemographic data, out of the total 100.0% (150), 40.0% (60) of students are 16 years old, which is the average age for completing secondary education in Peru; 56.0% are male and 88.0% come from an urban area or live in the same district as the study.

It can be seen that of the total 100.0% (150) of students who participated in the study; in the application of the pre-test, 28.0% (42); 31.3% (47) and 40.7% (61)

presented unhealthy, unhealthy and healthy eating respectively, after the application of the audiovisual strategy, the results were that 2.0% (3); 41.3% (62) and 56.7% (85) had unhealthy, unhealthy and healthy diets respectively. In other words, the majority of the population studied improved their eating habits after the implementation of these audiovisual strategies.

The total of 100.0% (150) of students who participated in the study allows us to observe significant changes in the physical habits of the participants. In the pre-test; 13.3% (20); 63.3% (95) and 23.3% (35) of students showed unhealthy, unhealthy and healthy physical activity respectively, subsequently to the audiovisual strategy activities, the results showed, through the post-test, a significant decrease in the number of participants in the unhealthy category, reducing to only 7 (4.7%). Similarly, those who were unhealthy decreased to 23 (15.3%). On the other hand, the healthy physical activity category showed a substantial increase, going from 23.3% of participants in the pre-test to 80% in the post-test. In other words, the majority of the population studied improved in the development of physical activity after the implementation of the audiovisual strategies.

Psychological well-being before and after the audiovisual strategies

It is stated that of the total 100.0% (150) of students who participated in the study, it is possible to see significant changes in the psychological well-being of the participants. In the pre-test; 8.0% (12); 40.0% (60) and 52.0% (78) of students showed unhealthy, unhealthily and healthy physical activity respectively, after the audiovisual strategy activities, the results showed through the post-test, a fundamental decrease in the participants who were in the unhealthy category, reducing to only 13 (8.7%). Likewise, those who presented unhealthy decreased to 20 (13.3%). On the other hand, the category of healthy physical activity increased considerably, going from 52.0% of participants in the pre-test to 78.0% in the post-test.

In other words, the majority of the population showed changes in their psychological well-being after the implementation of the audiovisual strategies, an indication of a general improvement in eating habits after the audiovisual strategies, specifically reflected in the increase in the healthy category and the significant reduction in the unhealthy category. In particular, it is highlighted that only 0.7% (1) remained unchanged after the intervention, while 12.0% (18) of the unhealthy category moved to unhealthy, and 15.3% (23) reached healthy, after the development of these strategies.

The McNemar-Bowker test, with a value of 35.831 and a significance level of p = 0.000 ($p<0.05$), confirms that these changes in category distribution are statistically significant. This supports the conclusion that the audiovisual strategies applied have positive effects on improving the eating behaviors of the participants.

The distribution of the physical activity categories before and after the audiovisual strategies is shown; which reflects a significant change in the participants' behavior with respect to physical activity. This change is especially notable in the unhealthy category, which highlights that only 0.7% (1) remained without improvement, while 0.7% (1) of that same category moved to unhealthy in the post-test, and 12.0% (18) managed to reach the healthy category. In the unhealthy category in the pre-test, 46.7% (70) of 63.3% (70) progressed to the healthy category in the post-test.

The McNemar-Bowker test, with a value of 82.099 and a significance level of p = 0.000 ($p<0.05$), indicates that these changes in the distribution of categories are statistically significant. This supports the conclusion that the audiovisual strategies applied have positive effects on the improvement of the physical activities of the participants, as expressed by the distribution of the psychological well-being categories before and after the audiovisual strategies; which reflects a significant change in the attitude of the participants with respect to psychological well-being. This change is particularly notable in the unhealthy category, where only 0.0% (0) (in other words, none) presented an unfavorable psychological state before or after the implementation of the strategies, while 0.7% (1) of that same category moved to the unhealthy category in the post-test, and 7.3% (11) managed to reach the healthy category. In the unhealthy category in the pre-test, 29.3% (44) of 40.0% (60) progressed to the healthy category in the post-test.

The McNemar-Bowker test, with a value of 27.852 and a significance level of p = 0.000 ($p<0.05$), indicates that these changes in the distribution of categories are statistically significant. This supports the conclusion that the audiovisual strategies applied have positive effects on improving the psychological well-being of the participants.

The present research focuses on evaluating the effectiveness of audiovisual communication strategies aimed at promoting healthy habits (nutrition, physical activity and psychological well-being) among fifth-year secondary school students in public educational institutions in Huánuco. The results obtained show a significant difference in the pre-test and post-test on healthy eating considering the McNemar-Bowker test calculated 35.831, plus the p value of (0.000<0.05). With regard to physical activity, there is a significant difference between the pre-test and post-test, considering the McNemar-Bowker test calculated at 82.099, plus the p-value of (0.000<0.05). And with regard to psychological well-being, there was also a significant difference between the pre-test and post-test according to the McNemar-Bowker test calculated at 27.952, plus the p-value of (0.000<0.05). Therefore, it is established that the audiovisual communication strategies considered in the study are effective in promoting healthy eating, physical activity and psychological well-being in 5th year secondary school students from public educational institutions in the city of Huánuco-2023, given that the calculated McNemar-Bowker test is 35.831; 82.099 and 27.952 respectively in each of the variables and the p value of the variables is 0.000 (p<0.05) in each case, therefore the research hypothesis is accepted.

These results reveal the positive impact of these strategies on the promotion of healthy eating, physical activity and psychological well-being in the study sample. As for the impact of audiovisual communication strategies, they were found to play a significant role in the adoption of healthy behaviors by students. These results are supported by previous research, such as that of Beasley, C. R., & Whitaker, L. R. (2016) whose findings revealed that mobile applications can be effective tools for promoting healthy nutrition and exercise behaviors in young people, as long as they are tailored to their preferences, with an attractive design and interactive features to maintain their long-term interest. In the area of healthy eating, the audiovisual strategies employed, such as social media campaigns, mobile applications and interactive websites, proved to be efficient in providing nutritional information, healthy recipes and practical advice on a balanced diet. These findings coincide with previous research by Harris et al.

(2021) who have also emphasized the usefulness of audiovisual interventions to promote healthy eating in young people.

In terms of promoting physical activity, audiovisual strategies, such as mobile activity tracking applications, online training videos and virtual challenges, played a key role in increasing participation in physical exercise. According to Direito et al. (2017), this supports the idea that audiovisual interventions, such as applications and text messages, have the potential to be successful in stimulating changes in physical activity.

On the other hand, in the work of Hall et al (2015) it was identified that text messages have the potential to be successful in increasing physical activity, both in healthy individuals and in those with chronic diseases. According to Stephens, et al (2017) the results of their research revealed that these strategies, such as applications and text messages, have the potential to be successful in improving physical activity and generating changes in weight.

Likewise, audiovisual communication strategies addressed the psychological well-being of students through educational content, relaxation techniques, and online emotional support. These approaches coincide with previous research by Flett et al. (2019) and Karyotaki et al. (2020), which has underlined the usefulness of audiovisual interventions to improve psychological well-being in young people. On the other hand, Kuss and Griffiths (2017) emphasize that excessive use of social networks and audiovisual communication can negatively affect mental health and well-being. Despite this, they admit the presence of favorable aspects on these platforms. They emphasize the need to use these tools in a balanced and conscious way to reduce risks and take advantage of their benefits.

These results have substantial implications for the design and implementation of health promotion strategies for secondary school students. They support the effectiveness of audiovisual communication strategies in promoting healthy habits (diet and physical activity) and suggest their integration into future interventions and policies aimed at improving the health and well-being of students in Huánuco.

However, it is crucial to recognize certain limitations in this research, such as the size of the sample. In addition, it is suggested that additional research be carried out with a long follow-up to evaluate the long-term effects of audiovisual strategies, taking these limitations into account when interpreting the results.

Conclusions

This study supports the effectiveness of audiovisual communication strategies using virtual platforms through informative videos, online classes, using social networks, emails or school blogs to promote healthy eating, physical activity and psychological well-being among fifth-year secondary school students in public educational institutions in Huánuco.

These findings underline the importance of including audiovisual communication strategies in health promotion programs aimed at this student population. Likewise, educational institutions should also provide access to virtual resources related to healthy lifestyles and emotional well-being, such as practical guides and mobile applications focused on promoting healthy habits.

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System of communication and characterization of the urban-rural relationship

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Introduction

The interaction between urban and rural areas in the canton of Milagro is a situation in which various social, economic and cultural factors converge, which is reflected in the flow of population in each area (Dai et al., 2024), addition to the resources that one can contribute to the other, and the services they receive, all of which is important for a complete understanding of the degree of development that they present, as well as the possible disputes that may arise (Perpiña et al., 2023).

The canton of Milagro has experienced considerable growth, which has gradually affected rural life, as a result of the urbanization process that is forcing economic and territorial transformations, i.e., the demand for basic services, new jobs, and infrastructure improvements is increasing. Likewise, changes are generated in the ways of production, influencing development and land use strategies (Wang et al., 2023).

The relationship between urban and rural environments is crucial under the role that each manages to fulfill, on the one hand, rural areas are the architects of being able to ensure the food sovereignty of the population in general (Fonseca and Bossa, 2022), and in the same way, urban areas can boost the development of rural areas through the creation of new policies or investment programs that intensify rural productive capacity (Avila, 2024).

This paper seeks to establish the characteristics of the urban-rural relationship in the canton of Milagro, using the statistical method of Principal Component Analysis, in order to identify the dynamics generated by this interaction, as well as the respective challenges, opportunities, and strategies that allow a better integration between these areas.

Urban-rural contrasts

There are precedents that address this issue, such as the research carried out by Cano(2022) entitled Reading the 'disorder'. Agrarian change, peasantry and Sembrando Vida, where he exposes that the role of the peasant is increasingly devalued, because it is not considered as important within the comparative capital and State, being able to compromise the food sovereignty of the population as a result of disinterest, and the migration process towards other activities that this position generates.

Following this same trend, Benavidez(2023) in his work Estrategias de vida y reciprocidad: en laguna de Moyuá 2020-2022, describes that some rural sectors have greater access to basic services and road infrastructure due to their proximity to urban areas, however, living conditions are limited by the variability of the environment and periods of scarcity of products, as well as the inability of people to form associations, making it difficult to implement programs that are useful for all.

Cifuentes and Duque(2021) carried out a study entitled La transformación del paisaje urbano rural del municipio de Montenegro, Quindío, in which they comment that urban intervention within territorial planning can alter the conception of the rural environment, since this process, in spite of interfering in the distribution of space, is also a social product, This process, despite interfering with the distribution of space, is also a social product because it can cause changes by displacing activities and changing certain customs, given the persistence of the major problems facing the rural area, such as stagnant agricultural productivity, the high poverty rate, and inequity in access to public goods and services.

Velasco et al. (2022) in their research entitled La dichotomía entre lo rural y lo urbano y sus desafíos en el Ecuador, argue that rurality is a unique territory in which there are disparities between modern sectors, and others to be developed, and should be duly supported by urban planning projects in order to strengthen the sociocultural relationship, and find solutions to the major challenges affecting the inhabitants of both areas, so that a renewal of the rural-urban relationship occurs, providing opportunities for all, contributing to local development in the twenty-first century.

Pereira and Ramírez(2020) expose in their research Processes of articulation and disarticulation of a rural community from the practices of place, where through the incorporation of urban practices and customs they seek to generate some change in the conception of the rural environment, however, these communities are reluctant to adopt radical changes, but on the contrary, opt for a new rurality with tints of urbanism, considering that the same is an aspect that has much potential to be exploited, without losing its most common characteristic as is the work of the farmer.

Alberdi(2024) in his article entitled Territory and vulnerability, axes of the rural zoning of the Basque Country, where he exposes the depopulation faced by rural areas due to urbanization projects, however, a rural development law is approved where actions are sought to meet the most basic needs of the population, and then escalate to more concrete situations, providing innovative solutions in different areas.

Ghiglione(2022) indicates in his work Rural development in Argentina and Latin America: current problems and debates, that rural areas require a structuring of agribusinesses due to the amount of land grabbing that exists, in addition to the need to discuss the implementation of ideas that contribute to the productivity of agricultural activities, apart from this, It is believed that the development perspectives are variable between urban and rural sectors, considering aspects such as economic, demographic and socio-cultural aspects that establish a differentiating framework.

Perez and Avendaño(2021) establish in their research entitled Claves desde lo rural sobre desarrollo territorial. A look at the municipality of Jesús María in Santander, Colombia, that the rural population wants to promote new development projects considering the way in which the farmers of the area are associated and the identity that they present with respect to the territory, for which they maintain the desire to leave a little aside the extractivist techniques and modify the traditional production processes of the agricultural activity.

Guamán (2022) in his research work entitled Development of Agricultural Policies and their Influence on Ecuadorian Small Farmers, identifies that subsidy and technical assistance policies have benefited large producers to a greater extent, while small farmers are the ones who face major challenges such as difficulty in entering markets, poor access to credit, lack of technical assistance, among others. This makes it necessary to generate more inclusive policies that seek to solve these problems and, in turn, promote the equitable development of small farmers.

Barragán (2023) argues in his study Prospectiva de las relaciones campo-ciudad en los países andinos: identificación y análisis de las variables claves, that the relationship between urban and rural areas presents a certain dynamism that makes it necessary to rethink territorial approaches, leading to an analysis of future scenarios that indicate which would be the most influential aspects in such situations, and the possible strategies that should be proposed. However, it concludes that the territorial variability between the different Andean countries makes it difficult to identify common factors that explain this fact, leading the research to a more regional scale.

In order to identify the characteristics that best expose the urban-rural relationship of the Milagro canton, the descriptive methodology is used, considering the statistical model of Principal Component Analysis, which is used to reduce the dimensionality of a set of data, through normalization techniques and elimination of biases, in order to define the most significant groups of variables, also called components.

These components are useful to understand in a simpler and more graphic way the interactions between the different aspects that contrast urban and rural areas, to be able to identify valid interdependence patterns, and consequently to provide recommendations for the balanced development of the canton.

According to Quinde et al.(2022) the equation that best describes the score of each component extracted from the total data is:

$$PCn = Zi1X1j + Zi2X2j + Zi3X3j + \ldots + ZimXmj.$$

- Z: coefficient of the variable within the component
- X: value assigned to the variables for each observation
- i: the component number
- j: the sample number
- n: the component number
- m: the total number of variables

In addition, the original data set is composed of the variables that make up the survey applied to 77 people, that is, the inhabitants of the urban and rural areas of the canton of Milagro, for which the data collection instrument was developed by the Agricultural and Environmental Economics Research Center (CIEAA), and the data were analyzed using Statgraphics and RStudio programs.

The variables included in this study are the following:

- Sex (S)
- Age (E)
- Type of economic activity (TAE)
- Sector of work under dependency (STBD)
- Self-employment sector (STFA)
- Activity in a dependent relationship (ABD)
- Time worked under dependency (TTBD)
- Activity related to own business (ANP)
- Time worked autonomously (TTFA)
- Number of people in the household working (PHL)
- Number of household members working in the urban sector (PHLU)
- Number of persons in the household working in the rural sector (PHLR)
- Income under dependency relationship (IBD)
- Frequency of income in a dependent relationship (FIBD)
- Income from own business (INP)
- Frequency of own business income (FINP)
- Household expenses (GH)
- Level of education (NI)
- Academic Training Sector (SFA)
- Educational units in the sector (UES)
- Type of educational institutions (TIE)
- Number of educational institutions (CIE)
- Home Shopping Location (LCH)
- Sector where household purchases are made (SCH)
- Frequency of household purchases (FCH)
- Mobilization to urban or rural area (MZUR)
- Most mobilized zone (ZM)
- Reason for mobilization to these zones (MMZ)
- Means of transport for mobilization (MTM)
- Type of Transportation for Mobilization (TTM)
- Access to Road Infrastructure (AIV)
- Availability of health services (DSS)
- Types of health services (TSS)
- Health status (EN)
- Access to emergency services (ASE)
- Drinking water service (SAP)
- Electricity service (SE)
- Street lighting service (SALP)
- Internet service (YES)
- Cellular telephone service (STC)

- Access to government programs (APG)
- Rural tourism activities (RTA)
- Community Recreation Sites (CRS)
- Quality of life of the individual (CVI)
- Perception of the development of the zone (PDZ)

To establish the appropriate number of components extracted from the initial data set, it is necessary to resort to the metrics provided by the eigenvalue (eigenvalue), which to be considered valid must be equal to or greater than unity, and the amount of variance captured by the components must be greater than 60% for the assignment to be considered optimal.

Thirteen principal components were identified for a total of 45 variables, among which they show an eigenvalue greater than 1. In addition, the total variance explained is 81.84%, thus fulfilling the other criterion. It is worth mentioning that as of component number 14, it is no longer considered useful, since its eigenvalue is less than unity.

The next step in the procedure was to extract the weight matrix of the components, which is useful for carrying out the association between variables and optimal components, i.e., its usefulness lies in being able to define which variables are most representative with respect to the component in which they are grouped. The assignment of the number of variables for each component is directly related to the amount of variance explained by each one, where, for example: the first component explains 21.63% of the variance, which groups 9 variables; the second component explains 10.53% of the variance grouping 5 variables; the third component explains 9.175 and relates 4 variables; in the fourth component 3 variables are grouped, explaining 6.94%; for the fifth component 6 variables were selected, explaining 6.71% of the variance. The following components, from the sixth to the thirteenth, only explain between 2 and 4% of the total variance, and contain the remaining 18 variables, respectively.

Table 1. Main component designation

Designation	Variables
C1: Income from employment	Type of economic activity (TAE), Dependent work sector (STBD), Self-employed work sector (STFA), Time worked as dependent (TTBD), Time worked as self-employed (TTFA), Income in dependent relationship (IBD), Frequency of income in dependent relationship (FIBD), Income from own business (INP), Frequency of income from own business (FINP)
C2: Level of development of the area	Educational units in the sector (UES), Type of educational institutions (TIE), Number of educational institutions (CIE), Access to road infrastructure (AIV), Perception of the development of the zone (PDZ)
C3: Household Expenses	Household expenditures (GH), Place of household purchases (LCH), Sector where household purchases are made (SCH), Frequency of household purchases (FCH)
C4: Health services	Availability of health services (DSS), Types of health services (TSS), Access to emergency services (ASE), Access to emergency services (ASE).
C5: Mobilization to urban and rural areas	Zone to which most mobilized (ZM), Reason for mobilization to these zones (MMZ), Means of transport for mobilization (MTM), Type of transport for mobilization (TTM), Rural tourism activities (ATR), Mobilization to urban or rural zone (MZUR).
C6: Educational level of the individual	Level of education (NI), Sector of academic training (SFA)
C7: Number of working people in the household	Number of household members working (PHL), Number of household members working in the urban sector (PHLU), Number of household members working in the rural sector (PHLR), Number of household members working in the urban sector (PHLU), Number of

	household members working in the rural sector (PHLR)
C8: Quality of life	Quality of life of the individual (CVI)
C9: Health status	Age (E), Health status (ES)
C10: Miscellaneous services	Drinking water service (SAP), Electricity service (SE), Public lighting service (SALP), Cellular telephone service (STC), Water and sewage service (SAP).
C11: Labor activity	Activity in a relationship under dependency (ABD), Activity related to own business (ANP)
C12: Entertainment	Internet service (IS), Community recreation sites (CRL)
C13: Access to government programs	Gender (S), Access to government programs (APG)

Source: Prepared by authors

Once the variables corresponding to each component have been identified, it is necessary to assign a name to facilitate the interpretation and analysis of the information, as shown in Table 1. Therefore, the following can be deduced from this point:

Component 1, Income by employment activity, is composed of variables such as type of economic activity (TAE), dependent work sector (STBD), self-employed work sector (STFA), time worked as a dependent (TTBD), time worked as a self-employed (TTFA), income in dependent relationship (IBD), frequency of income in dependent relationship (FIBD), income from own business (INP), and frequency of income from own business (FINP), frequency of income under dependency (FIBD), income from own business (INP), and frequency of income from own business (FINP), where most of the variables present a negative coefficient, a clear indication that the salary conditions under which people operate do not allow them to cover their needs completely.

Component 2, called Level of development of the zone, is made up of variables such as educational units in the sector (UES), type of educational institutions

(TIE), number of educational institutions (CIE), access to road infrastructure (AIV), and perception of the development of the zone (PDZ) whose coefficients are positive, indicating a clear direct relationship, where an improvement in the education and mobility of the population can generate greater prospects for development in these zones.

Component 3 called Household expenses groups variables such as household expenses (GH), place of household purchases (LCH), sector where household purchases are made (SCH), and frequency of household purchases (FCH), all components being positive, and according to the different observations, families tend to spend per month according to their capacities, and show a favoritism for making purchases in the market or in the center of Milagro, supporting their decision because they manage to obtain the things they need at economic prices.

Component 4 called Health Services is composed of variables such as availability of health services (DSS), types of health services (TSS), and access to emergency services (ASE), all coefficients are positive, however, the majority of the surveyed population does not have access to health services, which is directly related to the idea that they lack health insurance, which makes them vulnerable.

Component 5, called Mobilization to urban and rural areas, is composed of variables such as the area to which most people move (ZM), reason for moving to these areas (MMZ), means of transport for mobilization (MTM), type of transport for mobilization (TTM), rural tourism activities (ATR), and mobilization to urban or rural areas (MZUR), The results show that people tend to travel to both urban and rural areas, but there are two reasons why they do so: the majority of the group travels to rural areas for work, and another group goes to urban areas to make purchases for the household.

Component 6, called Level of education of the individual, is composed of the variables level of education (NI) and sector of academic training (SFA), both with positive coefficients, emphasizing that most of the people managed to finish primary school, others even managed to study secondary school, and complete high school, in addition to the fact that most of the respondents stated that they had completed their studies in the urban area due to the lack of resources in rural areas.

Component 7, called Number of household members who work, considers the variables number of household members who work (PHL), number of household members who work in the urban sector (PHLU), and number of household members who work in the rural sector (PHLR), with all coefficients positive, This is a situation in which more and more families have several members of the household who have to work in order to make ends meet. Related to this, it is common for this to happen in families whose main source of income is work in the fields, specifically in banana crops, given that this is one of the most popular products in the area.

Component 8, Quality of life, groups a single variable as the quality of life of the individual (CVI), with a negative coefficient, and this may be due to the fact that the population does not have an adequate scenario to improve their living conditions, especially in rural areas, this same situation is observed in urban areas, which have similar characteristics to rural areas, because the urbanization process has been slow in the canton of Milagro.

Component 9, called Health status, is composed of the variables age (E) and health status (HS), making this a negative component, and indicating that the health status in these areas is indistinct according to age, because there are people of advanced age with a good health status.

Component 10, Miscellaneous Services, groups together the variables drinking water service (SAP), electricity service (SE), public lighting service (SALP) and cellular telephone service (STC), with half of the coefficients being negative, due to the fact that most of the people indicated that they do not have access to drinking water, but have water from wells, and that they cannot afford to pay for cellular telephone service. However, the majority indicated that they do have electricity and some areas do have street lighting.

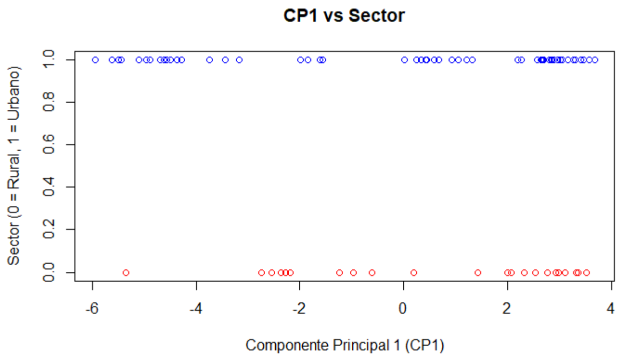
Component 11, called Labor activity, considers the variables activity in a dependent relationship (ABD) and activity related to own business (ANP), both coefficients being positive, but the first with a greater influence, perfectly capturing that most of the people surveyed work as day laborers in a dependent relationship, due to the fact that the most popular activity is agriculture.

Component 12, called Entertainment, groups the variables Internet service (IS) and recreational places for the community (LRC), with the coefficient of the first variable having the greatest influence, but it is negative, which can be attributed to the fact that this service is not something that all families can afford; likewise, few localities have any recreational space for the community.

Component 13 called Access to government programs is composed of variables such as sex (S) and access to government programs (APG), where the coefficient of the sex variable turns out to be negative, which would indicate that government programs within this area are more in favor of women, due to the fact that they are generally the ones who have greater access to the government bond.

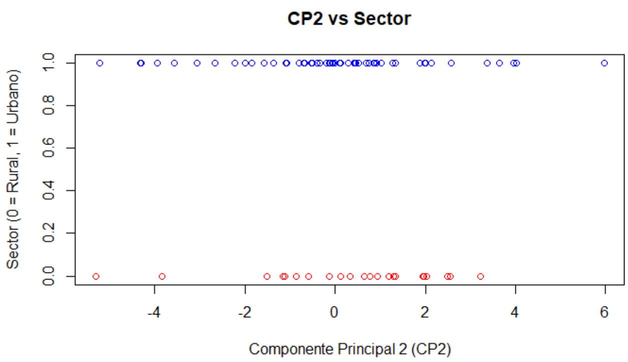
To complement the analysis, relationship graphs were established between the three principal components with the greatest variance explanatory capacity of the data set with a variable related to the sector to indicate a final comparison of this urban-rural relationship.

***Figure 1** . Principal Component 1 and Sector Variable (SEC)*



Principal component 1 collects information on labor aspects such as the type of economic activity and the sources of income, whether dependent or self-employed, and it can be seen that the values generated in the new component vary greatly for the two sectors, but at first glance the graph indicates that the highest values are found in the urban sector (1), which may indicate very marked labor differences between sectors. The differences may include aspects such as the type of activity performed, the levels of income to which the population has access, and the formality of the work, contrary to what happens with the negative values that may be a clear indication of inferior working conditions, and which are closely related to the rural environment.

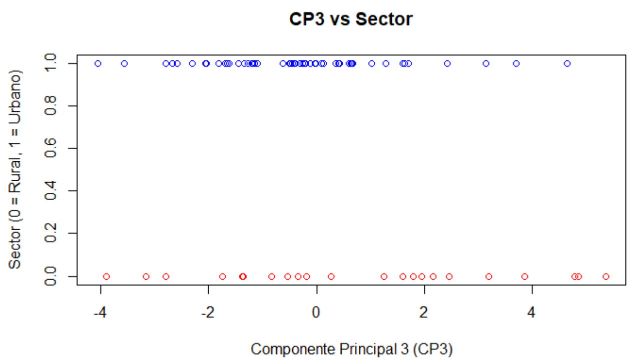
***Figure 2.** Principal Component 2 and Sector Variable (SEC)*



Principal component 2 is related to the level of development of the area, and although the data show variability, this is lower than that observed in CP1, which indicates that the level of development of the area varies considerably in the urban environment (1), this is due to the fact that there are sectors in which the urbanization process has been slow, leading them to share certain similar characteristics with localities in the rural sector (0), and causing this gap of little homogeneity in the urban sector.

On the contrary, the rural sector has somewhat lower values, but less variable, which is an indication of a homogeneous level of development, and relatively low due to the challenges faced by the population. However, with the urban sector we observe that there are more positive values, an indication that is easily interpreted as better access to education and infrastructure, and therefore, greater possibilities for development.

Graph 3. Principal Component 3 and Sector Variable (SEC)



Within this component, the urban sector has higher positive values, while the rural sector has values close to zero, which implies that household spending is carried out very differently in each sector, that is, the urban sector could indicate a greater capacity to choose, as well as having greater purchasing power; on the contrary, the spending patterns of rural households are similar. Delgado and Gómez(2022) in their work entitled La interacción entre lo urbano y lo rural: una revisión paradigmática, metodológica y bibliográfica actualizada (The interaction between the urban and the rural: an updated paradigmatic, methodological and bibliographical review), emphasize deagrarianization, and the abandonment of previous positions focused on keeping the urban and rural sectors separate, strongly considering the idea of proposing an approach where urban-rural interaction is more multifunctional.

In addition, Yang et al.(2021) in the article entitled Measuring the level of urban-rural integration and its spatial differentiation in China in the new century, agree that the relationship between these areas should be strengthened through the implementation of strategies for coordinated regional development while promoting the revitalization of rural life.

Ma et al.(2021) concluded in their paper entitled Investigation of integrated urban-rural city development strategy based on the study of rural forms in Nantong, China, that urban areas should be involved in improving the quality of life of the rural population by actively participating in whatever is aligned with sustainable development. Along the same lines, the current research indicates that there are still differences between urban and rural areas of the canton of Milagro, however, these are minimal between localities that share a certain proximity, as a result of the slow urbanization process, The fact that in many cases the salary difference is not so considerable, and the fact that the preferred labor activity in most of the sectors is agriculture, establishes a very marked situation, where deagrarianization is not viable, but nevertheless, improving working conditions could be a good starting point.

Conclusions

After analyzing and establishing the most influential aspects of the urban-rural relationship in the canton of Milagro, it is clear that within the urban sector there is a greater choice of job opportunities, so the labor differences are significant; likewise, development opportunities are slightly higher, however, there are still localities in which the urbanization process has been slow, and finally, monthly household expenses are higher on average. On the contrary, the population of the rural sector indicates that there are labor differences to take into account, especially if we consider the level of income and variable working hours, in addition, there is a strong homogeneity regarding the level of development, the localities share many similarities, indicating that the level of development of the rural sector is low, and in turn, the monthly household expenses are on average much lower than the urban sector.

In conclusion, the urban-rural relationship in the canton of Milagro is not going through a favorable moment due to the persistence of very noticeable differences, which should be solved through a program of investment in infrastructure, education and health, both to accelerate the process of urbanization of some localities, and to implement sustainable improvements over time within the rural areas; in addition, the design and implementation of labor policies to ensure the care and improvement of the quality of life of workers.

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The application of new communication techniques in the diagnosis of school bullying

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Introduction

School bullying, also known as bullying, is a complex and multifaceted phenomenon that significantly affects adolescents worldwide. This problem is not only limited to physical or verbal interactions, but also encompasses indirect and relational forms of bullying, which can have serious consequences on the mental health and well-being of students, (Cardozo & Moncada, 2015). In the digital age, online tools have emerged as an effective way to diagnose and address this problem, allowing a more accurate and timely assessment of bullying dynamics and can help identify patterns and trends in school victimization that might go unnoticed in a traditional setting, (López, L.,2023).

Diagnosing bullying in adolescents by gender and background is crucial, as these factors can influence how and how often bullying is experienced, where cultural and socioeconomic context can affect how bullying is perceived and addressed in different settings, (Pacheco, B., 2020). Online tools, such as questionnaires and screening platforms, offer an efficient way to collect data and analyze patterns of bullying, being an innovative and necessary approach to address this problem comprehensively and effectively, providing a secure and anonymous means for adolescents to report incidents of bullying, which can help identify patterns and trends that would not otherwise be evident.

Today's digital technology has significantly transformed the way we live, how we relate to each other and also in our professional activities where we make use of electronic devices, social networks and other digital technologies, which have facilitated the access and exchange of information at a global level (Castells, 2010). The ability to collect, store and analyze large amounts of digital data has revolutionized decision making in various fields (Mayer-Schönberger & Cukier, 2013). Likewise, Coronel and Tabia (2019), point out that the subject who suffers harassment can have serious negative consequences, such as low self-esteem or anxiety and stress, poor academic performance, inadequate social relationships, which carry over into adulthood

On the other hand, in times of health emergence due to the Corona Virus pandemic, there have been changes in many aspects not only related to health care but also changes in labor and educational procedures among others, for example in the field of Psychology, psychological diagnoses have had to be performed through virtual evaluations, as Bocanegra & Navarro (2017) point out that a diagnostic process, via a virtual system, allows students to develop a series of self-regulation skills that allow them to analyze their own responses. Navarro (2017), that a diagnostic process, via a virtual system, allows students to develop a series of self-regulation skills that allow them to analyze their own responses dealing even more about violence. Thus, López & Sabatar (2014), point out that the correct and pedagogical use of audiovisual media, mainly among families, would act as the main educational strategy to prevent bullying, promoting coexistence, both in schools and in the wider family and social environment.

Pasquali (2001) refers that the process of psychological diagnosis may include different measurement procedures, identifying specific dimensions of the subject, his environment and the relationship between them; thus, not having access to the face-to-face application of the school bullying instruments, online tools were used to collect data efficiently and reliably. During the last years social networks and other tools on the web, work as amplifiers of more fundamental points of view than face-to-face interaction, and it has been extended the discourses of animosity to the different spaces of activities (Colleoni et al., 2014). Along these lines, technological means have been considered to assess the different experiences related to school bullying that are highly prevalent among members of educational institutions from different contexts.

From a theoretical perspective, the use of online tools to diagnose bullying can be seen as an application of social learning theory, where the digital environment influences adolescent behavior. From a practical point of view, these tools can help develop more effective and personalized interventions according to the gender and background of adolescents. When diagnosing the causes and risk factors of school violence, it is important to establish, that they usually originate from various criteria of the assaulted subject, such as having characteristics of low self-esteem or poor self-conceptualization; from the behavioral perspective, maintaining a poor control of behaviors that is evaluated through aggressive or defiant behavior, constant impulsivity, affective disorders (depression and dysthymia), complementing the picture of school violence by maintaining a lack of attitude/aptitude to solve problems, constant risk behaviors such as the use and abuse of alcohol, drugs and gangs, Pacheco (2019).

Virtual assessment has become a fundamental tool in school violence research, allowing for efficient and accessible data collection. Through online surveys, meaningful insights into the dynamics of school violence among adolescents can be obtained with greater sincerity, since by answering alone and anonymously they are more spontaneous in their responses. This methodology also facilitates the participation of a large number of participants, ensuring the representativeness of the sample, which will allow us to know the incidence of school bullying in two different contexts. In recent years, an increase in coexistence problems in educational institutions has been reported, being mainly adolescents who establish unhealthy social relationships (Garaigordobil and Maganto, 2016, p.2).

The United Nations Educational, Scientific and Cultural Organization (UNESCO), through the report of the World Education Forum (2019), states that some countries have made significant progress in reducing and containing bullying; a problem that is not alien to educational contexts in Peru. According to the United Nations Children's Fund (UNICEF) worldwide, about 150 million students between the ages of 13 to 15 years (just over 1 in 3) experience cases of bullying (2018), According to the platform of the Ministry of Education (Minedu) SíseVe in Peru, recorded 43 999 cases of school violence between September 2013 and

June 2022, of which 53.13% refers to cases of violence between schoolchildren, (MINEDU, 2023, p.19) and Chalco (2021) points out that the incidence is higher in secondary education.

Monroy et al. (2017), point out that the most frequent forms of bullying were name-calling or making a fool of (44.4%) and physical harm (18.9%); and of those surveyed 50.3% identified with the role of the aggressor, 90.4% with that of the bystander and 51% with that of the victim. The characteristics that are attributed to victimization in victims as in aggressors, as an expression of power, domination, which come from the social macrosystem, and should be taken into account to eradicate bullying (Mendieta et al. 2019).). Likewise, Hernández and Gutiérrez (2013) state that victimization and school rejection in adolescence are related to factors outside the classroom, such as the quality of communication between parents and children, since there are studies that indicate that a positive family environment is significantly associated with the resilience of schoolchildren to victimization; thus, the assessment of bullying has become crucial in the current educational context, especially with the rise of digital platforms.

These bullying problems are observed in schools especially with those adolescents who do not respond to the power pressures of some of their classmates, where the abuse of power of the aggressor over a person who is weaker or who is in defenselessness being severely affected. (Becerra et al., 2010, p.5), thus highlighting the importance of school climate to reduce violence (Espelage & Hong, 2019; Karakiozis & Papakitsos, 2018); likewise,Villavir (2023), points out that from a social perspective, bullying affects a large number of students and it is important to note that psychological diagnosis using online tools offers new possibilities for collecting data, but also poses challenges in terms of the authenticity and validity of the evaluations, (Barrios, Maradey & Delgado, 2024).

In this sense, being the problem of school bullying a very susceptible aspect, it is important to guarantee the reliability of the answers, so that through online tools, participants would be more willing and free to respond objectively, the diagnosis of bullying in Peru requires a deep understanding of its characteristics, risk factors and the tools available for its evaluation considering the differences according to gender and origin in order to develop effective interventions. For the present study two objectives have been established: a) to determine the differences of school bullying in adolescents of Public Educational Institutions according to gender and origin using virtual assessment methods, b) to establish the differences in the dimensions of victimization, symptomatology and bullying by respondents through virtual diagnosis.

After the data analysis, the descriptive statistics with the levels of school bullying in the adolescents of the sample are shown and the presentation of the results focused on the examination of the theoretical model on the comparisons of means considering gender and origin from the individualized assessment of each item of the subjects of the study sample.

1, 49% of the study sample presented high levels of symptomatology and 23% were at the medium level in terms of school bullying, while 75% presented low levels of responsive bullying.

Table 1. *Descriptive Results on School Bullying in Adolescents*

Variables	N	M	DS	VAR	MED	Asymmetry	Kurtosis
Victimization situations	446	14,28	2,95	8.70	14,00	3,027	13,82
Symptomatologies	446	17,88	4,89	23,92	17,00	1,037	,915
Intimidation by respondents	446	12,61	2,47	6,11	12,00	7,797	67,422
Total School Bullying	446	44,77	8,25	63.13	43,00	2,813	13,761

Note: Results of the School Bullying Questionnaire.

According to the descriptive results of the application of the questionnaire through the virtual evaluation, the mean was higher in the dimension Symptomatology and lower in Intimidation per respondent, in the total scale the mean was 44.77 and the SD was 8.25.

Table 3. *Comparison of Means of School Bullying in Adolescent Males and Females*

Variables	Males		Women		Statistical Significance				
	M	Variance	M	Variance	t	gl	Sig (two tails)	Crit.val. t	d
Victimization	14.20	6.32	14.33	10.47	.49	443	.62	1.965	0.045
Symptomatology	18.88	16.46	18.61	28.22	3.88	443	.00	1.965	0.425
Intimidation	12.69	4.44	12.54	7.35	.69	443	.49	1.965	0.064
Total	43.78	48.63	45.49	81.49	2.24	443	.02	1.965	0.207

Regarding the differences in the dimension of bullying victimization situations according to gender, no significant differences were found t=0.490; p = .624 > .05 and d=0.04 with no effect size. In symptoms and effects on anxiety, depression, post-traumatic stress and effects on self-esteem, there are significant differences being t= 3.389; p = .000 < .05 and d= 0.425 with small effect size. In reference to intimidation by respondents, no significant differences were also found according to gender, with t= .690; p = .490 > .05, d= .06 with no effect.

In the total school bullying scale, significant differences were found between male and female adolescents with t= 2.245; p = .025 < .05 and d= .207 CI95% (0.019-0.395) with small effect size (Table 3).

Table 4. *Comparison of Means on School Bullying among Adolescents according to source*

Variables	Lima		Huanuco		Statistical Significance				
	M	Variance	M	Variance	T	gl	Sig (two tails)	Val.crit. t	D
Victimization	14.38	10.10	14.06	5.85	-1.16	372	.24	1.969	0.109
Symptomatology	17.65	20.62	18.33	30.44	1.29	298	.19	1.969	0.131
Intimidation	12.72	7.29	12.37	3.67	.69	391	1.12	1.969	0.141
Total	44.76	74.18	44.78	56.38	2.24	332	.02	1.969	0.002

Note: M=Mean, D= s d

Considering the origin of the adolescents between Lima and Huánuco according to the virtual assessment, no significant differences were found with respect to the differences in the three dimensions. In the total school bullying scale, significant differences were found between adolescents from Lima and Huánuco, t= 2.245; p = .025 < .05 and d= .002 (Table 4).

Based on the results of the study, the findings are presented according to the proposed objectives and the antecedents that indicate the prevalence and negative impact of school bullying on the psychological health of adolescents; likewise, the use of online tools has allowed obtaining data in a pandemic situation where face-to-face assessment was not possible, providing a detailed view of this phenomenon. Assessment using online tools for the diagnosis of school bullying allows students to respond anonymously and securely, which can increase honesty in their responses about bullying experiences (Kowalski et al., 2014).

The results showed a high level of school bullying in 25.6% of the adolescents in the sample and considering the dimensions, the highest percentage (78.8%) presented a high level of symptoms, as indicated in previous studies carried out in Peru, such as that of Oliveros et al. (2009), that bullying has a multicausal origin, causes health problems, school phobia, and the long-term prognosis for victims and aggressors is negative, being able to get involved in problems with the law, likewise in a study conducted by Huerta et al. (2015) they found very significant correlation between depression with each of the components of anger in adolescent victims of domestic violence. From the perspective of the adolescent who presents difficult changes, it causes confusion, disorientation, anxiety, depression and that many times social and family influences such as lack of communication, family problems and makes them dysfunctional and they do not adequately develop problem-solving skills specifically in the face of violence.

Briñez & Caro (2018) presented statistically significant results of symptoms and diagnoses that compromise the health of schoolchildren. In this sense, educational institutions should implement psycho-pedagogical services that not only attend these cases of school bullying and violence in a timely manner, but also carry out preventive actions and promote healthy lifestyles from the school context. On the other hand, Ramón and Vilchez (2022) in the study conducted with adolescents point out that hate speech is a response to specific and pernicious discriminatory social phenomena, which can take many forms: written, nonverbal, visual, artistic, etc., and can be disseminated by any means, including the Internet, printed materials, radio, or television. These forms of action in the context of education, from the early years of the school stage, have become more notorious with the use of digital technology.

Taking into account the objectives set out, to establish the differences according to gender, significant differences have been found in the general scale and only in the symptomatology dimension with a small effect size; a similar study by Romero et al. (2018), according to comparisons by sex found that there are statistically significant differences in victimization situation, Bullying by aggressors, and in the general factor of school bullying, which could be related to the roles of both sexes. Likewise, Díaz-Aguado & Martínez (2014) point out that traditional gender stereotypes and the internalization that violence is an intrinsic part of male identity. On the other hand, new information technologies and digital communication play an increasingly predominant role in our society (Martínez, 2022), which has allowed in times of pandemic to know the problem of school violence taking into account the gender of different contexts. On the other hand, Herrera-López et al. (2017) in the study on Bullying and cyberbullying in Colombia, regarding the sex variable, found no differences, with boys being to a greater extent victims. The problem of violence has consequences that transversalize different dimensions of the adolescent and there may be representative repercussions associated with suicidal ideation and attempts presented in both victims and victimizers (Arroyave, 2012), which by not having knowledge would deepen the problem of adolescents in preventive decision making not only of a specific context but in different populations. The purpose of the evaluation through online tools is to measure and diagnose knowledge, skills, attitudes, as in the present study to collect information related to school bullying in adolescents from different contexts that allows comparisons, identifying strengths and weaknesses, and making appropriate psycho-pedagogical decisions to prevent school violence and promote the development and healthy coexistence of students.

Considering the origin of the adolescents between Lima and Huánuco in the total scale of school bullying, significant differences were also found, but without effect size; likewise, no significant differences were found in the dimensions, situations of bullying victimization, symptomatology and bullying by respondents. While it is true that school bullying in educational institutions, the incidence in some contexts is higher than in others depending on psychosocial risk factors; in the study conducted in Brazil by Azeredo et al. (2015) evidenced that the variation of verbal bullying at the school and city level was small, and most of the variation was explained at the individual level. This does not mean that the school or city is unimportant, but it may suggest that city boundaries comparing only state capitals do not capture the differences that shape the environment relevant to the occurrence of bullying, studies explore associations between other forms of bullying and other contextual variables; this indicates that may be other school, family, contextual characteristics that are closer to adolescents may influence school bullying in adolescents. At the same time, the proper management of audiovisual media can be key in the prevention of bullying, highlighting the need for a comprehensive approach involving students, parents and educators.

These findings are important because it has allowed to know the levels and incidence of this problem and leaves manifest the need to intervene these phenomena from multidisciplinary perspectives and integrally to improve coexistence in adolescents; however, in a study conducted by, Estévez et al. (2019) point out that in many there is a diversity of protocols and programs that, in addition, have not usually been involved in a process of evaluating the effectiveness of their implementation, likewise Reyes and Sánchez (2017), found 40% of students evaluated who suffered from bullying. On the other hand, diagnosing school bullying using online tools has allowed researchers to gain a deeper understanding of the nature, prevalence, and consequences in adolescents, which in turn can inform the development of more effective interventions and policies (Bauman, 2013).

Conclusions

This study highlights the importance of virtual assessment in the understanding of school bullying in adolescents from different educational institutions and different contexts, being an important tool that provides efficiency, accessibility and flexibility in different contexts, allowing a more accurate and representative assessment. In the total school bullying scale, significant differences were found between adolescents from Lima and Huánuco, considering gender and origin. This demonstrates, as in other studies, the existence of the problem of bullying in adolescents, making it necessary to implement psychoeducational intervention programs that seek to work integrally on values and overcome gender and power stereotypes and achieve behavioral and emotional self-regulation in adolescents. Virtual assessment of bullying is essential not only to identify and prevent school violence but also to adapt to new educational realities and foster autonomous and reflective learning among students. It is imperative to continue to develop assessment tools that are valid and reliable, thus ensuring a safer school environment conducive to the integral development of all students.

However, it is important to point out the limitations of the study, in relation to the sample in two specific contexts of high school students, which may limit the generalization of the results to other demographic groups, that future research should expand the sample to include a greater diversity of educational and cultural contexts for the diagnosis of bullying and that through virtual assessment could facilitate in terms of time and costs that would allow timely prevention of any type of school violence.

Based on the results of the study, it is necessary to create audiovisual programs that are committed to education, since virtual media are currently very influential, taking into account that, although they do not educate, students do learn from them.

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Levels of rural development based on digital communication methods focused on the distribution of income in rural areas

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Introduction

The level of fertility in the rural sector is influenced by different socioeconomic and even cultural aspects, where the level of development and income distribution emerge as variables that can significantly affect the decision of rural families to have children. On the one hand, the level of development of an area is always related to the viability of satisfying the most vital needs, i.e., access to basic services, health, education, housing, and other related aspects that can motivate fertility (Forty et al., 2022). However, in rural areas it is common that there are still great limitations in infrastructure, and even many households do not have access to basic services, including the one that is most lacking, such as drinking water; likewise, values or positions that rural families may have regarding the birth rate are considered, where it is implicit that each one can decide whether to have a child or not, as a result of their own experience (Molina et al., 2020).

In contrast, income distribution is also another aspect to consider because of how crucial it tends to be when a couple desires to have a baby, even more so given the inequalities in income in the rural sector, which significantly reduces the possibility of having access to better resources that influence reproductive health, and the level of education, both of which are important components in these cases.

The objective of this chapter is to analyze how the fertility level of families in rural areas of Simón Bolívar canton is affected by factors such as the level of development of the area, the monthly income, and related aspects that may influence this decision; for this purpose, the Poisson Regression model is considered and subjected to an over-dispersion test to validate its adjustment, in order to know how the probability of conception could be affected by the different variations that the variables may present.

There are several studies that expose this situation from different perspectives, such as Utechenko(2020) who detailed in his work entitled Peculiarities of the reproduction of human capital in rural areas, that one of the activities that ensure the reproduction of human capital is agriculture, because it establishes the basis of the economy of rural families, transforming in a certain way these communities through the creation of adequate living conditions, reproduction of agricultural inputs, and its influence on social reproduction, however, it must be considered that periods of change can lead to the destruction of economic, social and environmental processes established in rural areas, in addition to resenting the reproductive potential.

Li et al.(2022) indicated in their research, Relationship between multifunctionality and sustainable rural development: perspectives of 129 counties in Sichuan Province, China, that the rural sector is based on activities related to production, daily life, and ecological preservation in the pursuit of sustainable rural development. However, the analyses detail that the level of development is insufficient in productive tasks, attributing this gap to the significant spatial difference existing between each county, in addition, under this comparison, the suburban counties proved to be areas where better performances were obtained, being the key scenario for the implementation of strategies to promote sustainable rural development, and equitable for all.

Yu et al.(2024) pointed out in their study Integration of development, education and rural management: challenges and strategies, that there are difficulties that complicate this relationship such as limited institutional capacity, low funding, and lack of multidisciplinary cooperation, for which they consider the promotion of community participation, training for the improvement of skills, and the adoption of new technologies as ways to overcome this scenario. They also consider that the implementation of more specific and timely strategies can ensure a timelier intervention that can encompass all these aspects, and thus lead to sustainable and inclusive development results in rural areas.

De la Croix and Gobbi(2017) found in their paper entitled Population Density, Fertility and Demographic Convergence in Developing Countries, that the relationship between density and fertility is negative. Also, factors such as greater agglomeration, high educational attainment, better health services, and access to better infrastructure reduced fertility rates in the population.

Klemp and Weisdorf(2019) conducted research entitled Fertility, fertility and the formation of human capital, where they conclude that society has changed over the last two centuries, so much so that fertility periods are directly related to the size of the family, but not so much to the quality of the offspring; but the latter applies to people with more favorable living conditions, where they decide not to assume additional costs with the raising of another child, but on the contrary, allocate their resources to improve the quality of their offspring.

Das et al.(2023) conducted a study entitled Responsibility, Social Aspirations and Contemporary Low Fertility: A Case Study of Rural West Bengal, India, where they detail that this area is poised to become the area with the lowest fertility and argue that economic insecurity can significantly reduce the aspirations of infants, leading to a decrease in parental intentionality to have another child. Therefore, the responsibility factor in the development of such aspirations leads to small families as a way of coping with economic hardship, rural life, and fertility.

Nestorová and Lipták(2024) investigated in their work entitled Regional predictors of fertility based on socioeconomic determinants in Slovakia, where they described that the fertility gap increased in the regions, but at the same time the total fertility rate decreased. It is worth mentioning that they attributed this situation to the socioeconomic and cultural conditions of the areas, using variables such as the divorce rate of women, the primary education rate of women, the rate of Catholics, the average monthly income, the unemployment rate of women, the urbanization rate of the areas, among others.

Serrano et al.(2024) analyzed in the study entitled financial performance of new circular economy companies in rural environments, that the conditions of the rural environment may imply a series of challenges for new and existing companies based on the ideology of the circular economy. However, recognizing that those companies that operate in these situations grow at a slower pace, but can achieve better performances, which could imply in the development of survival strategies in relation to companies operating in other areas, which may be indicative of sustainable job opportunities for rural inhabitants.

Brooks and Clark(2024) detailed in their work Early family formation, selective migration and childhood conditions in rural areas of the United States, that the inhabitants of rural areas marry and have children at an early age in relation to those who live in urban areas, which is demonstrated in the existing gap at the moment when families are formed, which is much greater among women, in relation to the comparison among men. It should be noted that the formation of families at very young ages in rural areas represents a counterproductive situation for the members of the family, the development of the sector, and can contribute to rural depopulation.

Weeks et al.(2024) elaborated the research entitled The ecology of economic hardship and life expectancy, where they sought to determine the changes in life expectancy considering aspects such as race, rural status, and economic prosperity of the locality, and found that there are sectors of the population where life expectancy decreased dramatically, which indicates that race, rural living conditions, and the economic aspirations of the sectors do show a great influence on the dependent variable. They also emphasize that policies should be generated in favor of areas with low economic prosperity as a measure to improve the health of the population.

In order to define the model that best fits the situation presented in this study, several estimations were carried out, from which the best 4 models were selected, and to detect the one with the best fit, several parameters were established such as: the Akaike information criterion (AIC), the Bayesian information criterion (BIC), the theoretical justification, and the principle of parsimony.

Selection of the best Poisson regression model

The Poisson regression models were estimated through the variance components and robust standard errors, in order to adjust for the overdispersion and correlation that the data may present. From this point, it can be considered that the four models show a Wald Chi-square different from zero, which implies that within the models there are independent variables whose relationship is significant with respect to the independent variable.

The Chi-square p-value is less than 0.05 for all models, which reinforces the idea of a significant impact of the model coefficients on the dependent variable, also, the Pseudo R-square is relatively similar among the models, which is a measure that indicates the ability to predict the results of the model, differing from the interpretation of a normal R-square.

Finally, the Akaike and Bayesian selection criteria establish that the best model is the fourth one, because its values are lower, indicating a balanced relationship between the goodness of fit and the complexity described in the model.

Once the comparison has been made, the fourth model is as follows:

$$\log(NH) = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 ND_1 + \boldsymbol{\beta}_2 EMPH_2 + \boldsymbol{\beta}_3 EMUH_3 + \boldsymbol{\beta}_4 EPPH_4 + \boldsymbol{\beta}_5 IBD_5 + \boldsymbol{\beta}_6 EPV_6$$

Considering that the fourth model meets all the prerequisites, and even the principle of parsimony, it is time to indicate the theoretical justification, where the variable level of development (LOD) somehow manages to explain from a context in the environment in which people live, the fact of influencing fertility, likewise the mother's age at the birth of the first child (MTHB) establishes the beginning at which women decide to take the step towards motherhood, and even identify how likely it is that pregnancies occur at an early age; the age of the mother at the birth of the last child (EMUH) is useful to establish the limits of how late in life they decide to conceive a child.

Accordingly, the age of the father at the birth of his first child (EPPH) also establishes the age at which men decide to take the step towards fatherhood; income from dependent work activity (IBD) is strongly related to the economic stability that the person may have at the time of conception, which may have an impact on lifestyle; and the variable home ownership status (EPV) may be a clear indicator of whether families have a place to live.

Finally, variables such as income from self-employment (IAA), household expenses (GH), level of education (NI), and factors influencing conception (FIC) were also considered for the study. However, at the time of estimation, these variables did not fit the model adequately, since they had values that were mostly the same, in addition to the fact that the people who make up the target population have homogeneous characteristics, which reduced the number of variables used in the models.

The estimation of the best Poisson regression model for the proposed data set, with a Wald statistic equal to 149.27 and a p-value equal to 0, shows that it is highly significant, and with respect to the Pseudo R-squared it presents a 19.04% predictive capacity, which is an acceptable indicator for this type of model.

It is worth mentioning that the Poisson regression analysis is based on the probability, for or against, that the dependent variable will modify its behavior, and being in this case the variable number of children (NH) the one that exemplifies fertility, the following can be deduced:

- The variable sector development level (ND) indicates that at its low level (2) it is significantly associated with a marginal increase in the number of children (NH).

- The variable mother's age at birth of first child (EMPH) indicates that it is highly significantly associated with a marginal reduction in the number of children (NH).

- The variable mother's age at the birth of the last child (EMUH) indicates that it is highly significantly associated with a marginal increase in the number of children (NH).

- The variable father's age at birth of first child (EMPH) indicates that it is significantly associated with a slight marginal increase in the number of children (NH).

- The variable income from dependent work activity (IBD) indicates that a monthly income of less than one basic salary (1) is associated with a marginal reduction in the number of children (NH).

The deviation and Pearson statistics, as measures of detection of adequate model fit. For these indicators it is established that a low value indicates a better fit, at the same time that its probability value must be greater than 0.05 in order not to reject the null hypothesis that the model is well adjusted.

According to the above, with a deviation statistic of 13.77 and a p-value equal to 1, it is affirmed that the model is adequate and fits the data perfectly. With respect to Pearson's statistic, the analysis is similar, therefore, by presenting an indicator of 12.10 and a p-value equal to 1, it reinforces the position that the model is adequate.

Average marginal effects

Once the average marginal effects of the Poisson regression have been obtained, the following can be emphasized:

- If a person lives in a sector whose level of development (ND) is low (2), it will generate an increase of 60.7% in the number of children (NH), in addition to the fact that it is a highly significant relationship at 5%.

- A woman's age at the birth of her first child (EMPH) will generate a 24.7% reduction in the number of children (NH), and is a highly significant relationship at 5%.

- A woman's age at the birth of her last child (EMUH) will generate a 23% increase in the number of children (NH), and is a highly significant relationship at 5%.

- A man's age at the birth of his first child (EPPH) is going to generate a 5.5% increase in the number of children (NH), in addition to being a significant relationship at 10%.

- If a person has an income from dependent activity (IBD) of less than one basic salary (1), it will generate a reduction of 68.4% in the number of children (NH), in addition to being a significant relationship at 5%.

Forty et al.(2022) in their paper Determinants of Fertility in Malawi: Does the dimension of women's autonomy matter? found that women's autonomy does not have an independent effect on fertility, however, the government of Malawi is expected to develop policies in favor of the completion of women's secondary education and to ensure through programs that women's role becomes more important at all levels, including the household.

Villasmil(2022) highlights in his study Fecundidad en familias en situación de pobreza: hipótesis para su estudio, that, although the fertility rate has decreased in Latin America, the fact that it is very high in families with very low living conditions is very important, making it necessary to resort to economic, cultural and symbolic aspects to address this situation.

Pierrin et al.(2024) found in their research, Analysis of Haitian women's fertility by birth order, that when women have their fourth child, they decide to establish greater control over their fertility, and that the longer the time between two pregnancies, the more likely it is that the birth rate will drop; also emphasizing that women living in rural areas, with low educational levels and little access to resources, tend to have children at much younger ages, with shorter intervals between pregnancies.

Likewise, this research shows that the low level of development does not prevent the number of children in families from increasing, in addition to the fact that the labor situation is unfavorable, and many are still part of traditional rural families, leading women to remain in their role as housewives, dedicating themselves to raising children, thus mitigating any possibility of improving their living conditions.

Conclusions

Considering the latest findings, it is well known that in areas where there is less development, there is an increase in fertility, and it is very common that this may be due to the lack of knowledge and guidance on reproductive issues, and the influence of a traditional home where women are responsible for fulfilling household chores and raising children, and this is also very much considered the low level of education that is usually present in these areas.

Regarding the fact that the age of the woman when she has her first child has a negative influence, this may be due to the fact that there is a certain group of women who have opted to leave behind this traditional role and have chosen to prepare themselves better, are aware of the economic difficulties they are going through, and are more responsible with their sexuality.

The age of the woman at the birth of her last child has a positive relationship on fertility and this can be attributed to the state of maturity in which the person is in order to be able to assume greater responsibility, supported at the same time by a scenario where living conditions are slightly better.

The age of the father when he has his first child has a low positive marginal effect on fertility, clearly it is a decision that depends on economic, labor, and social aspects, although it is observed that, in older men, the number of children increases considerably.

Although it is evident that the economic situation is not sufficient for families to support themselves, partly because of the deplorable working conditions, it must be considered that no sustained control has been established and no awareness has been developed by the inhabitants of these areas.

In summary, the rural sector of the Simón Bolívar canton does not have the best local development or labor conditions to sustain the high birth rates. This is a case to which greater attention should be paid, and alternatives should be proposed to counteract this disparity, and at the same time, through the intervention of State institutions, guarantee awareness and training programs for families.

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Audiovisual media to develop healthy lifestyles in rural school children

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Introduction

Education in rural areas faces structural challenges that require innovative solutions adapted to local conditions, since access to resources to guarantee quality education is very limited. In this context, victims of violence face geographical, cultural and information barriers that limit their access to services that require multidisciplinary approaches, so it is essential to develop educational strategies that take advantage of audiovisual media to address violence and promote healthy habits among schoolchildren, and families, allowing students to explore realities beyond their immediate environment, (Barros, 2015) promoting a cultural change towards healthier and safer relationships.

Education without violence is a very important issue in the education of schoolchildren, especially in rural areas where educational opportunities may be limited, as well as the customs, parenting styles and low educational levels of families, which requires a comprehensive approach that combines participatory methodologies, community strengthening and innovative tools such as audiovisual media, in a joint work that allows involving teachers, students and families to convey educational messages about peaceful coexistence, conflict resolution and healthy lifestyles, since violence in school environments affects academic performance, mental health and the comprehensive development of students. This is especially critical in rural areas, where family violence is accentuated, (Braga, A., 2023).

Family violence is currently a worrying situation for society and in several countries, it has already been raised as a major psychosocial problem that requires urgent prevention and intervention. The World Health Organization (WHO, 2002) defines family violence as physical, psychological, sexual or other types of abuse or aggression inflicted by family members and generally directed at the most vulnerable members of the family (children, the elderly and women). In the present study, intrafamily violence or domestic violence is understood as the relational complex where all family members are involved in a pattern of violence that is exercised in different hierarchical modes and with multiple manifestations, ranging from insults, to severe disqualifications and physical aggressions (Brino & Souza, 2016).

The results of the Demographic and Family Health Survey (Endes) 2021 at the national level, reported that in our country 54.9% of women aged 15 to 49 years were victims of family violence at some time in their lives by a husband or partner. According to the type of violence perpetrated by the husband or partner at some time in their lives, 26.7% of the victims suffered physical violence, 50.8% psychological or verbal violence, and 5.9% sexual violence. These data show the need for inter- and multidisciplinary intervention actions, not only for violence prevention work.

Comprehensive education to families with priority in rural areas and vulnerable populations so that they can improve their lifestyles, for this it is essential that the audiovisual media are designed according to the needs of the target audience, with clear narratives and defined purposes to maximize their educational impact, (Marino, Torres & Valdivia, 2020).

However, for cultural reasons, in our country this type of violence, until recently, was considered something natural and was justified as a means and corrective, parents beat and humiliated their children and in turn it was thought that a man was within his rights if he beat his wife, (Winnicot, 1981), being a characteristic in rural areas and often children from violent homes present low school achievement and behavioral problems, (Reyes, 2017). We know that the family is the institution par excellence where the early socialization of individuals takes place, so that the exercise of violence would be a barrier to the cycle of intergenerational transmission of human values associated with the psychoemotional well-being of its members and would cause multiple negative effects (Mayor & Salazar, 2019).

It is important in family relationships to live in harmony regardless of gender or age, harmony that is not easy to achieve and maintain, due to the fact that although it is sustained in satisfying affective needs (love, understanding, solidarity...), as well as economic (food, housing, transportation,...), and social (education, health, ...); these are the ones that inexcusably have different motives (Alvarez & Hartog, 2016), it is the parents who have the obligation and ethical faculty, to form the personality of their children. The moral quality of parents in educating and forming their children is decisive for them to relate peacefully, as well as to achieve living in harmony in their future homes, as pointed out by (Saldaña & Gorjón, 2022). However, there is a diversity of situations in relation to the types of homes and parenting styles that vary according to social, cultural and geographic contexts.

According to the World Health Organization (1989), lifestyle is a frequent way of existing, established in the interaction between life circumstances in a broad sense and individual behavioral standards determined by sociocultural factors and personal characteristics. In such sense it includes individual and collective behavior patterns and maintain certain coherence over time and can be conditioning factors of people's health, (Foy, et al., 2022). Healthy habits and lifestyles describes how body weight, physical activity, good personal hygiene and a clean environment influence our health. It explains how protecting ourselves from disease-causing agents is important to maintain a good state of health and well-being (Ramón, 2005). To this end, audiovisual media will be an effective strategy to influence the health-related decisions and behaviors of families and schoolchildren.

Likewise, the audiovisual media have an essential role in the teaching of ethical content, since they can lead to the learning of reflection and critical thinking in students (Díaz Aguado, 2003). It has also been shown that certain audiovisual programs induce a favorable positive change towards the achievement of school coexistence and conflict resolution among students (Perochena, Rodríguez-Conde and Olmos, 2009).

In this sense, it has been considered for the workshops with families in rural areas, where they are sensitized through contents related to the promotion of healthy lifestyles, ethical values using audiovisual media, since the images and messages have a great impact on the participants that allow them to analyze and reflect on their own experiences. Tedesco and García Leiva (2002), point out that the audiovisual media exert a bombardment of technologically mediatized stimuli that generate messages constantly giving them the possibility to reflect, thus forming imaginary representations of reality.

On the other hand, Pérez (2022) refers those active methodologies centered on the students, with a strong implication in and with the social aspect, are the ones that allow to approach to achieve these objectives, starting from a more horizontal teaching, dialogued and working directly with the parents of the students. The World Health Organization (WHO, 2010) has developed several projects to translate health promotion strategies into practical actions: healthy hospitals and health-promoting workplaces.

In a study, Abril & Rascón (2012) on "Promotion of healthy habits in schoolchildren in Hermosillo, Sonora, in the results the schoolchildren increased knowledge in the various thematic axes, improved their self-esteem and some practices related to food and their environment. Therefore, audiovisual content can convey messages in a more impactful way by combining images, sound and narrative to capture the attention of families and students,

It is against this background, the need to intervene in rural communities with educational strategies aimed at sensitizing, informing and training families in aspects related to strengthening parental skills to prevent family violence and at the same time work with their children programs that promote healthy environments that optimize not only their school performance but in their overall development, since educating without violence through audiovisual media involves using these media in a pedagogical way, promoting positive content, and encouraging critical education and reflective dialogue. This can help develop healthy lifestyles and prevent violent behavior among schoolchildren, since if we take advantage of the positive side of these media, we promote cultural content and prosocial values to prevent violence and promote coexistence, inside and outside the school (Lara and Sabatar, 2014).

To this end, the objective is to determine the effects of the program "Educate without violence" through audiovisual media for the reduction of family violence and the development of healthy lifestyles in schoolchildren in rural areas of Huánuco. After having processed the results of the evaluations with the instruments before and after the application of the program, the data were processed according to the objectives and hypotheses proposed, from which we present the following results.

Average results of the pre-test and post-test applied to the families of the rural localities of Huánuco.

The results of the questionnaire applied to the families before the application of the program are presented, where the average in the pre-test is 74.12, which increased to 93.6 after the application of the program, with a difference of 19.48, which shows that it has influenced the information and change of attitudes on aspects related to family roles and prevention of family violence.

According to the localities, the differences in the results were greater in the families of the localities of Cayrán and Choquecancha and smaller in the localities of Condormarca, Huancapallac and Huancachupa, we can observe the average results where in the pre-test the average of the six localities was 34. 57 and after applying the program, the average in the post test increased to 35.94, with the differences being greater in the localities of Churubamba, Condormarca and Choquecancha and smaller in the localities of Huancachupa, Cayrán and Huancapallac. Likewise, in the locality of Churubamba the students presented greater differences in the average scores between the pre and post test than the students of the other localities. The results on the lifestyles of the students before and after the application of the program, of the total, a “t” of 1.51 was obtained, lower than the p value of 2.00, demonstrating that there are significant differences between the values of the pre and post test, being the size of the effect intermediate according to Cohen's d.

In the Educational Institution of the locality of Huancapallac, in the results when establishing the significant differences, a “t” of 1.92 was obtained, lower than the critical value of 1.99, which means that the differences are significant, being the effect size large, in the Educational Institution of Cayrán, the results regarding the differences show a “t” of 1.42 and the critical value of 2.03, demonstrating that the differences are significant with a small effect size.

In the Huancachupa Educational Institution in the District of Cayrán, the results show a t-value of 0.339 and a critical value of 2.01, demonstrating that the differences are significant with an intermediate effect size.

In the Choquecancha Educational Institution in the District of Santa Marìa del Valle, the results show a t-value of 1.47 and a critical value of 2.01, demonstrating that the differences are equally significant but with a small effect size.

In the Churubamba Educational Institution, the result of the “t” is 1.75 and the critical value is 2.019, which shows that the differences are also significant but with a small effect size.

In the Cayrán District Educational Institution, the results of the “t” test were 2.22 and the critical value was 2.00, which shows that the differences are not significant.

According to the results, it has been shown that the “Educate without violence” program has influenced the reduction of family violence and the development of healthy lifestyles in schoolchildren in rural areas of Huánuco; these results show us that intervention in rural areas is important since preventive programs are generally given in urban areas. During the development of the sessions, it was found that families have not had the opportunity to receive information on the prevention of family violence, since they consider punishment as a disciplinary measure not only with their children but also with their partners, and women feel subjugated, justifying machismo. The workshops have made it possible to encourage dialogue and reflection on the audiovisual content so that schoolchildren can better understand the messages and develop a critical vision (López, 2023).

Thus, Alcántara (1993) points out that violence in the totality of its dimensions is increasingly worrying for professionals in psychological health and the citizen in general, preventive intervention towards the community will be as a protective factor. While it is true that the six communities where we have intervened are close to the city of Huanuco, however the social, economic, psychological characteristics, specifically in relation to parenting styles and commitment to the education of their children there are differences, so it is shown in the results that in some communities the achievements have been more significant than others, Vera (2008) points out that social factors are related to poverty, unemployment, low schooling, illiteracy, lack of services and psychological factors are related to lifestyles, personality, not taking into account their life project, gender authoritarianism, among other idiosyncratic and cultural factors in each society.

Therefore, education is important, using educational strategies that allow influencing what individuals learn and the way they learn, that is, their knowledge and their relationship with knowledge, the process where reason and emotion, information and representation are mixed (Barros, 22015). Individuals learn from audiovisual media, although this potential is often denied or ignored, the media teach diverse content and behaviors of everyday life which has been applied to participants in relation to the prevention of violence and the promotion of healthy lifestyles. Using audiovisual media in a pedagogical way has been an effective tool to prevent violence from parents to children, among students themselves and to promote positive coexistence, as pointed out, (López and Sabater, 2014), that the correct and pedagogical use of the same, mainly among families, acts as a main educational strategy to prevent bullying, promoting coexistence, both in educational centers and in the wider family and social environment.

According to the specific objectives, some differences have been found in the six rural localities that have been intervened due to social, educational and cultural factors. In relation to the application of the program to parents, there have been difficulties in the participation in all the programmed sessions, however, parents who participated in all the workshops, have demonstrated to have a greater knowledge in the education of their children, and they committed themselves to educate without violence, to support their children from home, they were also trained in the topics of the institutions that defend their rights and those of their children. However, in the interviews mainly to mothers who were the ones who most attended the workshops, their attitudes are related to the "negationist myths" as pointed out, (Ferrer & Bosch, 2012) that not only deny the existence of gender violence but consider that in reality we are facing an exaggeration that certain women create and use to harm men, especially in separation and/or divorce processes. For this reason, content that promotes values such as empathy, cooperation and peaceful conflict resolution has been presented through audiovisual media so that it can help develop healthy lifestyles. (Gómez, 2019).

According to the references of teachers, it is necessary to strengthen the personal development of students who are in primary school, since at the secondary level there are students with risk behaviors that could influence their psychological development and also their academic performance, so the accompaniment of their parents should be timely, in most cases because of their work occupations they neglect in their education. As Barg (2006) points out, the new bonding configurations account for different forms of relationships among family members and social relationships have also changed as a result of the socio-cultural transformations that have taken place in recent years and, on the other hand, reaching the community with preventive or promotional projects should be included and coordinated with different institutions and programs that have to carry out these activities, Since they do not have the culture of training to improve their conditions and lifestyles and often do not assume of their own free will and aware that they are necessary, prioritizing their occupational activities than learning to be better parents to ensure a healthy coexistence with their children.

Likewise, the impact of the audiovisual media has allowed the participants to be motivated to learn the contents through the videos, thus allowing for reflection and renewal of their attitudes and the promotion of a culture of healthy coexistence in the family and helped the schoolchildren to better understand the messages and develop a critical view of their behaviors and attitudes.

Conclusions

The results demonstrated the effectiveness of the "Educate without Violence" program, considering that audiovisual resources, such as visual images, videos, and other similar materials, contribute to improving healthy lifestyles among schoolchildren and families in rural areas of Huánuco, where the average pre-test score was 74.1 and increased to 93. 6 after the program was implemented, in relation to information and changes in attitudes about aspects related to violence prevention and taking on family roles responsibly.

Significant differences were demonstrated between the results before and after the program was implemented in the development of healthy lifestyles among schoolchildren, with an intermediate effect size according to Cohen's d of 0.63 with 95% CI (0.31-0.95), since teaching through audiovisual media in a pedagogical manner has promoted critical education and reflective dialogue to prevent violent behavior.

Likewise, the impact of the use of audiovisual media during the workshops with families and students has been positive, allowing for a participatory attitude and constructive dialogue based on the educational videos, with a commitment to modify their habits and attitudes to develop healthy lifestyles.

Finally, we can point out that in some locations, the effects of the program have been statistically significant with large and medium effect sizes, while in three locations the effect size was small, considering the educational and social conditions of the participants.

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