



Innovation Experiences in Tertiary Education in Latin America

Innovation Experiences in Tertiary Education in Latin America

Innovation Experiences in Tertiary Education in Latin America

Editores

Osbaldo Turpo-Gebera
Gerber Pérez-Postigo

Editorial Board

José Ignacio Aguaded Gómez
Ángel Hernando Gómez
Francisco José García Peñalvo

Osbaldo Turpo-Gebera
Gerber Pérez-Postigo

Innovation Experiences in Tertiary Education in Latin America

/ AUTORES

Juliana Raffagelli, Gerber Sergio Pérez Postigo, María Mercedes Zea Urviola, Mónica Nelly Camargo Cuéllar, Yessika Madelaine Abarca Arias, Marilyn Marie Monrroy Fernandez, Osbaldo Turpo Gebera, Yvan Valery Delgado Sarmiento, Milagros Gonzales Miñan, Juan Zárate Yépez, Gregorio Nicolás Cusihamán Sisa, Oscar Oswaldo Pacheco Rodríguez, Gabriel Adalberto Vela-Quico, Telmi Janet Cáceres-Coaquira, Héctor Exequiel Gamero-Torres, Alicia Miguelina Vera-Manchego, Rocío Marivel Díaz Zavala, Merly Clariza Lazo Manrique, Fernando Pari Tito, Reyna Ysmelia Peralta Gomez, Jesus Roger Chavez Parillo, Maria Christeen Chavez Peralta, Irma Stephani Rodriguez Marin, Pedro Mango Quispe, Carlos Juan Rojas Galarza

Santa Catalina Nro. 117. Arequipa, 2021, 295
17x24cm

Universidad Nacional San Agustín
Grupo Compás
Cátedra UNESCO "Paz, Solidaridad y Diálogo Intercultural"
Universitat Abay Oliba CEU

Title: Innovation Experiences in Tertiary Education in Latin America

First Edition: Agosto 2021

ISBN: 978-612-5035-16-5

Foto de Kampus Production en Pexels
Layout and Printing
Grupo Compás compasacademico@icloud.com

The total or partial reproduction of this work by any means (electronic, mechanical, photocopying, recording or other) is not allowed, without the prior written authorization of the copyright holder, under the penalties established by law. The content of this publication can be reproduced citing the source.

The published work exclusively expresses the opinion of the authors, in such a way that it does not compromise the thinking or responsibility of the Universidad San Agustín, Grupo Compás and Cátedra UNESCO "Paz, Solidaridad y Diálogo Intercultural" Universitat Abay Oliba CEU

Table of contents

Prologue

Data-based practices in university teaching and lines of professional development: The case of Universidad Nacional de San Agustín, Arequipa	13
Introduction	13
A call for data literacy in higher education institutions.....	16
Conclusions.....	22
References	25

Scenarios for training researchers in education: A case study

.....	29
Introduction	29
Discursive perspectives on research training in education..	30
Complexity of training researchers in education	33
Discursive positions in the training of researchers in education	36
Conclusions.....	40
References	43

Collaborative learning from a complex thinking perspective in virtual higher education in Arequipa.....

.....	46
Introduction	46
Collaborative learning and its incidence of new information technologies	49

Investigative interests of the Career of Communication	
Sciences from the Complex approach.....	59
Didactic controversy	67
Conclusions.....	69
References	71

University Curriculum and Transformative Professional	
Training	77
Introduction	77
Philosophical and epistemological bases of the curriculum	80
The curriculum from a critical approach	82
Educational model in higher education.....	85
The role of the current university curriculum	86
Results of the investigation	90
Conclusions.....	99
References	101

Factors associated with levels of post-traumatic stress in	
Peruvian nurses exposed to COVID-19	104
Introduction	104
Post-traumatic stress	107
Symptoms and levels of post-traumatic stress	109
Post-traumatic stress levels.....	112
Factors associated with levels of post-traumatic stress	113
Critical analysis.....	116
Conclusions.....	121
References	122

Scientific production on Computational Thinking in Peru: A systematic review	129
Introduction	129
Computational thinking in scientific production	133
Fields of knowledge about the Computational thinking ...	135
Methodological trends in research on Computational thinking	136
Conclusions.....	142
References	144

Coping with stress in teaching university-level researchers: A gender perspective	149
Introduction	149
The global epidemic of stress in university professors	151
Dialectics.....	163
Conclusions.....	165
References	166

Family violence and self-esteem in college students.....	169
Introduction	169
Family violence in college students	171
Typology of Violence	175
Training, components and levels of self-esteem	179
Conclusions.....	185
References	187

Social presence of university students in virtual teaching-learning environments in times of Covid-19	190
Introduction	190
The social presence in virtual environments.....	194
Learning in virtual environments.....	201
Online teacher skills.....	202
Pedagogical competences that the teacher must have in virtual environments	202
Teacher's pedagogical competences in virtual environments	203
Virtual environment analysis	210
Conclusions.....	213
References	214

Emerging technologies in university settings: digital identity from the educational and psychological perspective	219
Introduction	219
Challenges in the incorporation of emerging technologies in higher education spaces.....	222
Importance of digital identity in university contexts.....	225
Digital identity from the field of psychology	229
Controversy.....	234
Conclusions.....	236
References	238

Basic profile of postgraduate thesis on pedagogical leadership	243
Pedagogical leadership, theories and research in managers	243
Look from the practice of pedagogical leadership: graduate thesis.....	246
References	256

Techno-pedagogical discourses on the uses of Information and Communication Technologies in education	260
Introduction	260
Technological uses in education.....	262
Discursive construction of the techno-pedagogical	266
Conclusions.....	269
References	272

Perception of the level of stress in university students in asynchronous educational activities in times of COVID-19	278
Introduction	278
Characterization of the educational problem	279
New conditions for learning at university	281
Asynchronous educational activities.....	285
Conclusion	292
References	293

Prologue

The ideas shared at the First International Congress on Innovation in University Education (CINEDU-2020), held in Arequipa (Peru), in December 2020, left enormous significance, not only for the quality of the participants, but also for the new visions proposed to face the health crisis generated by the coronavirus. The approaches presented respond to an era of continuous change, which is difficult to ignore; on the contrary, it is possible to contribute new educational scenarios, with imaginative proposals enhanced by technology. In this evolution, CINEDU-2020 constituted a platform for exchanges, with speakers and authors who collaborate in this book. All of them, from their own work experiences, interact with each other on a regular basis with ICT, learning and recreating what they do in the classroom or in knowledge management, inspiring new ideas, tools and concepts.

The book, as a means of expression of shared thought in multiple spaces of relationship, conveys the vision of knowledge as substance and of the media as a conduit to promote participation and consequent socialization in communities of practice. This book thus seeks to make educational innovations available to its readers for the construction of knowledge and, therefore, for the acquisition of meaningful learning. At the same time, it raises the idea that the key to this change is not only in the technology, but also in the didactic or methodological action. The innovations shared here promote continuous involvement, through multiple codes, languages and tools that encourage understanding, research and the creation of possibilities for learning and personal and social development.

For Raffaghelli, Perez and Zea, in the first chapter, they address the use of data for academic management and quality assessment, configuring educational resources for teaching and learning; essentially, for literacy, assessment and empowerment. Their systematic use will inform educational decision-making processes at the level of strategy and quality

analysis. In the second chapter, Turpo, Delgado, Pari and Gonzales, address the training of researchers in education, in this line, they propose that its constitution represents an indeterminate matter, where forms of understanding that disrupt the formative meanings are intertwined. A situation that involves credentialism, based on convictions and practices supported by academic recognition, and performativity, which advocates research performance based on scientific productivity.

In the analysis of collaborative learning from the perspective of complex thinking, Cusihamán and Pacheco point out the existence of a complex pattern in virtual education, which must be approached interdisciplinary, in order not to generate communication barriers that reduce the probabilities of success in problem solving. In the following chapter, Pérez, Camargo, Rojas and Mango, understand the role of the university curriculum as a contribution to transforming professional training, from a curricular model based on philosophical and epistemological bases linked to the context and to the research carried out by teachers, as part of the

teaching performance, aligning them to the institutional curricular model.

In the fifth chapter, Peralta, Chávez, Rodríguez and Chávez, considering the working conditions of nurses in times of pandemic, determine the factors associated with high levels of post-traumatic stress, including characteristic symptoms and a statistically significant association with sociodemographic, occupational and comorbidity factors. In the sixth chapter, Pari, Turpo, Delgado, Lazo and Diaz, investigate computational thinking as a very important competence for the field of education, for which they resort to the systematic review of literature, and find that in its development, the cognitive sense prevails over the procedural and attitudinal, as well as an individual use over the collective, and an orientation to disciplinary contents over transversal ones.

For Luque, Castillo, Casapia and Chávez, in their approach to coping with stress in research professors and given the responsibility it entails, they find that these professors use strategies to seek emotional support, both as emotional

supports, positive reinterpretations and their own personal development to cope with stress and, thus, to carry out the actions demanded by their involvement as researchers. The eighth chapter deals with family violence and self-esteem in university students, by Abarca and Monrroy, through this study they seek to determine the relationship between both variables in university students in the biomedical area. The analysis leads them to corroborate that those who present high self-esteem live in an environment free of violence, a context that is reflected in their actions and behaviors.

For Calizaya, Diaz de la Vega and Zapata, when studying the social presence of university students in virtual teaching-learning environments in times of Covid-19, determine that it is not the most adequate, given that students are passive, due to economic difficulties and limitations in the management of online academic strategies; in addition, their level of learning has not been modified with respect to face-to-face education. In the tenth chapter, Llorente and Luque, when investigating emerging technologies in university environments, recognize that the construction of digital identity from the educational

and psychological perspective, demands training in digital competencies, as well as the use of ICTs in the configuration of digital identity.

The study of the basic profile of graduate theses on pedagogical leadership is investigated by Vela, Cáceres, Gamero and Vera, whose results reveal the predominance of topics related to teaching performance and management styles. A complementary result evidences a deficient formulation of the thesis abstract, contributing to a low impact on scientific production. In the twelfth chapter, Turpo, Diaz, Pari and Zarate, when analyzing the construction of technopedagogical discourses, establish configurations that respond to the crossroads between pedagogy and technology, which refer to structures ranging from a panacea, that is, from a discourse of immediate solution to a sense marked by a neutral instrument, without major effects on educational change.

In the thirteenth chapter, Hurtado, Iquira, Sotelo and Castro, point out that the advance of technology is increasing the need for the mastery of digital competencies in the school

environment and at all educational levels in order to improve and optimize the teaching-learning processes. In the fourteenth chapter, Gutiérrez, Rosado, Passano and Duche, analyze the perception of the level of stress in university students who perform asynchronous educational activities mediated by the Moodle LMS in times of Covid-19.

The brief overview of the research presented here shows the growing involvement of technology in the constant recreation of academic knowledge, a collective task that demonstrates that, despite the pandemic crisis, the scarcity of resources, indecision in management, disinterest, rigidities and shortages among other problems, the collective creation remains vital to demonstrate that another education is possible, and absolutely necessary. The possibilities of breaking inertias and channeling favorable changes will depend on it.

Data-based practices in university teaching and lines of professional development: The case of Universidad Nacional de San Agustín, Arequipa

Juliana E. Raffaghelli
Gerber Sergio Pérez-Postigo
María Mercedes Zea-Urviola

Introduction

The development of smart technologies has increased exponentially with the development of technological infrastructures for computing digital data. With faster data processing speeds and improved interconnectivity, the ability of self-controlled reporting and analysis systems, as a key component of smart technology, is becoming increasingly common in higher education. However, acculturation to such systems, user experiences and their concrete integration into learning, as well as professional practices require reflection and strategic planning, which over time allow users to participate in intelligent education (Morze, Smyrnova-Trybulska, & Glazunova, 2017). Within this field, the interaction between people and data (human data interaction

—HDI—) will become central, since the personalization and contextualization that characterizes the intelligent dimension of education, encompasses feedback based on data, recommendations and visualizations or dashboards that address user reactions to technology (Hoel, & Mason, 2018).

In fact, for Mortier et al. (n.d.), HDI opens up as an emerging field of research that places the human being at the center of data flows, from its generation through the interaction of humans devices to algorithms created to support the responses of systems that further shape user experiences and activity.

The university as an institution has entered the so-called datification paradigm somewhat abruptly, in an attempt to survive a credibility crisis, through forms of innovation that went hand in hand with the digitization of processes and services (Lupton, & Williamson, 2017). Repeating social dynamics, the initial discourses regarding the use of data were enthusiastic and positivist, adopting data-driven practices as an opportunity to improve the efficiency, objectivity, transparency and innovation of teaching and learning processes, as well as academic management (Daniel, 2017). Likewise, the discussion on data-driven practices also advanced from the field of Open Science policies, with a strong emphasis on the adoption of Open Research Data (Molloy, 2011). However, these approaches find strong criticism regarding the feasibility and ethical problems of the

use of student data, in the first case (Slade, & Prinsloo, 2013), as well as the effective quality and usability of scientific and government data that are open-offered (Quarati, & Raffaghelli, 2020; Zuiderwijk, Janssen, & Dwivedi, 2015).

As noted, we are still moving in complex and evolving terrain when it comes to data-driven practices in higher education. The promising logic of the Big and Open Data scenarios has been contrasted by the need for a complex exploration and the application of a critical approach to the problem of surveillance in society, precisely by virtue of the diversified impacts between “elites,” scientists and corporations, activists and hackers, and little data-literate end users (Raffaghelli, 2020). The development of advanced digital competence, which includes the new timely and critical implications of the intensive use of data at the researcher and teaching level, implies professional reflection and the need for a complex look at teaching professionalism in the university context (Amundsen, & Wilson, 2012; González-Sanmamed et al., 2020).

In this context, this study presents a case study on data-based practices in university teaching. The objective of the research has been to carry out an initial exploration of these practices, to analyze the spaces that require possible strategies for institutional intervention and professional development in an integrated system of practices based on data, effective and ethically sustainable.

A call for data literacy in higher education institutions

The complex scenario of data use in higher education requires innovative approaches to teacher training, therefore is required, as indicated by the Human Data Interaction approach, that work be done on the transparency and negotiation of the datified technological infrastructure. This means that the teacher should be prepared not only from a specific technical viewpoint (which data is extracted and used, between research and teaching) but also from a critical, ethical and even aesthetic viewpoint (Raffaghelli, & Stewart, 2020).

Data literacy is not a new topic: there has been a concern parallel to that of the development of informational competence about the ability to manage numerical operations, later statistical (Gould, 2017). However, only recently the need has arisen to promote the understanding of datified digital systems emerged, from data extraction, algorithmic and coding processes connected to the production of static and dynamic visualizations, and the production of intelligent systems (Raffaghelli, 2020). This competence can arise in specific contexts both at an academic level (manipulation of data for academic communication purposes), and at a professional level when data is used to communicate processes and decisions (more basic level) or to generate products and services (advanced level innovation). The different definitions agree on the

centrality of the following elements of data literacy: extraction, management and processing; ethical and critical approach to data processing. According to a bibliographic review by Maybee and Zilinski (2015), based on the analysis of 8 data literacy frames, the following characteristic elements can be identified:

1. Awareness: understanding data and its role in and for society.
2. Access: understand how to properly identify, locate and use datasets and databases (e.g. collection of structured data).
3. Participation: evaluation, analysis, organization and interpretation of existing data; make data-driven decisions.
4. Management: planning and data processing; including organization and analysis, security protocols for data retention, data exchange and data-based documentation.
5. Communication: synthesize, create visualizations and graphical representations based on data.
6. Ethical use: identify the different sources of data, in particular those that come from human and social activity, considering the risks of processing such data; understand data usage issues.

7. Preservation: be aware of the practices of use and reuse of data, which require forms of long-term conservation.

Educator data literacy is still a broad field to explore. Although there is a growing literature in the case of compulsory education and teacher training (Mandinach, & Gummer, 2016), the situation at the university level is much less developed, and above all there is a lack of critical literacy components to the use of data (Raffaghelli, & Stewart, 2020).

In the case of the university, data literacy could be traced to a reflection that covers individual practices within the classroom, both from the side of data referring to educational content (for example, sustainable development), and from data as an element supporting pedagogical methods and empowering students (for example, data used in learning analytics dashboards). In addition, it could move from these objects towards the generation of a complex and strategic institutional project in terms of the use of data in teaching planning and instructional design, as well as in academic management (Tsai, & Gasevic, 2017). In fact, the data sets produced by research based on educational design could be critically commented and shared in a broad educational community, thus recalling the values of collaboration and data-driven construction (and its criticism), according to van der Zee & Reich in their approach to open educational science (2018).

This research considers a competency framework based on six typologies of data-based practices. It begins with the investigation and use of data as educational content; considers the generation of educational data, its analysis and use for different purposes; and their shared circulation to improve teaching; culminating in student data literacy. This explorative study is based on a survey aimed at providing the necessary information to develop the scenarios and the competency framework for data literacy in university teaching, as an emerging component of the digital competence of academics.

The study is carried out at Universidad Nacional de San Agustín of Arequipa, with the participation of 146 teachers from different professional schools and from the three academic areas. Two main constructs were used: (i) the profile of the university teacher (gender, age, professional experience in research and teaching, scientific-disciplinary sector); and (ii) the framework of competencies for data-based practices in university teaching. The research question formulated for the data analysis was: What are the practices based on the use of digital data with a more massive and more diversified presence in teaching at Universidad Nacional de San Agustín of Arequipa?.

The data were processed grouped by questionnaire areas as

mono-varied statistics. Characteristics of the sample were taken into account in terms of age, gender, scientific-disciplinary field and experience in research and teaching; followed by data-driven practices in university teaching. The categorical variables are considered modulators of practices based on data in teaching as a second group of ordinal variables (responses according to the Likert scale). To allow the analysis procedures, the second group was transformed into discontinuous numerical variables (scale 1-6). Next, we enter the results according to the two groups of variables mentioned.

With regard to the characteristics of the participants, 41.28 % (45) of the participants were male and 58.72 (64) were female. Regarding age, a clear prevalence of the group “over 55 years” is observed with 47.71 % (52) followed by 37.61 % (41) who are placed in the group 45-54 and 12.84 % (14) in group 35-44. This could be the result of a slow career advancement that culminates in the acquisition of the academic position at middle age, to advance towards consolidated positions after 45 years. Regarding areas of knowledge, prevalence of technology (13.7 % (20)) and pedagogy (11.64 % (17)), followed by medicine and economics with the same number of responses (10.27 % (15)). Other areas (Art, Psychology, History, Sociology, Mathematics, Life, Agriculture and Earth Sciences, Logic, Linguistics, Ethics) are placed between 4.11 % and 3.42 % of response.

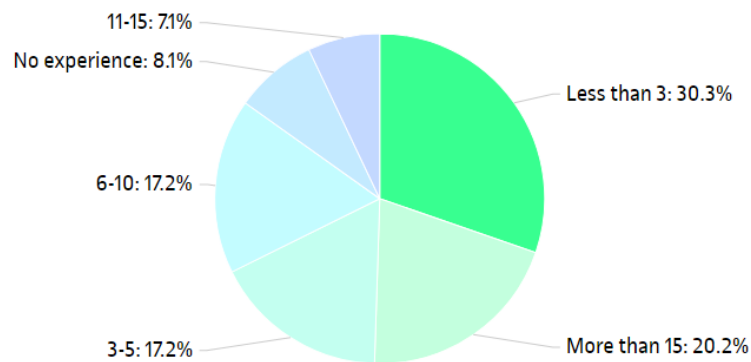


Figure 1. Research professional experience. Source: author own elaboration.

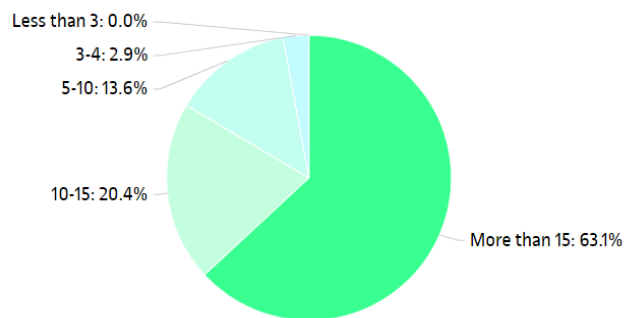


Figure 2. Professional experience in university teaching. Source: author own elaboration.

Figures 1 and 2 show professional experience in teaching and research. Here it is possible to observe how the career profiles diversify, since the group with more than 15 years of teaching experience far exceeds the group with more than 15 years of research experience (63.1 % versus 20.2 %,

respectively). This situation is confirmed in relation to the participants without experience in research (30.3 %) and the absence of participants in the group without experience in teaching (0 %). This could imply that the academic career begins more frequently from teaching than from research. The assumption that the UNSA sample has a relevant experiential base to report on its own data-based practices within digital contexts is supported, which is convergent with the description of the university and its level of digitization.

Conclusions

Despite the limitations of an exploratory, non-probabilistic study, the results have shown the specific characteristics of the institutional data culture shown by Universidad Nacional de San Agustín of Arequipa, and this may have enormous heuristic value for the necessary reflection at the level of new approaches to work in virtual environments heavily traversed by Big Data technologies, as well as present in a context of institutional policy that can push towards the generation and use of open data on the one hand, and the use or generation of “surveillance” services based on private platforms that extract data from teaching and learning processes without a clear policy on their use. The study has confirmed the presence of practices based on advanced data, which coexist with areas in which some fragmentation and uncertainty are observed. In particular, the level of virtualization of teaching at UNSA is clear since relevant values are obtained in the items that explore the use of tools such as learning analytics and visualization panels. Also noteworthy is the teaching

effort to use open data from research and government as an educational resource, which is related to a social and ethical sensitivity through the reflection promoted, declared as a fairly frequent practice. However, the areas that are still less clearly reflected as acquired practice are those of data literacy development, in which it is necessary to explore whether there is a diversification of approaches by field of knowledge.

On the other hand, it is worth noting a certain fragmentation in the use of data for academic management. As indicated by Yang & Li (2020), data literacy of all interest holders in higher education institutions is an element that impacts on teaching effectiveness and therefore on the quality of learning. In this sense, an institutional culture that uses the wealth of data produced in an efficient but also equitable and fair manner must establish access mechanisms and infrastructures, as well as modalities for the use of said institutional wealth.

It should be noted that the mechanisms of student empowerment through the use of system data have been the least present or perhaps the most difficult aspect to face, according to the study. However, this is indeed one of the most important challenges, in a “post-pandemic” era of forced virtualization.

Referring to Boyer's framework of academic professionalism that didactic research called for, the use of data could lead to more significant forms of analyze, evaluate and share effective pedagogical practices. Even a strategic vision of education as open science could be projected (Tim Zee, 2018), while the datasets of research based on educational design could be critically commented and shared in the broad educational community (Persico, & Pozzi, 2015). In this case, we are also at the beginning of practices and engagement that need to be further explored.

Data extracted must not only be used with criteria of efficiency and effectiveness. The "techno-solutionism" around the problem of the misuse of data, an aspect quite evident during the pandemic, should be avoided (Williamson, Eynon, & Potter, 2020). The forms of de-accountability created by objectivist positions around data practices is a clear expression of the pressure on the system to produce results quickly, such as the use of certain indicators for placement in international university rankings. The faster, the simpler, the better, which implies less attention to the need for complex interventions where data-driven practices are just another piece of the puzzle. A higher institution must generate forms and spaces for discussion on the culture of data, which implies a laborious interweaving of data produced at the level of academic management, research and didactic research beyond teaching.

References

- Amundsen, C., & Wilson, M. (2012). Are We Asking the Right Questions?: A Conceptual Review of the Educational Development Literature in Higher Education. *Review of Educational Research*, 82(1), 90-126.
- Daniel, B. (2017). Big Data in Higher Education: The Big Picture. In *Big Data and Learning Analytics in Higher Education* (pp. 19-28). New York, USA: Springer International Publishing.
- González-Sanmamed, M. et al. (2020). Digital learning ecologies and professional development of university professors. *Comunicar*, 28(62), 9-18.
- Gould, R. (2017). Data Literacy is Statistical Literacy. *Statistics Education Research Journal*, 16(1), 22-25.
- Hoel, T., & Mason, J. (2018). Standards for smart education – towards a development framework. *Smart Learning Environments*, 5(1), 1-25.
- Lupton, D., & Williamson, B. (2017). The datafied child: The dataveillance of children and implications for their rights. *New Media & Society*, 19(5), 780-794.
- Mandinach, E.B., & Gummer, E.S. (2016). What does it mean for teachers to be data literate: Laying out the skills, knowledge, and dispositions. *Teaching and Teacher Education*, 60, 366-376.

- Maybee, C., & Zilinski, L. (2015). Data informed learning: A next phase data literacy framework for higher education. *Proceedings of the Association for Information Science and Technology*, 52(1), 1-4.
- Molloy, J.C. (2011). The open knowledge foundation: Open data means better science. *PLoS Biology*, 9(12), e1001195.
- Mortier, R. (n.d.). Human-Data Interaction. In Interaction Design Foundation, *The Encyclopedia of Human-Computer Interaction*. New York, USA: Interaction Design Foundation.
- Morze, N. V., Smyrnova-Trybulska, E., & Glazunova, O. (2017). Design of a University Learning Environment for SMART Education. In T. Issa, P. Kommers, T. Issa, P. Isaías, & T. Issa (Eds.), *Smart Technology Applications in Business Environments* (pp. 221–248). Hershey, PA: IGI Global.
- Persico, D., & Pozzi, F. (2015). Informing learning design with learning analytics to improve teacher inquiry. *British Journal of Educational Technology*, 46(2), 230-248.
- Quarati, A., & Raffaghelli, J.E. (2020). Do researchers use open research data? Exploring the relationships between usage trends and metadata quality across scientific disciplines from the Figshare case. *Journal of Information Science*, 46(2), 230-248
<https://doi.org/10.1177/0165551520961048>

- Raffaghelli, J.E. (2020). Analíticas de aprendizaje ¿Un continente oscuro? *SMART PAPERS EDUL@B*, 8, 1-6.
- Raffaghelli, J.E. (2020). "Datificación" y educación superior: hacia la construcción de un marco para la alfabetización en datos del profesorado universitario. *Revista Interamericana de Investigación, Educación y Pedagogía*, 13(1), 177-205.
- Raffaghelli, J.E., & Stewart, B. (2020). Centering complexity in 'educators' data literacy' to support future practices in faculty development: A systematic review of the literature. *Teaching in Higher Education*, 25(4), 435-455.
- Slade, S., & Prinsloo, P. (2013). Learning Analytics, Ethical Issues and Dilemmas. *American Behavioral Scientist*, 57(10), 1510-1529.
- Tsai, Y.-S., & Gasevic, D. (2017). Learning analytics in higher education --- challenges and policies. In LAK'17: Proceedings of the Seventh International Learning Analytics & Knowledge Conference, ACM Press, New York, USA.
- van der Zee, T., & Reich, J. (2018). Open Education Science. *AERA Open*, 4(3), 1-15.
- Williamson, B., Eynon, R., & Potter, J. (2020). Pandemic politics, pedagogies and practices: Digital technologies and distance education during the

coronavirus emergency. *Learning, Media and Technology*, 45(2), 107-114.

Yang, N., & Li, T. (2020). How stakeholders' data literacy contributes to student success in higher education: A goal-oriented analysis. *International Journal of Educational Technology in Higher Education*, 17(1), 41.

Zuiderwijk, A., Janssen, M., & Dwivedi, Y. K. (2015). Acceptance and use predictors of open data technologies: Drawing upon the unified theory of acceptance and use of technology. *Government Information Quarterly*, 32(4), 429-440.

II

Scenarios for training researchers in education: A case study

Osbaldo Turpo-Gebera

Yvan Delgado Sarmiento

Fernando Pari-Tito

Milagros Gonzales-Miñan

Introduction

The training of researchers involves a complex process that occurs from the confluence of a diversity of contexts associated with the mission of the university; in order to innovate, transform and transcend social dynamics and bring them closer to exchanges that consolidate their social impact (Moreno, 2006). The investigative process affects both the action in the classroom and the university institution, becoming the organizational factor that mobilizes a structure of privileged relationships, by posing as essential, the inquiry and search for knowledge, the same that lie in the construction of questions as the core axis, being the starting point and arrival of this process.

The researcher in training is made up of acts of relationships built by the expectations of the levels committed to research:

internally, he is linked to quality educational practices, basically, to standards and indicators of the rankings; and externally, to the interests of society, to the integrated set of interconnected activities. In this course, circumstances converge that gravitate to the ways of thinking and acting: on oneself or on others. From that statute, they share a knowledge valued by the community where it is recognized for the production of knowledge and contributions to society. In this way, they participate in the academic debate, from the reflection on its consequences and possibilities (Angulo et al., 2007).

The complexity of research training involves a multiplicity of transcendent meanings. Some of them come from the desire to improve or expand their professional development, to make decisions, to privilege theoretical or application areas, as well as academic or social; for others, the resulting recognitions (accreditations, funds, among others) vary between teaching and research, with more or less emphasis. Researchers in training, question and reflect on it, create and innovate and draw to "truths," propose goals, found or connect to discourses that share, inspire and develop trends, among other possibilities.

Discursive perspectives on research training in education

The recognition of the conditioning factors of the training of

researchers, presupposes approaches to their subjectivity, to recognize the reasons, representations and projections that define the daily life of their mediations. In that sense, they would be invested by the accreditation of academic qualifications that justify their access to privileged positions, than those accredited academically (titles, awards) (Fernández-Fernández, et al., 2016; Didier, 2014). The credentials constitute the implicit guarantee of productivity and expression of capacities and incremental qualifications. Such knowledge grants the monopoly of scientific production and, therefore, presage greater academic productivity.

The university as a credentialing body rediscovers the image of researchers, defining and rewarding their training, from (i) the assignment of jobs and positions, (ii) the demand for higher qualifications, and (iii) the profitability of the training investment. These processes introduce inequities, from credentials that ensure a certain quality of life, also found differences and barriers between the elite and the remaining. For Didier (2014), academic credentialing contributes to a social dynamic based on degrees conducive to employability. A meritocratic sense of belonging that segregates and reproduces inequalities, and where it underlies, a cultural sense of valuing time and work to obtain the necessary skills.

From performativity, a position assumed by researchers,

discursive capacities are privileged to transform their environment. For Austin (1998), such expressions describe or enunciate a situation that configure mobilizing actions for a new "realization." For instance, by saying "I am an accredited researcher," the accreditation is constituted and, obviously, a personal and environmental change occurs, initialed by its scientific production. The example graphs performativity as a process of legitimation of objective conditions, not only descriptive, but of affirmation and representative possibility. It marks, therefore, their belonging to an extended discussion community (García-Peñalvo, 2018; Turpo-Gebera et al., 2020).

The university institution trains researchers for performativity, while establishing their control, with predetermined outputs that legitimize their power, and where control and hierarchy determine their merits as researchers. At the same time, they decide the criteria and goals, which occupy the "place," of their self-naturalization. In this way, they recreate contingent identities and disciplines that redefine their essences and form governance mechanisms that impose technologies of domination as totalizing and individualizing practices (Ball, 2003; Mungaray, 2001). The control developed is based on devices that install the investigating subject within the self-responsibility and hierarchical submission that inhibit his investigative creativity.

Complexity of training researchers in education

The constitution of education as a disciplinary field and object of study represents one of the greatest difficulties for its investigative approach. In its training, conflicts and contradictions are expressed that lead us to wonder, how to train researchers in education? In this context, what type of researchers to train and what is their role, what problems to prioritize, how to respond to them; so that “they do not limit themselves to the routine exercise of their function, but rather do so in an imaginative, creative way, seeking to adapt flexibly to the changing circumstances surrounding any professional practice” (Martínez, 1997, p. 7), so that they can be inserted in knowledge generation spaces, through inter or transdisciplinary programs.

Given the rise of postgraduate degrees in education in Latin America, as in Peru, universities influence training for teaching and research, with rigor and academic quality, integrating actors, as well as their own practices and knowledge, habits and attitudes that the profession of investigating demands (Pérez, López, & Buendía, 2019). They basically try to considerably increase the quantity and quality of researchers in education, to face the backwardness in a context marked by inequalities. A process that began late in our countries, and that emerges in response to the need to develop the capacities of those who assume investigative responsibilities.

The process of training researchers in education, although it started late in Latin America, flows in two main ways: one, from postgraduate studies, and the other, from undergraduate training research. Processes that for Dietz (2014), demand a renewal of training spaces and profiles, training of habitus for research and the promotion of self-learning. Another route emerges from differentiated, less formal settings, of integration to academic bodies or research groups. Such dynamics break the paradigms of resistance to change, promoting the dropout of the comfort zone, by dedicating more time, effort and commitment to build the job of researcher (Turpo-Gebera et al., 2019).

In the training work of researchers in education, according to Martínez (1997), two meanings concur: one expanded, as researchers innovative, researchers in training, graduate students and thesis students; and another, restrictive, only to researchers in education with scientific production in indexed databases. These positions, more than impervious borders, are desirable transitions to train or conform as a researcher in education. Both positions require a vast knowledge of educational complexity, as well as the various approaches in social research, and the experiences of situated knowledge of education (Villalta, & Martinic, 2020).

In order to recognize the discursive positions that are

expressed in the training of researchers in education, we use narrative techniques that explore their subjectivities. From this perspective, we refer to the focus group technique, through a semi-structured group interview on the formative work of the researcher. The process followed seeks to capture the feeling, thinking and living of the research subjects in training. Properly, it was started from discussion topics that bring together a plurality of attitudes, experiences and beliefs of the participants, in a relatively short space; generating collective interactions that produce underlying data and interpretations in individuals.

The subjects of this study respond to an intentional selection, due to their disposition and “formal” continuity in the training processes in research. Ten university teachers participated, who are studying postgraduate studies in education (representing researchers in training). Several of them are integrated into subsidized research projects by a public university; they also form research teams or groups, where they fulfill various functions, from leaders or senior managers to associates or co-researchers. Their training involvement is aimed at obtaining their accreditation as researchers or an academic degree.

To collect the information, a thematic script was designed that addressed the perspectives related to research training. Two focus groups were organized, who authorized the use of the information for academic purposes. The length of the

focused discussion was moderated by two of the authors, was videotaped, and lasted an average of 45 minutes. The discursive corpus was independently transcribed and categorized (aprioristic and emergent) by three of the authors, then they were consensual to adjust them to the study objectives. The categorization and codification allowed the materialization of the positions, expressed by the intersubjective relationships that the discourses revealed (Lefèvre, de Suremain, & Rubín, 2000).

Discursive positions in the training of researchers in education

The approach to the positions of the researchers in training allowed to determine the ways in which they structure and build their modes of intervention. The determination of its course starts from locating and aligning the discourses recovered as categories, with the theoretical assumptions of performativity and credentialism.

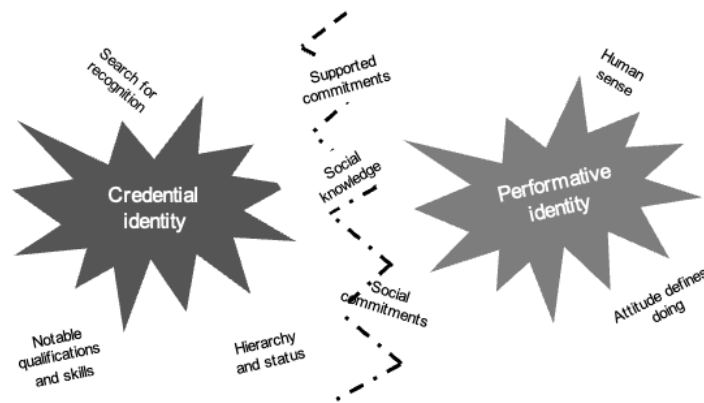


Figure 1. Identity duality of the researcher in training. Source: author own elaboration.

The positions expressed by researchers in training graph the identity duality in which they transit (Figure 1). From credentialism, identity presupposes recognition of studies (academic titles) and the affirmation of hierarchy and academic status, which endows them with greater prerogatives towards greater social mobility and assuming responsibilities corresponding to their training. Whereas, in performativity, the identity role of the researcher in training passes through the generation of knowledge, the search for commitments with social development, and they are oriented to transcend, from the attitude towards the research work, and understand that their influence must contribute to better decisions and to reassess the investigative mission.

The training of researchers in education is related to the spaces where research takes place, which in our country, fundamentally, in universities, which is where their disquisitions about their real value and the alternation to which their existential multiplicity invites are defined.

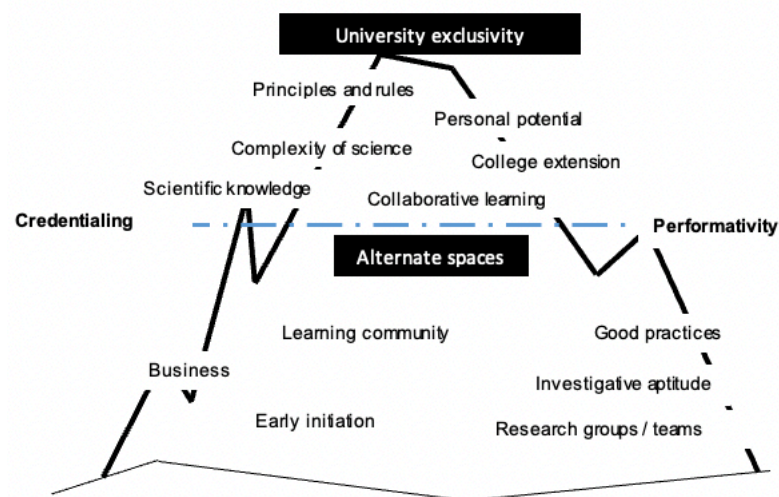


Figure 2. The university as a research training space. Source: author own elaboration.

The assessment of the university as a training space for researchers is understandable, by expressing a sense of complementarity or aggregation of scenarios. Although, from credentialism its exclusivity as a researcher trainer is affirmed, due to the credential institutionalism defined by the

regulations, as a “guardian” of knowledge and its potential for linking and recognition. This trend is not excluded by performativity, considering the university as a space for affirmation and extension and shared learning. Among other research training spaces, “good practices” and collaboration count as qualities that contribute to its development. For the researchers interviewed, training in research skills constitutes a significant aspect, not only because of the potential, but also as a guarantee to participate assertively in the research community.

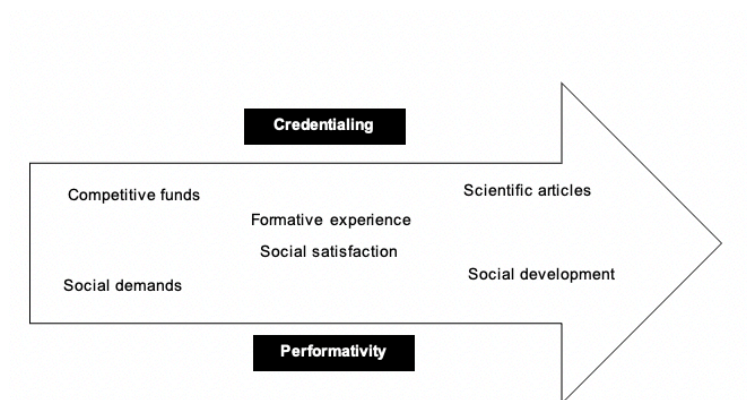


Figure 3. Formative development of research capacities. Source: author own elaboration.

The development of investigative capacities is categorical and requires not only acquisition, but also permanent updating and involvement in new scenarios and ways of investigating. Consequently, the training of researchers in education

requires rethinking, not only in terms of the institution it forms, but also of the support structures. That is to say, the relationships that strengthen capacities that show the deepening and accumulation for the generation of knowledge and empirical development, without ignoring the global nature of science. Scientific production represents for researchers in training the realization of their expectations, research continuity and academic links.

Conclusions

In the training of researchers in education, their positions are recognized and, in this way, it becomes possible to characterize them within one or another theoretical field. From these delimitations, it is conceived that a homogeneity of criteria coexists among them, and not the primacy of a single way of understanding reality. In this way, it is avoiding resorting into the temptation of thinking that the complexity of social problems and science becomes a comfortable and idle matter. The study carried out made it clear that the experiential immersion of researchers in education places them in a complex dynamic, of epistemic intersections and formative meanings, between what is desirable and what is achievable (Barros, & Turpo-Gebera, 2017); and where the confusion between objectivity, truthfulness and impartiality gravitates on their convictions.

Performativity like credentialism configures positions on the understanding of the formative complexity of researchers in education. Accreditation contributes to recognizing the need to have qualifications for research, as proof of social and academic advancement, and therefore, of scientific productivity. In these intentions converge the tasks of the interviewees, for whom the degrees and scientific productions affirm academic recognition and status. They recognize that it is necessary to intervene socially, through studies that generate transformations, through attitudes that lead to intellectual passion and social sense, rather than to seek hierarchical positions.

The perspectives described and in which researchers in training are installed do not express classifications, but rather aim to show binding points of view (Horkheimer, 2000) on the training of researchers. The distinctive features refer more than to differences of a theoretical nature, to aggregate interpretations of their formative role. Hence, given the apparent educational exclusivity of the university, especially as a depository of science, they allude to the need for concurrence of spaces, not necessarily institutional but motivational. The context of today's society stirs up a training excess, not always in the best conditions or qualities, detracting from the academic credentials. Therefore, mobilizing actions that legitimize the training of researchers are essential.

Judging by the results, the investigated subjects interact between credentialism and performativity, between dissonant discourses, and meeting points. The programmatic positions, assumed theoretically, are overwhelmed by empirical data, which encourages a foundational state in the training of researchers in education. The similarities reveal formative convergences and non-equidistant life trajectories, expressing the complexities of human nature. Whereas, the divergences have more a sense of transition on a duty to be signed by the institutionalism; given the dynamics of situations in which it is immersed, representing an undetermined matter.

Given the dynamics of situations in which the training of researchers in education is immersed, their development represents an undetermined matter, where forms of understanding intersect, disrupting the formative senses. In this perspective, credentialism raises convictions and practices based on academic recognition (degrees) that enable their personal and social development, while performativity advocates research action from scientific productivity. Researchers, in their daily work, assume such positions as complementary, and subject to institutional pressure, which, while stimulating them, also leads them to legitimize their actions.

In the training of researchers in education, addressing the resolution of educational problems, adds them to the need to collaborate, thus affirming their research identity. A

legitimation based on self-responsibility, where actions are defined and asserted that induce coincidences to be highlighted in order to approximate the most appropriate developments, such that they contribute to overcoming differences. A process that, although it requires training based on degrees, in turn, bypasses credentials, leading to greater participation in actions that tend to value research as essential. In that becoming, they are constructed as subjects that interact between both positions, expressing the complexity of their being, as research subjects.

References

- Angulo, R. et al. (2007). *Conocimiento y región*. Madrid, España: Plaza y Valdés.
- Austin, J. (1998). *Cómo hacer cosas con palabras*. Barcelona, España: Paidós.
- Ball, S. (2003). Professionalism, Managerialism and Performativity. *Educación y Pedagogía*, 37(15), 87-104.
- Barros, C., & Turpo-Gebera, O. (2017). Training in the development of the researcher teacher: A systematic review. *Espacios*, 38(45), 11-21.
- Didier, N. (2014). Nominal Human Capital, Employability and Credentialing. *Revista Iberoamericana de Psicología: Ciencia y Tecnología*, 7(2), 19-27.

- Dietz, G. (2014). La formación de investigadores en educación y la producción de conocimiento. El caso del Doctorado en Educación de la UATx. *Perfiles Educativos*, 36(146), 202-205.
- García-Peñalvo, F. (2018). Digital Identity as Researchers. The Evidence and Transparency of Scientific Production. *Education in the Knowledge Society*, 19(2), 7-28.
- Fernández-Fernández, S. et al. (2016). Reflective and Inquiry Thinking in Education. Aspects to consider in teacher education. *RELIEVE. Revista ELectrónica de Investigación y EValuación Educativa*, 22(2), 1-17.
- Horkheimer, M. (2000). Teoría tradicional y teoría crítica. Barcelona: Paidós.
- Lefèvre, P., de Suremain, C-É, & Rubín, E. (2000). Investigación socio-antropológica clásica, focus groups y modelo causal. *Cinta de Moebio. Revista de Epistemología de Ciencias Sociales*, 9, 270-286.
- Martínez, M. (1997). Dimensiones epistemológicas y metodológicas de la IAP para un autoconocimiento de los Nuevos Movimientos Sociales. *Política y sociedad*, (25), 205-228.
- Moreno, M. (2006). La formación de investigadores como elemento para la consolidación de la investigación en la universidad. *Revista de Educación Superior*, 40(158), 59-78.

- Mungaray, A. (2001). Higher Education and the Professional Job Market. *REDIE. Revista Electrónica de Investigación Educativa*, 3(1), 2-12.
- Pérez, A., López, J., & Buendía, J. (2019). El congreso académico como espacio para la formación de investigadores. *Revista Mexicana de Investigación Educativa*, 24(83), 1109-1134.
- Villalta, M., & Martinic, S. (2020). Communicative Exchanges and Classroom Teaching Practices of Trainee Teachers. *REDIE. Revista Electrónica de Investigación Educativa*, 22, e21.
- Turpo-Gebera, O. et al. (2019). Formative research at the university: Meanings conferred by faculty at an Education Department. *Educação e Pesquisa*, 46, e215876.
- Turpo-Gebera, O. et al. (2020). Teaching Feelings Assigned to the Teaching of Formative Research in an Education Faculty. *Propósitos y Representaciones*, 8(3), 1-17.

III

Collaborative learning from a complex thinking perspective in virtual higher education in Arequipa

Gregorio Cusihamán Sisa
Oscar Pacheco Rodríguez

Introduction

Innovative processes have always been well-intentioned and often inconclusive proposals, however the objective impulse was presented with the renewal of the University Law (No. 23733) by Law No. 30220 of 2014, which objectively founded significant modifications in the innovative process, proposing changes that involve continuous improvement, from licensing to accreditation processes for universities and careers. One of the significant contributions in recent years has been the incorporation of collaborative work, as some call cooperative work, as Martínez & Jaimes (2020) points out, "these two concepts are not exclusive but complementary" (p. 2). The substance of the proposal lies in shared work, where "the real, the knowable can be built by its observers" (Perraudau, 2001, p. 38), giving that constructivist ingredient to collaborative work.

The proposal is part of the approach to issues and problems as part of the development of the Scientific Research subject in the Communication Sciences career at Universidad Nacional de San Agustín of Arequipa, considering that the lines of research were clearly delimited in the professional profile, in this sense it is intended to answer the question: How does a pedagogical innovation with collaborative application from a constructivist approach propose solutions to real social problems, and what is the implication from a complex perspective? Our objective is to identify the articulating links of collaborationism in a constructivist approach, proposing solutions to a complex reality and in a pandemic context.

We appeal to the collaborative sense, considering that current conditions imply group work, as an articulating element, as Compte & Sánchez (2019) pointed out “when work is in a group, tasks are divided, —strengthening collaborationism— the group itself distributes tasks and a dynamic of shared responsibilities is established, then there will be a level of collaboration” (p. 134), reason enough to reach new perspectives to analyze reality. On the other hand, the professor’s responsibility requires commitment and personal motivation, as Gutiérrez, Alberola & Tomás (2018) said: “the importance of support for autonomy by professors and academic commitment in predicting the satisfaction of university students” (p. 550).

Another relevant aspect is the innovative proposal from a complex perspective, Maldonado (2020) commenting on the institutionalism as a conservative element, pointed out that, "one reason for this impossibility is the fact that complexity implies change, transformation, innovation, rupture and breaks, by definition, not controllable" (p. 87); in such, a sense that an event as transcendent as the pandemic necessarily implies ruptures and as such complex phenomena. In this perspective, it will be necessary to take into account the student-professor relationship, Ribosa (2020) proposes: "In another of the vertices is the educational activity of the professor, that is, the professor's actions to help their students learn. And, in the last vertex, we find the constructive mental activity of the student" (p. 82).

Against this background, Castillo de Mesa (2019) said that "public policies loop from one service to another trying to find solutions to problems that have complex characteristics and that, paradoxically, they try to address from simplistic actions based on the own configurations and structures of the services" (p. 17). In sum, the practical proposal of collaborative applied research with a constructivist approach allows us a new research panorama with an interdisciplinary perspective, considering that the barriers of connection of networks, although they generate difficulties, allow an alternative to the complex problem foreseen.

Collaborative learning and its incidence of new information technologies

90 students of the Scientific Research subject in the Communication Sciences career of the Universidad Nacional de San Agustín participate in the investigation, both in the specialties of Public Relations and Journalism. It has a descriptive character, because “narrate, they review or they identify facts, situations, traits, characteristics of an object of study” (Bernal, 2016, p. 143). Regarding the relevant indicators, both quantitative and qualitative indicators are observed, which configures an investigation of a mixed nature given the complexity of the problem to be investigated: “These represent or are constituted by two realities, one objective and the other subjective” (Hernández, Fernández, & Baptista, 2014, p.536); what was sought with this methodology is to achieve a much broader perspective through varied data that allow a better exploration of the problem, in addition to having the possibility of making interpretations with greater solidity.

Regarding its application, it is transversal, not experimental, since the students had the possibility to freely choose their research topics, so there was no direct intervention by the professors of the subject to direct the subject, only the general indication that it should have relevance and social significance. The study has a constructivist approach, as Rodríguez et al. (2019) maintain: “professors attend to the construction and organization of knowledge by the student

himself, considering him as an active agent who is capable of building, based on knowledge priors taught by professors” (p. 37).

For data collection, both observation and unstructured interviews were used, in addition to the documentary review of the works presented by the students. The observation made it possible to collect data on their performance in the work groups and the way in which they came to define their research topics jointly, while the interviews served to deepen the reasons and motives that led them to choose the research topic raised; the documentary review allowed the organization and classification of the papers presented according to the lines of research approved for the school.

Regarding the procedure, from the methodological introduction and the review of the four lines of research of the degree, the participation of the students is open, proposing completely free research topics, but that in itself generates some level of involvement, in turn, it is perceived that they personally and professionally seek solutions. The participants knew that the topics and later the problems had to be reflected in research projects and probably in their degree thesis.

In the second stage, the open review was done in class, simulating a peer evaluation, strictly assuming "the part of the critical, independent, non-judgmental assessment of all academic work" (Ladrón de Guevara et al., 2008, p. 260), that is, anonymously, considering the difficulties in the network, it was proposed to conclude the review individually or in a group of whose organization was voluntary, some opted for individual work and others in a group way, giving your reasons for such a decision.

For this research, collaborative learning is considered as one that promotes student-centered learning, who chooses the possibility of working in small groups where all members are responsible for their learning by contributing with their different skills to the achievement of the activities of learning.

Therefore, when we talk about collaborative learning methodologies with ICT, we refer to a methodology based on negotiation and joint construction of knowledge applicable to the entire teaching-learning process. Through this approach, students design their structure of interactions and maintain control over the different decisions that affect their learning. (Acosta, Martín-García, & Hernández, 2019, p. 312)

Collaborative learning is considered within the scope of pedagogical innovation, and even more so, if it is mediated

by the use of new information and communication technologies. "At present, these bets are positioned as a pedagogical opportunity in which knowledge is disseminated and reconstructed from the possibility of accepting the diversity of positions and learning rhythms" (Lizcano Dallos, Barbosa Chacón, & Villamizar Escobar, 2019, p. 6). An important characteristic of collaborative work is the existence of a joint goal, which could not be achieved individually; likewise, it is configured as a strategy in which the members of the group learn from each other through dialogue, participation and the construction of knowledge (López, & Molina, 2018).

In situations as difficult as the current ones, strategies that involve cooperation are necessary. "In the work team, not only does the interaction between the students take place, but the way in which they interact will also be relevant, the professor and the students, each one in their respective role" (Compte, & Sánchez, 2019, p. 135). Now, if it is situated in the context of virtual education, the computer-mediated collaborative learning methodology has produced a substantial improvement in communication between professors and students; also, providing the possibility for students to have a better interaction with each other, without depending on presence and space-time coincidences (Delgado et al., 2020, p. 2).

Among other aspects, it is specified that collaborative experiences always gave good results. A recent study shows that “the experiences of collaborative educational practices relate to individual contributions that are presented collectively mediated by technological tools that allow the socialization of knowledge between students; thus, these practices are redefined for the fulfillment of common objectives” (Lizcano Dallos, Barbosa Chacón, & Villamizar Escobar, 2019, p. 6).

The constructivist approach proposed by Piaget was the beginning of a long strength in education. Thus, “sharing and building collective knowledge as a route for collective action in which learning communities are configured in collaborative environments” (Lizcano Dallos, Barbosa Chacón, & Villamizar Escobar, 2019, p. 18). They add the constructive power of knowledge, and for collaborative work to have satisfactory results it is necessary to understand that it is not enough for students to group together to carry out a task, but that basic principles such as responsibility, personal skills, communication and self-evaluation that together with collaboration and teamwork allow them to face the task successfully (Andreu-Andres, & García-Casas, 2014). It is the professor’s responsibility to avoid falling into superficiality and to think that it is enough to set up the work groups and leave the rest to the discretion of the students because “when a professor proposes to carry out a group work in class, his students usually divide it and distribute the contents, so that

each one studies, analyzes and writes their part and then unites it in a single work" (Onieva, 2018, p. 510).

It is necessary to rethink collaborative work, taking into account:

The value of the methodology based on collaborative learning lies in the fact that there is a union and exchange of efforts between the members that make up the group, in such a way that the common and group objective which is intended to originate, at the end of the process, an individual benefit in each and every one of the participants. (García-Valcárcel, & Tejedor, 2018, p. 156)

In the validity of the collaborationist analysis, the significant contribution of the constructivist approach refers to "a significant change of orientation towards a model centered on the student, which provides validity to the course. However, it has not been enough for the subjects to reach the constructivist model of reference" (Rivero et al., 2020, p. 30).

Collaborative learning supported by new information and communication technologies has been actively promoted with the sole purpose of improving the teaching-learning process and that students stop being passive entities, to have an active

role in their own education, taking advantage of the advantages of virtual learning tools that have allowed them a better interaction in a world that is practically at the mercy of these new technologies, and that simply cannot be subtracted from educational processes, but must be used for the benefit of students. "Technologies are in new societies. Technology is an attribute, an adjective of today's society and it is also one—or many— tool for communication between members of society" (Gutiérrez-Santiuste, & Gallego-Arrufat, 2017, p. 1170).

One aspect that is recognized today as very necessary and almost indispensable is knowing how to work in work teams to achieve a common purpose, which also makes use of digital technology.

Internet enables us to build learning communities, educational communities of questioning, inquiry, and joint creation of knowledge. This possibility is a determining factor for higher education in the 21st century that must be analyzed to observe its real potential in the development of student learning. (Gutiérrez-Santiuste, & Gallego-Arrufat, 2017, p. 1170)

The evolution of the internet has presented two important characteristics: the first is that its development has been dizzying and unexpected for many and the second is that its

evolution continues, it has not stopped and this technological progress has resulted in Web 2.0 whose main characteristic is management information, facilitating the publication and dissemination of content; likewise, in turn, this has allowed the Web 3.0 or semantic web that covers the need to obtain truthful and concrete information, based on artificial intelligence algorithms that recognize the preferences of users in order to satisfy their information needs (Ureña et al., 2017).

The special circumstances experienced by higher education in Arequipa make necessary strategies that involve the use of technologies according to this requirements, Valencia (2020) in a recent study shows that:

Web 2.0 tools increase the probability of training students in alternative ways: face-to-face, semi-face-to-face and virtual with the use of virtual classrooms using blogs, social networks, wikis, multimedia repositories, where professors, tutors and leaders organize strategies for learning through these resources who make the education of the new era more dynamic and interactive. (p. 2)

At the same time, the use of technologies that involve the virtual network in education

presents a great contribution in the generation of knowledge, through the creation of collective intelligence within the classrooms and the use of social tools, students manage to acquire dynamically and creatively the necessary competencies and skills within their teaching-learning process. (Ureña et al., 2017, p. 6)

From another perspective, we found that: “the use of these tools in the classroom changes the way professors teach their lessons and satisfy students’ learning expectations, allowing them to connect and converse with peers and specialists outside the classroom” (Valencia, & Rodríguez, 2019, p. 498).

One of the problems that occurs in virtual work is evaluation, Vaquerizo (2017) points out that “evaluation, it is usually difficult to determine the contribution of an individual to the work of the group. Therefore, at all times the professor must have a continuous monitoring mechanism” (p. 120). On the other hand, Martínez and Jaimes (2020), recognize the value that “ICTs promote collaborative work between individuals who carry out a learning—they maintain the advantages of their use—, because they have more resources to facilitate communication and work between people who are distant in time and space, as well as the options they allow for information processing” (p. 2).

Apart from the difficulties of virtual connection, collaborative work on the web consolidates the relationship of technologies with the teaching-learning process, "Web 2.0 tools allow collaborative learning to take place and this implies a change in the conception of the teaching and learning processes understood so far" (Flores et al., 2011, p. 935).

Regarding collaborative work, the research shows a dissociation, from the prevailing socioeconomic problems, the pandemic situation has brought with it personal and family deficiencies that have prevented the normal development of the advantages of collaborative work, added to this the deficiencies of virtual connection.

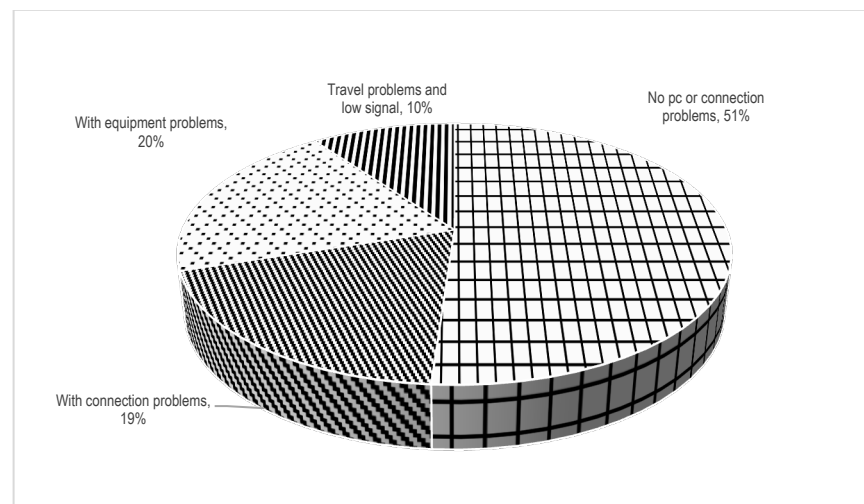


Figure 1. Communication barriers from the network connection. Source: author own elaboration.

Figure 1 shows that only 51 % of communication science students do not present any problem, both at the connection level or equipment level, or other implications; 20 % of students have equipment problems, either due to a cell phone deficiency, low power, without preventing them from carrying out academic activities; 19 % show connection problems, that is, the network signal is low, which may be due to the area, or due to the low potential of the service; and finally 10 % do not have a good location because they are on a trip and the impossibility of a good connection, in no case does this deficiency imply leaving the course, but it affects collaborative work, even in the correct application of the constructivist approach, since its participation is often asynchronous.

Investigative interests of the Career of Communication Sciences from the Complex approach

The proposal of the professional profile in communication sciences indicates four lines of research, within this framework, free research topics were proposed, considering the social problems that are evident and are capable of being solved by the communication professional or from other disciplines configuring the interdisciplinary proposal with a complex approach. In the following tables have extracted the most notable problems framed in each of the research lines.

Table 1. *Problems proposed in the first line of research in the Career of Communication Sciences*

Communication in primary groups, social networks and organizations	
Subject	Problem
Advertising	What is the influence that advertising for Kola real sodas on its Facebook page has on the purchase decision in the Paucarpata district between January and June 2020?
Community relations	What are the factors that prevent the dissuasion of Tia María mining project by the population of the Tambo-Arequipa valley during the period January 2015 to January 2020?
Family communication	How was communication affected in the families of the Hunter-Arequipa district due to the quarantine by Covid-19?
Internal business communication	What communicational factors cause poor communication to develop between the collaborators of the Company Estilos and the buyers in the Company Estilos store located in the province of Arequipa, in the first quarter of 2020?

The bad connection due to the pandemic	How did the bad internet signal affect the communication of the students and professors of the 4 th D of Professional School of Communication Sciences of Universidad Nacional de San Agustín of Arequipa during the pandemic in period A of studies, 2020?
Internal communication	How have small companies adapted to the use of digital platforms in the province of Arequipa, in the first half of 2020?

Source: author own elaboration.

What Table 1 shows is the inclination of the investigations to problems in primary groups, both at the institutional, business, and even family level; it should be noted that we only show significant evidence; however in general the proposals have a fairly local coverage and in perspective have been built from personal and group reviews anonymously.

Table 2. *Problems proposed in the second line of research in the Career of Communication Sciences*

Public communication in change and social development	
Subject	Problem
Media	How does the media affect citizens during the COVID-19 pandemic in the district of Arequipa, Arequipa 2020?

Communication barriers in basic education	What communication barriers limit optimal learning in students of the primary level of the IE Villa Magisterial in the district of Cerro Colorado, Arequipa during the year 2020?
Social problems	What factors hinder communication between the authorities and the ambulatory trade of the Mariscal Castilla Oval in the district of Miraflores, Arequipa during the year 2020?
Television shows in open signal	What is the educational and cultural content in Peruvian open signal television shows in Arequipa 2020?
Social communication	How to sensitize the population of the Mariano Melgar district about the mistreatment and neglect of pets, in the state of emergency imposed by the Peruvian state in the face of the Covid-19 pandemic, at the end of 2020?

Source: author own elaboration.

The second line of research has a social perspective, it is possible to perceive the constant relationship of those who make decisions, either at the level of authorities and the population in general, or of those who elaborate the messages in the different communication channels, mainly television.

Table 3. Problems proposed in the third line of research in the Communication Sciences Career

Community and Technologies (ICT)	
Subject	Problem
Digital inclusion	What are the effects generated by virtual education through digital inclusion granted by the state in times of pandemic in young towns in the district of Cerro Colorado-Arequipa 2020?
Access to digital technology	How does the state influence access to ICT for areas that are in the digital divide in the period of March-September 2020?
Digital journalism	What is the current situation of the media and digital journalism in the newspaper <i>El Pueblo</i> in the province of Arequipa, in the year 2020?
Digital journalism	What is the journalistic treatment in the digital version of the Peruvian newspapers <i>El Comercio</i> , <i>La República</i> , <i>Peru21</i> , <i>Exitosa</i> , <i>Trome</i> and <i>la Karibeña</i> about the case of Celia Capira between the months of July and August 2020?
Digital journalism	What are the advantages and difficulties in the process of information treatment and the style of the language of digital journalistic products in the

digital media Wayka during the months of November and December in the province of Arequipa, 2020?

Source: author own elaboration.

The remarkable connotation of Table 4 is digital inclusion, both from its access and from digital journalism, in its various manifestations, both at the level of the written press that in recent years has ventured into network management, as well as media that have strictly virtual labor.

Table 4. *Problems proposed in the fourth line of research in the Career of Communication Sciences*

Theory of communication and scientific knowledge	
Subject	Problem
Communication barriers	What are the theoretical trends regarding new barriers to social communication?

Source: author own elaboration.

Table 4 shows the epistemological contribution to the strengthening of communication theory, in that aspect it can be noticed even desert, since applicants to the degree perceive applied research with greater prominence, that is, the solution to practical problems.

Table 5. *Proposed problems that require interdisciplinary participation, with a complex approach*

Public communication in change and social development	
Subject	Problem
Academic performance	How does the social and economic factor affect the academic performance of the students of Universidad Nacional de San Agustín of Arequipa, due to the mandatory social isolation caused by the Covid-19, semester A 2020?
Mental health	How has the pandemic and the shift from normalcy affected the psychological health of adults over 40 in Hunter District?
Digital education	How does the digital gap between the private educational institution Corazon de Jesus-Cercado and Public Educational Institution Colegio 40160 Obdulio Barriga Vizcarra, Mollebaya during the pandemic in the city of Arequipa in the last quarter of 2020?
Informality	What are the social and economic characteristics of informality in Arequipa in 2020?
Unsafety	What are the factors that influence an increase in crime in the province of Arequipa in 2020?

Source: author own elaboration.

Table 5 shows the incursion of problems that are obviously social but that require the participation of other academic disciplines, thus demonstrating the complexity in the perception of problems and in the development of their probable solutions. It is necessary that in the processes of innovation in vocational training the support of research with an interdisciplinary perspective is made viable.

It is evident that, of the four lines of research, the first referred to the communication of primary groups and social networks, they show a greater inclination; in the second instance the community and technologies are perceived, to the extent that the technological incursion is increasingly more open in all cultural areas of society, in turn, public communication in social change and development have a great participation. A significant point is proposed by the complex approach, as shown in Table 5. The incursion of social problems that do not necessarily have implications in communication, but on the contrary, require the disciplinary competition of other specialties, since it would be rational to consider in the support and graduation profiles, as an innovative element in the development of professional training.

Didactic controversy

It is necessary to recompose the role of the university professor in special situations, considering that the incursion into the virtual system is decisive for the current process, so it is necessary to

train professors in the use of technologies, necessary for the application of CT (computational thinking) in the classroom and the didactic aspects involved in it, first we must make sure that they also know what they mean when they refer to CT and what its implications and potential are. (Peracaula-Bosch et al., 2020, p. 83)

At the same time,

the relevance acquired by the greater implementation and evaluation by professors of educational innovation projects in social education would entail a benefit tending to improve learning and competitiveness processes, since the traditional paradigm of mere transmission of knowledge is out of date. (Martínez de Miguel López, Salmerón Aroca, & Moreno Abellán, 2020, p. 503)

In terms of creativity in crisis situations, it is necessary to strengthen social creativity, thus García (2020) says: "When the role of critic is assumed, the process becomes a social experience" (p. 8); even more so, when it comes to having the members of an academic community contribute and criticize the process, the creative impulse is strengthened. At the same time, "these dynamics have permeated the educational field, through internationalization agreements, which promote the standardization of processes, validation of degrees and competitiveness of Higher Education Institutions (HEI)" (Botero Sarassa, & Renteria Pérez, 2019, p. 2). Considering the complex perspective, both in the technological use and in the perspective of new latent problems.

It is a reality that there is a decompensation of the technological use of students with respect to the use of it by professors, therefore it should be specified that "digital competence—as part of professional training in the field of educational leisure—as key aspect for the guarantee of an active and participatory citizenship of young people in the current digital culture" (Rodrigo-Moriche et al., 2020, p. 141). In a singular analysis, Pecourt & Rius-Ulldemolins (2018) they point out that "in general terms, digital theorists maintain a basic dichotomy that does not correspond to the complexity of sociocultural life" (p. 77), regarding subordination cultural to digital technologies, more now that the conditions are determining especially in this educational space, reducing our capacities to a commercial culture results to say the least is a

limited perception of the creative capacities of the human being.

Finally, for recompose the idea of the university student within a critical process and at the same time within the innovative scheme in the constructivist premise, it is necessary to "deepen the study of the different motives that students have to learn, as well as in the self-regulation processes of the learning in university students" (Gaeta et al., 2020, p. 26). Consequently, an education from the perspective of complex thinking contributes greatly to the understanding of the most representative social phenomena of our time and an educational training with a critical approach because "complex thinking does not disregard what is simple, it criticizes simplification. Complexity is the union of simplification and complexity, for that reason, it does not exclude, rather, it integrates, it is a rotating, spiral thought" (Olivo, 2019, p. 1363).

Conclusions

The innovative process in higher education in Peru is a sinuous and continuous journey. The collaborative model encounters difficulties from the perspective of connection, equipment, deficiencies socioeconomic, which reveal that although half of the students do not have connection problems, the other half do and although they do not mean an impediment in academic development, they do limit them; even more so, if

the pedagogical approach has a constructivist perspective, since the student's involvement in the approach of their issues in the work as well as in the evaluation itself, it is essential to enrich the research proposal that must be built in collaborative work teams, where obviously participation must be permanent and constant (i.e., if the foreseen problems have implications for other disciplines).

In the face of persistent uncertainty, it is necessary to make pedagogical strategies more flexible, rethink the didactics according to the conditions and circumstances of infrastructure and the response of the learners.

In the context of the different disciplines or fields of knowledge, the so-called communication sciences are transversal to all of them, as it appears in psychology, sociology, anthropology, etc. Therefore, complex thinking to address the proposed research is not only necessary, but also fundamental to understand the complexity of human life from an interdisciplinary, transdisciplinary and holistic perspective, a situation that can be verified in the research topics, which were freely raised by students, under the sole premise of relevance and social significance, which highlights the complexity of social existence that does not respond to a separation of knowledge but to its integration into a single theoretical body.

In this sense, it is necessary to contemplate the complex perspective in the process of support and graduation, in the entire social sphere, given that the problems evidenced have an interdisciplinary connotation; even more so, if the processes of competitiveness imply solution to objectively demonstrated latent problems, for what the scientific research process must have the interdisciplinary commitment because it favors the congruence that must exist between the different fields of knowledge from a multidimensional and critical perspective, that in turn allows the understanding of the social phenomena that devastate humanity and that demand immediate solutions.

References

- Acosta, R., Martín, A.V., & Hernández, A. (2019). Use of the Collaborative Learning Methodologies with ICT: An analysis based on the teachers' beliefs. *digital Education*, 35, 309-323.
- Andreu-Andrés, M.Á., & García-Casas, M. (2014). Assessment of Critical Thinking in Teamwork Activities. *Revista de Investigación Educativa*, 32(1), 203-222.
- Bernal, C. (2016). *Metodología de la investigación*. Bogotá, Colombia: Pearson.
- Botero Sarassa, J., & Rentería Pérez, E. (2019). Employment and work of university professors. A field review. *Athenea Digital*, 19(3), e2140-e2181.

Castillo de Mesa, J. (2019). Towards Network Governance Model that Assume the Increasing of Complexity. *Athenea Digital*, 19(1), e2350.

Compte, M., & Sánchez, M. (2019). Collaborative learning in the Ecuadorian higher education system. *Revista de Ciencias Sociales*, 25(2), 131-140.

Delgado, J.A. et al. (2020). Collaborative learning tools used in virtual higher education programs: A sistematic review of literature in Iberoamerica. In 15th Iberian Conference on Information Systems and Technologies (CISTI), Seville, Spain.

Flores, Ó. et al. (2011). Web 2.0 in university teaching: Collaborative learning through technology. *Electronic Journal of Research in Educational Psychology*, 9(2), 931-960.

Gaeta, M. et al. (2020). Time Perspective, Learning Patterns and Academic Achievement in Mexican University Students. *Estudios sobre Educación*, 39, 9-31.

García, V. (2020). Design Creativity: A Sociocultural Contribution. *Athenea Digital*, 20(1), e2168-e2178.

García-Valcarcel, A., & Tejedor, F. (2018). Value of Collaborative Work in Teaching and Learning Processes in Schools with a High Level of ICT. *Estudios sobre Educación*, 34, 155-175.

- Gutiérrez-Santiuste, E., & Gallego-Arrufat, M.J. (2017). Social presence in a virtual collaborative learning environment: Analysis of a oriented inquiry community. *Revista Mexicana de Investigación Educativa*, 22(75), 1169-1186.
- Gutiérrez, M., Alberola, S., & Tomás, J.-M. (2018). Teacher Support, Academic Engagement and University Student Satisfaction. *Estudios sobre Educación*, 35, 535-555.
- Hernández, R., Fernández, C., & Baptista, P. (2014). *Metodología de la investigación*. Ciudad de México, México: McGraw-Hill Interamericana Editores, S.A.
- Ladrón de Guevara, M. et al. (2008). Peer Review: what it's and what it's for? *Salud Uninorte*, 24(2), 258-272.
- Lizcano Dallos, A.R., Barbosa Chacón, J.W., & Villamizar Escobar, J.D. (2019). ICT-aided Collaborative Learning: Concept, Methodology and Resources. *Magis*, 12(24), 5-24.
- López, K.S., & Molina, V. (2018). Impact of Collaborative Work by Teachers in Teaching and Learning Academic Writing. *REDIE. Revista Electrónica de Investigación Educativa*, 20(1), 3-13.
- Maldonado, C. (2014). What is a Complex System? *Revista Colombiana de Filosofía y Ciencia*, 14(29), 71-93.

- Martínez de Miguel López, S., Salmerón Aroca, J., & Moreno Abellán, P. (2020). Educational innovation in social education bachelor's degrees in Spanish universities: A systematic review. *Educar*, 56(2), 491-508.
- Martínez, L.F., & Jaimes, N.M. (2020). Canvas LMS and Collaborative work as a learning methodology in virtual environments. In 15th Iberian Conference on Information Systems and Technologies (CISTI), Seville, Spain.
- Olivo, S.C. (2019). Importance of complex thinking of the researcher and practice in a scientific investigation process. *Opción*, 35(90), 1357-1375.
- Onieva, J.L. (2018). SCRUM as a strategy for collaborative learning through projects. Didactic proposal for implementation in the university classroom. *Profesorado. Revista de currículum y formación del profesorado*, 22(2), 509-527.
- Pecourt, J., & Rius-Ulldemolins, J. (2018). Digitalization of the Cultural Field and Cultural Intermediaries: A Social Critique of Digital Utopianism. *Revista Española de Investigaciones Sociológicas*, 162, 73-90.
- Peracaula-Bosch, M. et al. (2020). What do pre-service teachers know about computational thinking? *Aloma*, 38(1), 75-86.
- Perraudieu, M. (2001). *Piaget hoy*. Ciudad de México, México: Fondo de Cultura Económica.

- Ribosa, J. (2020). The social-constructivist teacher: A hero without a cape. *Educar*, 56(1), 77-90.
- Rivero, A. et al. (2020). University science teachers' conceptions of contents. *Enseñanza de las Ciencias*, 38(3), 15-35.
- Rodrigo-Moriche, M. et al. (2020). Digital Competence of Young People Undertaking Leisure and Free Time Training Programs. *Pedagogía Social*, 35(11), 139-153.
- Rodríguez, T. et al. (2019). Mentoring egresados-alumnado-profesorado para la asignatura de trabajo de fin de grado. In Pérez-Fuentes, M. (Ed.), *Innovación docente e investigación en educación y ciencias sociales* (pp. 35-42). Madrid, España: Dykinson S.L.
- Ureña, J.P. et al. (2017). Collaborative and active learning through web 2.0 tools applied in higher education. In 12th Iberian Conference on Information Systems and Technologies (CISTI), Lisbon, Portugal.
- Valencia, G.M. (2020). Web tools 2.0 and its influence on academic performance in collaborative learning environments: An empirical study. In 15th Iberian Conference on Information Systems and Technologies (CISTI), Seville, Spain.
- Valencia, G.M., & Rodríguez, R.G. (2019). A bibliographic review of empirical studies of Web 2.0 tools for collaborative learning: wikis, blogs, social networks and

multimedia repositories. *RISTI. Revista Ibérica de Sistemas e tecnologías de informacao*, E18, 497-516.

Vaquerizo-García, M. (2011). Teaching-learning with Web 2.0 and 3.0. *Revista de Comunicación Vivat Academia*, XIV(117), 116-121.

IV

University Curriculum and Transformative Professional Training

Gerber Sergio Pérez-Postigo
Mónica Nelly Camargo-Cuéllar
Carlos Juan Rojas-Galarza
Pedro Estanislao Mango-Quispe

Introduction

Public universities increasingly attract a greater number of students in our country. Therefore, they face different challenges that range from the possibility of having modern facilities, and in an emphatic sense, to training itself in skills according to the quality standards demanded by globalization as an international benchmark.

This research starts from the following questions: What is the role of the current university curriculum?; does the university curriculum respond to the demands of society?; what should the transformative university curriculum look like? In this sense, the curriculum acquires relevance as long as it is contextualized and responds to the training needs and

interests of university students, in order to act competently in immediate reality.

Interacting with the nearby environment in an ideal way is a crucial aspect in a competency-based approach, it requires verifying that, from training, universities ensure that they have a study plan that finds a grip in their own reality for the demonstration of knowledge, skills and attitudes as evidence (Turpo-Gebera, 2016). However, an aspect to be addressed from the educational model will be the ability to project with the graduates of the different professional careers. It is assumed from the university, to have economic relevance, that is, to provide training that directly links its graduates with the productive sector and with the labor market (Espinosa, 2018), which is why the university must collect the demands of entities and companies as strategic allies.

For this reason, the need to review curriculums and study plans aimed at strengthening the university student, leadership and decision-making in situations of uncertainty with the long-awaited innovative component is stressed.

Then, faced with the questions indicated above, a concern arises, how to specify a transformative university curriculum and that, from its conception, there are transversal guidelines to all the careers oriented to the development of generic

competences, the same that rebound in practice, in such a way that there is a dialogue between theory and praxis in authentic learning scenarios.

Faced with this, it was considered necessary to collect answers around the following questions: Do you know the curricular approach of the educational model of your university?; do you know the philosophical and epistemological bases of the university curriculum?; do you consider that the educational model of your university promotes the development of the competences of future professionals?; are the courses that you teach the product of your scientific research?; how much do you incorporate from the educational model in your teaching practice?; do you consider that your course takes into account the needs and interests of university students?; do you consider that the contents proposed in your courses are applicable to the work environment?

The descriptive research has been approached under a mixed approach (quantitative-qualitative), the technique used for the research were the survey with its instrument, questionnaire; and to achieve greater depth, the professor was asked to issue a written justification for each marked answer. The open responses were transcribed and analyzed using ATLAS.ti program as support; with this, findings were identified that aroused interest to be interpreted, in some cases, by the different aspects that are part of the implicit theory that

university professors have regarding the central issue to our research.

In the discussion, the graphs obtained as a result of the answers issued by the university professors are shown. The percentages are shown according to each of their statements and the findings that have emerged during the substantiation of said responses.

Philosophical and epistemological bases of the curriculum

The philosophical foundations are the principles that explain, guide, give meaning to the curriculum and establish a purpose to the entire curricular process; it is about establishing strong ideas that not only explain the entire educational system, but also each of its parts, including the curricular design.

The philosophical helps to guide life, to know who we are, why we are as we are and where we are going. The philosophical has to do with our way of life, our problems and projects and, above all, with our organization of thought, decisions, demands and alternatives. The philosophy provides parameters on the idea of a human being that must be formed thus responding, for the purposes of education, to democratic processes, the principles assumed and the objectives

established for the construction of the person/ethical professional.

Borrowing, for the case, two important concepts of Antonio Gramsci, referring to popular philosophy and systemic philosophy, it would be said that critical thinking of society in general is popular critical thinking that works in the common sense of people who find in the “space of reasons” real and potential contradictions not previously evidenced. It is a thought characterized by being scattered, unsystematic and superficial, but which, nevertheless, effectively guides people’s critical behavior; whereas systematic critical thought is the thought elaborated by the organic intelligentsia of society characterized by being coherent, deep and transcendent, although directed only to certain circles of critical social thought composed of researchers, academics, politicians and specialists in different fields of social and cultural life (Pérez et al., 2020).

This way of non-institutional critical thinking is prior to the university institutional critical thinking and is included in the university institution in two ways: the way of the factual academic subjects (students, professors, administrative) with a certain social experience; and the rational reactive way in teaching performance with the ability to detect contradictions in structures apparently immune to social change (Turpo-Gebera, 2013). Regarding factual academic subjects, critical thinking is the subjectively mediated active reflection of the

contextual critical culture in the university, generally articulated with the problems of the social world that require a renewed and radical interpretation, or with the problems of the university itself, translated into the language of ideology, politics and science, such as the entire process of reformist struggle of the students at the beginning of the previous century.

In the academic path, the inclusion of systemic critical thinking in the university has acted at the hands of the most advanced teaching intelligence that has influenced student education with new paradigms, ideas and visions about reality, awakening a reformist and emancipatory awareness and will. The existence, however, of a lucid non-university intelligentsia that has also greatly influenced the configuration of a non-institutional critical thought cannot be neglected, Jose Carlos Mariategui (1894-1930) and Victor Raul Haya de la Torre (1895-1979) are some representatives in the Peruvian case.

The curriculum from a critical approach

In every curricular approach there are theoretical-practical and methodological positions that guide the development of the curriculum. A curricular ideology is immersed in every approach as a set of assumptions on different educational aspects, elements that are visualized within the curricular structure and the educational projection as a purpose that derives from all this.

A theoretical position is adopted for the characterization and configuration of the elements of the curriculum and their respective interaction in the process of curriculum development.

The understanding of the curriculum is necessary as a cultural and social construction and not as an abstract concept (Rodrigues, & Bianconcini, 2020), especially when we find ourselves in situations of change and uncertainty that implies action and transtraining to seek a viable society. In a critical perspective, in addition to understanding the theory and managing to explain it in context, changes must be generated from one's own actions that facilitate interaction with society and its contribution to improvement. The criticism is projected to overcome some interests of an inconsequential nature for the benefit of society as a whole. But to place ourselves in this scenario, we must try to start from the training of human beings with whom it will be possible to achieve these objectives.

Critical thinking involves understanding, evaluating, and solving. It involves self-evaluation, thinking about the thought (meta-thought) and being sure not to go, without sufficient basis, to conclusions. In higher education, critical thinking is one of the key elements in achieving a sustainable society. For this reason, it has to

be educated in criticism, in a new way of thinking, evaluating and doing. (Bezanilla-Albisua et al., 2018, p. 95)

In the educational field, action and reflection, theory and practice, are unified in a dialectical process. Social reality provides valuable inputs for reflection and the setting of challenges that will have to be overcome as long as a critical stance with proactive capacity is assumed. Thus, criticism demands breaking with the alleged neutrality of the educational system, this includes that professors assume a reading of the world in order to “point out that there are other readings of the world different from their own and even antagonistic on certain occasions (Freire, 2005c)” (Toruño, 2020, p. 12).

Regarding the above, it is expected that students develop cognitive processes to understand, evaluate (within the framework of ethics and morals) and resolve so that they are in a position to make decisions and support them. However, the development of activities must consider challenging situations, banish those that are not functional to the context and empower the professor to promote a culture of participation with a reflective and democratic sense in the classroom, although this challenges their own practice.

Educational model in higher education

The educational model in higher education is based on the conception of a competency curriculum. The main features of the educational model that are configured more effective for the new expected learning outcomes (Ramírez-García, González-Fernández, & Salcines-Talledo, 2018) are: a model focused on learning to learn; collaborative learning, focused on the learning process; a strategic evaluation, among others; same ones that provide university students with different knowledge tools and procedures to know how to act in an ideal way.

This new training model on which the different study plans are based is considered a preparation for life and supposes the creation of “a significant link between school, university and life” (Ramírez-García, González-Fernández, & Salcines-Talledo, 2018, p. 264). In this sense, the university student demonstrates her performance in a field of pre-professional or work practices that constitute reality itself.

The curricular model adopted as a project by an institution (Zabalza, 2012), is one that allows a systematic and comprehensive sense to be attributed to the training of its students, attending not only to their training needs, but also to the demands of society. Its design means consolidating itself as a public document, known to members of the educational community. Precisely for this reason, it becomes

a commitment that must be assumed by each agent from the role they play in the institution.

The role of the current university curriculum

The Peruvian university in this XXI century is an institution with great challenges typical of Latin American society, they develop within the parameters of an economy dependent on international financial institutions of the greatest powers prescribers of the free market. The Peruvian case shows that, despite the efforts, there are still many gaps in the field of technological and scientific development, which does not supply its own domestic market.

In the description indicated in the previous paragraph, what is the role that the Peruvian university is fulfilling? The question is legitimate because it is considered that the fundamental factor for the development of countries is education; and immediately the contribution of the universities through scientific research in the economy and the needs of quality professionals for the respective social development (Turpo-Gebera et al., 2020).

As can be seen in this study, the interest in diagnosing the educational demands of the university student is glimpsed and enhancing both their philosophical training, as well as the

need to become aware of the existential direction of their being and act as a human in the face of contemporary problems that underlying. That is, to train as professionals for the concrete development of their profession as part of the role to be fulfilled in the economic field, and simultaneously, to realize the integral development oriented to the exercise of a metacognition regarding their role as a citizen and professional, within the framework of an evidently economic-social hierarchy with effects on the educational, cultural and political aspects.

This university institutional concern collects a state of the art about scientific research, curricula, resources (laboratories, workshops, machinery, etc.), the levels of development of teaching-learning (theory and practice) and the respective pre-professional vocations.

The academic diagnosis allows the identification of different aspects of reality for the projection of the core of the university curriculum with the scientific contents selected from the scientific and technological advances that are constantly being developed by the scientific community at the national and international level.

Assuming a critical and transformative curricular approach from the university implies a work of teams of professors by

specialties to develop a dialectical mesh of cognitive processes, that is, to consider, according to the nature of the students' profession, the coherent integration of the subjects of general and specialty courses, as well as art, physical culture and pre-professional practices aimed at the comprehensive training of future professionals; now in a transformative curriculum, it implies giving a substantiality to the academic structure that signifies a changing impact on the socio-economic development of the country from the transformative training.

This conception of a transforming university curriculum makes imperative the suitability of the pedagogical and didactic practice of all university professors with regard to the scientific approach of teaching-learning activities on the basis of improving the quality of research in each of subjects that involve students constantly. Finally, these specific ideas are established: having three angles that are going to be the axes of training with a vision of profound change in the economic structure of the society in which the graduated professionals will work. This triangle has the following axes: (i) the investigative; (ii) the curricular; and (ii) the theoretical-practical didactic. A curriculum will be meaningful and dialectical to the extent that scientific research is reflected in the curricula and they promote didactic practice.

Another aspect that has been considered in this research is the methodological design. In that sense, we assume that the

scientific method is the planned way to discover the properties of the object of study; it is a reasoning process that tries not only to describe the facts but also to explain them; it combines induction and deduction, that is, reflective thinking to solve a research problem (Hernández, Fernández, & Baptista, 2006) and communicate the results.

The research methodology relates quantitative-qualitative aspects (mixed); the first allowed us to apply an instrument: an online questionnaire according to the Likert scale, the intraining of which was processed using the Excel program. On the other hand, in the qualitative, the questions had a section for complementation in order to provide feedback on the answers provided by the professors in the choice of the alternative proposed in the Likert scale, it is a descriptive work in which a questionnaire was applied sent via e-mail, WhatsApp and Facebook groups; this was answered and sent to the data to concentrate the intraining. The data was concentrated in tables through the Excel. The open responses were transcribed and analyzed using the ATLAS.ti program as support, this allowed "to show interconnections between the data and other data sources" (Álvarez-Gayou, 2010, p. 198).

The surveys were individual in nature and the professors involved were selected for their willingness to participate in the research (intentional sampling), with the participation of 166 professors from different state universities in the country. The questionnaire was developed in the free time that each of

them has (asynchronous), the time allocated for the collection of the planned data took around five calendar days. The sample, as already indicated, was made up of 166 professors who were intentionally chosen with the criteria of coexistence (Turpo, & Acuña, 2019), the sample was predetermined and is constituted through the consent to participate voluntarily in the research, remembering the safeguarding of anonymity during all activities.

Results of the investigation

In Figure 1 the responses are mostly recorded between the yes, and partially level; which implies a knowledge of the guidelines that are adopted institutionally and that guides the teaching practice, including the university's commitments to society. However, the notoriety in the category partially makes us realize that we must try to spread the curricular model through different mechanisms to achieve full understanding of each of the actors in the university community.

Research carried out in recent years shows that most professors do not have the skills necessary to carry out their teaching task, generally due to ignorance of the model of their university and little knowledge about effective teaching practices (Pineda, & Duarte, 2020).

In light of the theory, we could identify that the knowledge of the educational model, not only provides parameters and opportunities for reflection; but, also, its knowledge by the institution allows an adequate alignment with the mission and vision of the institution and the response to the demands of society with its particular stamp that it prints.

Regarding the result in coherence with the question about the knowledge about the philosophical and epistemological bases, in Figure 2 the answers indicate that the majority of professors are unaware of the philosophical and epistemological bases of the curriculum; this situation reflects that the curricular proposal does not have the adequate support in its formulation, in contrast to the existing theory that points out the importance of taking into account the aforementioned sources.

A crucial aspect is to recognize the educational system as an ideological and participatory apparatus in the reproduction of social relations. It is expected then to address the existing problems in reality, questions and values democratic necessary for coexistence. In this sense, Figure 3 shows us which have been the terms linked to the philosophical and epistemological foundations, as an approximation we can indicate that the majority of professors indicate that they direct their teaching to scientific and humanistic training; however, if we look at the graph we can indicate that a

significant number of professors give inconsistent answers or do not answer this question.

It is evident that we need to have a clear definition of the conception of learning, which must be closely related to the knowledge of the academic discipline of reference itself, taking into account the different scenarios that emerge within society that challenge the university student to intervene accordingly to his own conviction expressed in the result of his training.

A relevant aspect that is attributed to the curriculum is its sense of contextualization that allows it to respond to the training needs and demands of its students. The competences, for Tobón (2007) have as one fundamental characteristics, the training that is based on the context. In that sense, it is worth saying that it is in this scenario that competencies are valued through the performances that must be demonstrated in the field of professionalization.

In a complex hermeneutical perspective, the context has three types according to intentionality. The primary context is highlighted as the field of discourse production, in the sense that the theoretical understanding is sought to explain some phenomenon present in the context. The secondary context is delimited by the reproduction of the discourse, the same one

that has already been internalized and it is hoped that it can be transmitted in another setting. Finally, a tertiary context is indicated, when there is a need for the social relocation of the field of discourse.

In this sense, it can be observed that the context increases the level of complexity to the extent that it finds ways to expand the discourse from disciplinary ideals, up to relationships with the family and/or social environment. For this reason, the work space requires graduates with the capacity for initiative, a proactive and reflective attitude to solve problems that arise and are erected in the social space. However, from undergraduate training, it will be necessary to attend to different aspects that make up these demands and needs that equip the future professional to act competently. Part of a massive affirmative response located with 78.79 %, in which it is indicated that the courses respond to the interests and needs of the students.

The percentages, aspects such as the clear purpose in front of "the professional to be trained" (43.08 %) assumed and recognized by each university professor in their exercise that combines their specialty and awareness of pedagogical knowledge are displayed backed by the years of experience he has in the university environment.

In the same way, pointing out as a result that, "takes into account society" (40 %) and "is the first contact" (4.62 %), can place them in the tertiary context, since there is a link or approach to the society and the need to have graduates who assume transformative leadership for each of the areas that demand timely attention.

Others such as the need for empathy (6.15 %), interpreted as a trait that sensitizes the future professional with their environment and needs that emerge from scientific and technological advances, form a kind of commitment to an ideal preparation of the performances to be demonstrated in the field of action in the commitment of quality and employment opportunity.

However, despite the encouraging results, it can be seen in Figure 6, 21.8 % that places these responses at a partial level; within this total, it is possible to identify 34.29 % with the need to update the syllabus. This document, which is specified in a third level of curricular concretion, establishes the content to be developed in the different units throughout a semester. Its design acquires relevance to the extent that its proposal implies the development of skills in accordance with the current demands of society.

It then suggests a framework where, in addition to the contents, the strategies with which the professor-student interaction is generated are visualized and, it explains how to collect data on the performance of the students and the conceptions that underlie the act itself of evaluate.

Perhaps banishing a traditional conception of design is a prevailing and recurring task of the teaching exercise, aimed at the integral training of students (concepts, procedures and values) that places it in better possibilities for interaction with the environment that challenges it.

Within the curricular design by competences, the training programs are organized based on the competencies to be developed, being established on the basis of comprehensive terminal goals and not only on the accumulation of knowledge, some of them inert. Regarding the competences, we can mention that it is necessary to increase the effort of higher education by considering the competencies related to the student's autonomy and their reflective capacity (González, Pérez, & Martínez, 2018).

Regarding the statement, about the need for updating and the commitment to the student's confidence, perhaps it means attending to these learning purposes and that their empowerment allows the student to function with greater

security and autonomy in the face of the uncertainty typical of professional practice. With this, reduce the margins of inefficiency on the part of each of the graduates in the labor field and bet on identifying the relevance of the non-priority that must be attended by showing efficiency and suitability in their actions.

Along the same lines, the results show that there is a concern about creating spaces for dialogue with students, it is not about focusing efforts on the accumulation of disciplinary knowledge and their memory reading of these, but rather, it is believed spaces for reflective dialogue around them, in such a way as to generate new learning aimed at professional projection.

An aspect that arises as a result on a smaller scale, is referred to the lack of resources, this could be biased because our sample is made up of a teaching population from the state sector whose universities convene low-income student populations (there are no pensions) who find in these institutions an opportunity to access higher education.

The affirmative results (75.3 %) obtained in Figure 7, regarding the applicability of the contents to the work environment, shows a concern not only to attend to the selection of contents, but, with their learning, students find themselves

with the possibility from planning to reach perhaps more complex ones, even the incorporation of ICT and the management of autonomous learning could be strengthened in the ideals to be achieved.

Access to the Internet even demands the demonstration of ICT skills that future professionals must demonstrate, which goes beyond searching data from repositories to communicating results of research carried out by groups of university students. In addition, it means knowing different tools to access and interact with knowledge. However, despite the effort of university professors to apply strategies incorporating these open source tools, it implies on the other hand that prior knowledge allows them to be able to provide this support to the student in their own training.

As can be seen in the graph of 100 % of respondents who said yes on Figure 7 and by categorizing the responses, it is found that the highest frequency is related to professors who indicate that their courses have application in the context, which is equivalent 30.65 %; next we have that 28.23 % indicate that the contents of their courses are closely related to the work environment; 21.77 % indicate that the contents of their subjects are required by the profession; 12.10 % indicate that the contents of their subjects are based on professional training; 4.82 % indicate that the contents of their subjects seek to transform reality; 1.61 % indicate that the contents of their subjects are periodically updated and finally

0.81 % indicate that the contents of their subjects are complete and related to all aspects.

We can infer that the majority of professors indicate that the contents of the subjects are useful for the aforementioned reasons. In addition to the above that supports the statement, it is viewed as applied in the context (30.65 %), the existence of the work environment (28.23 %) and the profession requires it 21.77%.

Of the professors who indicated that the contents of their courses are partially applicable in the work environment, the distribution of frequencies was as follows: 25.71 % indicate that it is necessary to improve in the management of structures in response to the modernization of the company; 17.14 % indicate that the syllabus of their subjects need to be updated; a percentage of 20 % indicates that the contents are very theoretical; 11.43 % indicate that the contents of their subjects are under the competence approach; 8.57 % indicate that the contents of their subjects are of interest and of occupational need; 5.71 % indicate that the contents of their courses take reality into account; and finally with 2.86 % we have four aspects: there must be a greater relationship between staff and authority, state policies must be established, they also point out that it is a real situation and the time they have to develop the content (Figure 9).

To conclude, we can answer the question that is the reason for our research, we reaffirm that the most effective way will be to bet on proposing guidelines for a curriculum that guarantees the training of critical and purposeful professionals that contributes to the transformation of our society, this being the general objective of our research. Through this we can point out that it will be necessary for said curriculum to contemplate pedagogical activities taken “from reality to reality”; likewise, that the challenges of the profession are present during university training, through a methodology that promotes to leadership, creativity, innovation and awareness about what happens in reality in order to transform it. However, this will be possible while the didactic discourse provides moments for reflection and critical thinking oriented to decision-making within the framework of morals and ethics.

Conclusions

For the university, in the process of training future professionals, the curriculum constitutes the fundamental instrument, since it establishes the fundamental pillars that support the conceptual, philosophical and epistemological approaches, which must be of management and mastery of all university professors. The possibility of ensuring the dissemination mechanisms of the university educational model acquires an imperative meaning.

Higher education institutions have reached a critical point in their long evolution as a global and local producer and disseminator of knowledge. The curriculum can be understood as all the learning that plans and guides a teaching or training organization, which is carried out individually or in groups, inside or outside the classroom, in a specific educational institution. It is necessary that universities, as a professional training institution, contribute to human and social development through the education that it offers through a curriculum, which should be derived from a process of dialogue on the ideologies, philosophies and epistemologies of knowledge and learning.

The curriculum must be grounded in the context in which learning takes place, and experiences leading to broader generalizations and the possibility of more meaningful and operational transfers must be contextualized.

With this research work, it has been possible to determine the ignorance on the part of an important sector of professors about the philosophical and epistemological bases of the curriculum, a situation that must be approached with greater dedication, initiating a rethinking of the nature and development of the curriculum, taking into account the impact on the ethics and values of teaching and learning.

It is necessary to establish the fundamental guidelines of a curriculum, which guarantees the development of a quality education, with a humanistic, scientific, democratic and inclusive approach, in a very complex and diverse society in different aspects.

References

- Álvarez-Gayou, J. (2010). *Cómo hacer investigación cualitativa. Fundamentos y metodología*. Ciudad de México, México: Paidós.
- Bezanilla-Albisua, M. et al. (2018). Critical Thinking from the Perspective of University Teachers. *Estudios Pedagógicos*, 44(1), 89-113.
- Espinosa, M. (2018). Recent trends in university connections with the environment. Challenges related to comprehensive social relevance. *RIES. Revista Iberoamericana de Educación Superior*, 9(26), 110-129.
- González, N., Pérez, J., & Martínez, M. (2018). Development of Cross-sectional Competences at Universidad de Murcia: Strengths, Weaknesses, and Proposals for Improvement. *RIDU. Revista Digital de Investigación en Docencia Universitaria*, 12(2), 88-113.
- Hernández, R., Fernández, C., & Baptista, P. (2014). *Metodología de la investigación*. Ciudad de México, México: McGraw-Hill Interamericana Editores, S.A.

- Pérez, G. et al. (2020). Systems based on critical thinking for social change from the university. *RISTI. Revista Ibérica de Sistemas e tecnologías de informacao*, E31, 121-136.
- Pineda-Alfonso, J., & Duarte, O. (2020). Pedagogical Conceptions of University Teaching: A Starting Point for Teacher Change. *Educación XX1*, 23(2), 95-118.
- Ramírez-García, A., González-Fernández, N., & Salcines-Talledo, I. (2018). Generic Teaching Competences in Education Degree Programs: The Vision of the University Faculty. *Estudios Pedagógicos*, XLIV(2), 259-277.
- Rodrigues, A., & Bianconcini, M. (2020). Narrative Curriculum and Technologies in Teacher Training: Theoretical and Conceptual Reflections. *Praxis & Saber*, 11(25), 205-226.
- Tobón, S. (2008). *Formación basada en competencias*. Bogotá, Colombia: Ecoe Ediciones.
- Toruño, C. (2020). Conceptual frameworks for a critical curriculum: A proposal from Brazilian, Spanish and American critical pedagogy. *Revista Actualidades Investigativas en Educación*, 20(1), 1-27.
- Turpo-Gebera, O. (2013). Positioning for Teachers of Science in the Evaluation of Learning: An Approach to its Subjectivities. *Educación Química*, 24(2), 230-236.

- Turpo-Gebera, O. (2016). Curriculum of scientific competition in Peru and Portugal. *Comuni@cción*, 7(2), 15-26.
- Turpo, O., & Acuña, L. (2019). *Investigación formativa y formación de investigadores en educación I*. Arequipa, Perú: Editorial UNSA.
- Turpo-Gebera, O. et al. (2020). Formative and organizational systems of general studies in Peruvian universities: Approaches to their senses. *RISTI. Revista Ibérica de Sistemas e tecnologías de informacao*, E31, 161-177.
- Zabalza, M. (2012). Reconstructing Higher Education Curriculum: the eternal institutional challenge. *Revista de Docencia Universitaria*, 10(3), 17-48.

V

Factors associated with levels of post-traumatic stress in Peruvian nurses exposed to COVID-19

Reyna Ysmelia Peralta Gómez
Jesús Roger Chávez Parillo
Irma Stephani Rodríguez Marín
María Christeen Chávez Peralta

Introduction

The pandemic caused by the SARS-CoV-2 virus (COVID-19) has represented a challenge for all countries on the planet. The causative agent is a virus of the Coronaviridae family. The form of infection of this pathogenic agent is through the airways and/or by direct contact with the mucous membranes, causing a serious fatal acute respiratory syndrome (Yen, Rei, & Shin, 2020). On December 31, 2019, the World Health Organization —WHO— launched the global alert on this disease originated in the Wuhan region, Hubei province, China. Immediately, the viral infection spread outside its confines (Yen, Rei, & Shin, 2020), affecting the European continent, with special severity to the countries of Italy (Riello et al., 2020) France and Spain (Ceylan, 2020). On March 11, it was declared a pandemic for the WHO.

In Latin America, the first case was confirmed on February 25 in Brazil (Rodríguez-Morales et al., 2020); the spread was of such magnitude that on March 26, 10,858 cases had been confirmed throughout the South American region, with 203 deaths, establishing a fatality of 1.87 % (Rodríguez-Morales et al., 2020). In Peru, the Ministry of Health reported the first case on March 6, so the government decreed a state of emergency and ordered quarantine as a security measure on March 15. Faced with this situation, Social Security ordered the development of a plan for the surveillance, prevention and control of COVID-19.

SARS-COV-2 has posed unprecedented challenges for health, economy, education, etc.; however, one of the effects to which less attention has been paid, has been the psychological impact of health professionals, who had a host of emotions related to fear for their health and that of their family, work overload, lack of personal protective equipment, etc. (Wankowicz, Szylinska, & Rotter, 2020). In similar events such as the SARS epidemic of 2003, significant levels of anxiety and stress were recorded that affected work and sleep quality in health personnel (Lai et al., 2020). As has been recognized by the Director General of the WHO, a significant number of nurses are on the front line, therefore, are the most exposed to the risk of infection by COVID-19 (Gheysarzadeh et al., 2020). The impact is not only limited to their physical health, but also to their mental health (Song et al., 2020).

Post-traumatic Stress Disorder —PTSD— has been described as one of the most serious mental health impacts secondary to pandemic outbreaks (Preti et al., 2020). As described by Eric Kandel (2018), PTSD is linked to the fear caused by having lived or observed events that put life in serious danger, such as assaults or physical abuse, wars, terrorist attacks, violent deaths or natural disasters. According to Joseph LeDoux (2016), PTSD is characterized by recurring memories and thoughts of past traumatic events, leading to dissociated feelings, sleep problems, and hypersensitivity.

In nursing personnel, there is a high risk of developing psychological disorders related to COVID-19, such as PTSD, which could affect their general well-being (Xiao, Luo, & Xiao, 2020). The factors that influence the PTSD in nurses are the workplace, labor relations and the pain of caring for vulnerable people (Schuster, & Dwyer, 2020). The physical and psychological impact on these professionals is further aggravated by social panic, long working hours, exhaustion, the risk of infection and closeness to death, whose manifestations are fear, fatigue, discomfort, impotence and anxiety (Sun et al., 2020).

Since we did not find studies on PTSD symptoms in Peruvian nurses exposed to the coronavirus, we asked ourselves the following question: Is there an association between sociodemographic factors and PTSD levels in nurses working in COVID and non-COVID hospitals of the Social Security of Arequipa? The general objective was to determine if these factors are associated with PTSD levels. It is described technically and methodologically what has been studied in a sequential way, starting with the theoretical support related to PTSD, followed by the symptoms and related factors.

Post-traumatic stress

Stress is an immediate and nonspecific psychobiological response to a threatening situation (Fink, 2017). Physiologically, it is characterized by the secretion of two hormones: adrenaline and cortisol (Aschbacher, & Mason, 2020). The secretion of the first triggers a series of organic responses, such as tachycardia, tachypnea, arterial hypertension, increased muscle tone, etc. The secretion of cortisol, which occurs seconds later, stimulates the release of glucose into the blood. These effects seek an efficient physical and mental response to face danger and eventually escape (Fink, 2016; Redolar, 2014). It has been shown that these physiological phenomena occur in the same intensity against different agents that the subject perceives as threats to his/her life (Sapolsky, 2013). Likewise, the anticipation of a threat can also trigger symptoms of stress and anxiety (Bear, Connors, & Paradiso, 2015).

There is an extremely intense modality called PSDT, which arises as a result of the person's exposure to a particularly serious event, with a high negative, violent or accidental impact; whose traumatic memory triggers a deep sense of anxiety and fear registered in the brain amygdala and in the memory center or hippocampus (McEwen, 2016).

The SARS-COV-2 virus pandemic has put everyone at risk of imminent death, generating very high levels of stress and anxiety, with symptoms of PTSD in survivors (Liu et al., 2020). Health personnel have endured not only the painful and frequent experience of deaths and the pain of losing co-workers, but also the high risk of infection, aggravated by sociodemographic factors such as age, sex, work experience (Serrano et al., 2020), comorbidity, etc. It is not known, however, if this situation is sufficient to cause the appearance of PTSD in Peruvian nurses.

By virtue of the situation described, we carried out the present study in a sample of 88 nurses out of a total of 114, who worked in the COVID and non-COVID hospitalization areas of three Social Security hospitals in Arequipa (Peru), during the months of July to September 2020. This is a descriptive, correlational, cross-sectional study. The instruments used were the "Sociodemographic Inventory" and the "Post-Traumatic Stress Symptom Scale" —PSSS—, adapted from

Sandin et al. (2020), according to the diagnostic criteria of the DSM-5. This instrument consists of three dimensions: recurrent distressing memories and dreams; physiological reactions and psychological discomfort; social and work deterioration. The PSSS Cronbach's alpha reliability index was 0.776. The instruments were applied virtually, with prior informed consent. SPSS 24.0 software was used for data processing. The association of the variables was determined using the Chi-square test of independence.

Symptoms and levels of post-traumatic stress

PTSD manifests itself through various signs and symptoms that cause persistent psychological and physical discomfort over time. Direct exposure to coronavirus has been found to cause PTSD symptoms in 22 % of Italian nurses (Riello et al., 2020), while the prevalence of PTSD symptoms in Chinese nurses was 21.4 % (Allan et al., 2020). There is growing recognition of the significant psychological impact generated by caring for people with COVID-19, given the immense pressure they are under (Greenberg et al., 2020). The symptoms found in the study population were classified in three dimensions, which are presented below:

Table 1. Study population according to symptoms of PTSD due to exposure to COVID-19

Dimension 1:	Never	Rarely	Most of the time	Always	Total
Recurring Distressing Memories and Dreams	fi %	fi %	fi %	fi %	
Have you had unwanted, unpleasant memories about the coronavirus?	8 (9.1 %)	46 (52.3 %)	29 (33.0 %)	5 (5.7 %)	88 (100 %)
Have these memories of the coronavirus caused you to feel overwhelmed or burdened?	10 (11.4 %)	42 (47.7 %)	33 (37.5 %)	3 (3.4 %)	88 (100 %)
Have you tried to avoid those pesky thoughts or memories about the coronavirus?	26 (29.5 %)	46 (52.3 %)	5 (5.7 %)	11 (12.5 %)	88 (100 %)
Have you had nightmares or been unable to sleep due to images of the coronavirus?	37 (42 %)	38 (43.2 %)	12 (13.6 %)	1 (1.1 %)	88 (100 %)
Total	81 (92 %)	172 (195.5 %)	79 (89.8 %)	20 (22.7 %)	
Dimension 2:	Never	Rarely	Most of the time	Always	
Intense physiological reactions and psychological distress	fi %	fi %	fi %	fi %	
Have the memories of the coronavirus produced physical reactions such as	48 (54.5 %)	27 (30.7 %)	9 (10.2 %)	4 (4.5 %)	88 (100 %)

sweating or rapid heartbeat?					
Have some disturbing images about the coronavirus invaded your mind?	28 (31.8 %)	41 (46.6 %)	14 (15.9 %)	5 (5.7 %)	88 (100 %)
Total	76 (86.4 %)	68 (77.3 %)	23 (26.1 %)	9 (10.2 %)	
Dimension 3:	Never	Rarely	Most of the time	Always	
Social and labor deterioration	fi %	fi %	fi %	fi %	
Have these thoughts memories or images about the coronavirus altered your family relationships or your relationships with friends?	32 (36.4 %)	36 (40.9 %)	13 (14.8 %)	6 (6.8 %)	88 (100 %)
Have these thoughts memories or images about the coronavirus altered your work or activities of your daily life?	28 (31.8 %)	36 (40.9 %)	18 (20.5 %)	6 (6.8 %)	88 (100 %)
Total	60 (68.2 %)	72 (81.8 %)	32 (36.4 %)	12 (13.6 %)	

Table 1 shows the PTSD symptoms in its three dimensions. In the first, it was found that 52.3 % of nurses rarely had unpleasant memories about the coronavirus and did not try to avoid upsetting thoughts or memories, while 37.5 % almost always felt overwhelmed when reliving these memories. The analysis of the second dimension shows that 10.2 % almost always presented sweating or tachycardia and

15.9 % perceived disturbing images about the coronavirus. In the third dimension, 14.8 % indicated that thoughts, memories or images about the coronavirus almost always altered their family and friends relationships, in the same way 20.5 % saw their work affected.

Post-traumatic stress levels

The PTSD is measured in levels according to the frequency of presentation of its symptoms. For this study it was classified as mild, moderate, and severe; based on distressing memories and dreams, physiological reactions, intense psychological distress, and social and work impairment.

The findings reveal that the level of PTSD in nurses who worked during the COVID-19 pandemic in Arequipa Social Security hospitals was mild in 43.2 % (n = 38), moderate in 19.3 % (n = 17) and severe in 28.4 % (n = 25). Only 9.1 % (n = 8) did not register any level of PTSD. It is worth paying attention to the results of the severe level, since the effects of these symptoms in the future can translate into PTSD.

Factors associated with levels of post-traumatic stress

In previous epidemics (SARS, MERS, Ebola, and AH1N1 influenza), there was a high combined prevalence of anxiety (45 %), depression (38 %), stress disorder (31 %), exhaustion (29 %), and PTSD (19 %) in health personnel (Ricci-Cabello et al., 2020). The main factors that predict complications in mental health in nurses were: being a woman, young, with little work experience and working on the front line (Bassi et al., 2020). The following table details the results found in this regard:

Table 2. Sociodemographic factors associated with levels of PTSD in Peruvian nurses exposed to COVID-19

Sociodemographic factors	Total	PTSD level by exposure to COVID-19				p-value
		Without PTSD	Mild	Moderate	Severe	
Age	fi %	fi %	fi %	fi %	fi %	p=0.011
From 20 to 30 years	28 (31.8 %)	2 (2.3 %)	5 (5.7 %)	12 (13.6 %)	9 (10.2 %)	
From 31 to 40 years	22 (25.0 %)	2 (2.3 %)	16 (18.2 %)	1 (1.1 %)	3 (3.4 %)	
From 41 to 50 years	11 (12.5 %)	1 (1.1 %)	4 (4.5 %)	2 (2.3 %)	4 (4.5 %)	
From 51 to 60 years	11 (12.5 %)	1 (1.1 %)	7 (8.0 %)	0 (0.0 %)	3 (3.4 %)	
More tan 60 years	16 (18.2 %)	2 (2.3 %)	6 (6.8 %)	2 (2.3 %)	6 (6.8 %)	
Sex						p=0.009
Female	77 (87.5 %)	6 (6.8 %)	29 (33.0 %)	17 (19.3 %)	25 (28.4 %)	

Male	11 (12.5 %)	2 (2.3 %)	9 (10.2 %)	0 (0.0 %)	0 (0.0 %)	
Second Specialty						p=0.001
Yes	81 (92.0 %)	5 (5.7 %)	38 (43.2 %)	14 (15.9 %)	24 (27.3 %)	
No	7 (8.0 %)	3 (3.4 %)	0 (0.0 %)	3 (3.4 %)	1 (1.1 %)	
Service you work for						p=0.046
ICU COVID	22 (25.0 %)	1 (1.1 %)	5 (5.7 %)	5 (5.7 %)	11 (12.5 %)	
COVID emergency	25 (28.4 %)	1 (1.1 %)	13 (14.8 %)	5 (5.7 %)	6 (6.8 %)	
COVID hospitalization	20 (22.7 %)	5 (5.7 %)	7 (8.0 %)	4 (4.5 %)	4 (4.5 %)	
NO COVID services	21 (23.9 %)	1 (1.1 %)	13 (14.8 %)	3 (3.4 %)	4 (4.5 %)	
Comorbidity						p=0.024
Arterial hypertension (hypertension)	6 (6.8 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	6 (6.8 %)	
Age over 60 years	5 (5.7 %)	0 (0.0 %)	3 (3.4 %)	1 (1.1 %)	1 (1.1 %)	
Mellitus diabetes	4 (4.5 %)	0 (0.0 %)	2 (2.3 %)	1 (1.1 %)	1 (1.1 %)	
Obesity	4 (4.5 %)	1 (1.1 %)	2 (2.3 %)	0 (0.0 %)	1 (1.1 %)	
Cancer	2 (2.3 %)	0 (0.0 %)	1 (1.1 %)	0 (0.0 %)	1 (1.1 %)	
HT + Age > 60	2 (2.3 %)	1 (1.1 %)	0 (0.0 %)	1 (1.1 %)	0 (0.0 %)	
HBP + Cancer	1 (1.1 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (1.1 %)	
HBP + Obesity + Age > 60	1 (1.1 %)	1 (1.1 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	
Has no risk factors	63 (71.6 %)	5 (5.7 %)	30 (34.1 %)	14 (15.9 %)	14 (15.9 %)	

Table 2 provides an in-depth understanding of the factors associated with PTSD. Regarding age, it was found that 31.8 % (n = 28) were between 20 and 30 years old. The average age was 41 years (Q1= 25; Q2= 35; Q3= 55). Regarding the association between age and PTSD levels, it was found that nine nurses under 30 years of age (10.2 %) presented a severe level of PTSD, while twelve (13.6 %) had a moderate level. The statistical test shows that there is a significant association between age and PTSD levels ($p = 0.011$).

Regarding sex, the majority were women (87.5 %; n = 77). 28.4 % showed a severe level of PTSD, while 19.3 % had a moderate level. According to the Chi-square test, there is a significant association between sex and PTSD levels ($p = 0.009$).

Education has been an important factor in reducing EFA levels. Indeed, having a second specialty is associated with mild PTSD levels ($p = 0.001$). If we take into account the role and objectives of specialization for the management of various competencies, consistent with the quality of care for critical patients, with ethical-humanistic support, specialists would better face this challenge.

According to the service where they worked, it was found that the nurses from the COVID ICU and COVID Emergency

services were the ones who registered severe levels of PTSD. The Chi-square test of statistical significance of independence shows that there is an association between work service and PTSD levels ($p = 0.046$).

Finally, comorbidity, that is, the concomitance of pathologies present in the subject, acted as a determining factor in the symptoms of PTSD. HBP was the factor most frequently associated with severe PTSD levels. These levels are also associated with age over 60, diabetes mellitus, obesity, and cancer. With a significance level of 0.024, there is an association between comorbidity and PTSD levels. This fact allows us to affirm that those who do not have comorbidity are in better conditions to work in the face of a pandemic.

Critical analysis

As is clear, PTSD is a complex and debilitating disorder, which has far-reaching effects, such as anxiety, fatigue, and depression (Salmon, & Morehead, 2019). The work of nurses during the COVID-19 pandemic is physically and emotionally demanding, which is why they are more likely to develop PTSD symptoms. The ESEP instrument allowed to collect predominant symptoms of this type of stress, among which the distressing memories and dreams that almost always or always produced nightmares or insomnia in 14.7 % of nurses, a result that differs from that found by Pappa et al. (2020) in a systematic review, where they estimated a prevalence of

insomnia of 38.9 % among health workers in Europe and Asia, which is explained because the pandemic started earlier in these continents.

Physiological reactions, such as tachycardia and sweating, were almost always present in 10.2 % of the study population, while 15.9 % said that disturbing images about COVID-19 almost always invaded their minds. The symptoms of PTSD have been associated with the presence of anxiety states, understood as fear of the unknown (LeDoux, 2016), whose prevalence was 23.2 % in health workers during the COVID-19 pandemic (Pappa et al., 2020).

The aforementioned symptoms lead to social and work deterioration, evidenced by 14.8 % of nurses who manifested an alteration in their family or friends relationships, as well as 20.5 % who almost always perceived a change in their work or daily activities. It has been described that the physical symptoms, in addition to the anxiety and depression encountered, caused difficulties in carrying out their work and activities at home, as well as in their relationships with other people (Cunill et al., 2020).

Regarding the PTSD levels, we found that the majority of nurses had a mild level, while the moderate and severe levels were representative and worrying. In fact, it is striking that 25

nurses have frequently presented nightmares, insomnia, tachycardia and sweating, with a consequent alteration of their personal, family and work life.

Regarding the incidence of PTSD in nurses exposed to COVID-19 in China, the record was 16.8 % (Wang et al., 2020). Another study in China (Hao et al., 2020) revealed that the majority of doctors and nurses in a hospital with COVID and non-COVID areas did not show PTSD symptoms (78.9 %), while moderate levels (11,7 %) and severe (9,4 %) were found less frequently. These studies show that mild or no symptoms was predominant. However, the moderate and severe PTSD percentages were higher in our study population, probably due to their young age and little work experience.

The study of the factors associated with the level of PTSD allows to know the symptoms and plan early and effective interventions. Among the factors that were considered in the research, the average age of the participants was 41.47 years (min: 20, max: 65), data that differ with those of Wang et al. (2020), who found younger ages, ranging between 29 and 40 years, with an average of 32 years. This fact is because, although the Peruvian state decreed that health personnel over 60 years of age should stay at home, there were those who decided to continue working voluntarily. The association found between the level of PTSD and age is consistent with the findings of Karatzias et al. (2020) for the population of Ireland; in the same way, prominent neuroscience studies

show that the younger the person, the greater the risks of developing PTSD (LeDoux, 2016).

Regarding sex, the majority were women, data that coincides with various studies (Li, Zhou, & Xu, 2020; Riello et al., 2020), since the nursing profession has historically been performed by them. This factor was found to be significantly associated with PTSD levels. These results coincide with Wang et al. (2020) who demonstrated that the male gender is associated with lower levels of PTSD in Chinese nurses. Kandel (2018) states that women are generally more likely to develop PTSD compared to men, at a rate of 10 women for every 4 men, due to genetic predisposition and environmental interaction.

Specialization would be a factor that mitigates the risk of developing PTSD symptoms due to the educational experience it generates. In fact, 86.4 % of nurses who had a specialty had lower levels. Exposure for a few times to the traumatic stimulus exacerbates these symptoms, but continuous and prolonged repetition can inhibit or even extinguish them (Kandel, 2018).

In the study, nurses who worked in COVID areas were considered: Emergency, ICU and hospitalization; as well as in non-COVID areas. It was found that in the ICU COVID and Emergency COVID services, the level of PTSD was severe in

most cases, while, in the non-COVID services, mild PTSD was predominant. The high levels of PTSD in Emergency and ICU COVID, are explained because in these services the nursing staff faced several situations related to the level of complexity of the patient and the pressure of her relatives. Hao et al. (2020) determined that the incidence of PTSD symptoms in health workers with high exposure, that is, who worked in COVID areas, was 28.7 %, while the incidence in workers with low exposure in non-COVID areas of the same hospital was 13 %. These data reveal that anxiety and stress were generalized in all areas.

It was found that 71.6 % of nurses reported that they had no risk factors to become seriously ill from COVID-19. 28.4 % reported having one of the following risk factors: hypertension, age over 60 years, diabetes mellitus, and obesity. A small group indicated having even two or more risk factors concomitantly. The WHO pointed out that there are non-communicable diseases that are risk factors for becoming seriously ill from COVID-19; these are obesity (Simonnet et al., 2020), cancer (Meng et al., 2020), diabetes (Williamson et al., 2020), hypertension (Zhang et al., 2020), etc. It has been noted that the most frequent risk factors related to PTSD are: hypertension (Sumner et al., 2019), diabetes mellitus (Roberts et al., 2015), obesity (Wolf et al., 2017), and cancer (Tung et al., 2017). This information is consistent with the findings, since 6.8 % of people with HT had severe PTSD.

Conclusions

PTSD from direct exposure to COVID-19 is a problem that affects healthcare professionals, mainly young nurses with little experience working on the front line. Many of the nurses studied presented recurrent symptoms of PTSD, such as unpleasant memories about COVID-19, difficult to avoid, with physical manifestations (tachycardia and sweating) and psychological (disturbing images about the virus), which altered their family and friends relationships, work, as well as his personal life.

The predominant PTSD levels were mild and severe, the latter standing out among nurses in the COVID ICU area. Sociodemographic (age and sex) and work characteristics (specialty and work area) are significantly associated with the levels of PTSD in nurses exposed to COVID-19, as are comorbidity factors, among which HT, age prevailed over 60, diabetes, obesity and cancer. Faced with this situation, personal and organizational protection measures must be taken to prevent and treat the negative effects on the mental health of nurses.

Future longitudinal studies are suggested, in which a follow-up of cases detected with PTSD symptoms is carried out due to its long-term implications, in addition to the evaluation being made by psychiatrists who study the disorder

comprehensively. Likewise, the research must be conducted at the national and/or multicenter level.

The experience lived by the researchers was instructive; while, even without being on the front line, the experiences experienced by the staff were received, which deep down expressed impotence and despair.

References

- Allan, S. et al. (2020). The prevalence of common and stress-related mental health disorders in healthcare workers based in pandemic-affected hospitals: A rapid systematic review and meta-analysis. *European Journal of Psychotraumatology*, 11(1), 1810903.
- Aschbacher, K., & Mason, A. (2020). Eustress, distress, and oxidative stress: Promising pathways for mind-body medicine. In Sies, H. (Ed.), *Oxidative stress eustress and distress* (pp. 592). London, England: Elsevier.
- Bassi, M. et al. (2020). The relationship between post-traumatic stress and positive mental health symptoms among health workers during COVID-19 pandemic in Lombardy, Italy. *Journal of Affective Disorders*, 280, 1-6.
- Bear, M., Connors, B., & Paradiso, M. (2015). *Neuroscience*. Philadelphia, USA: Wolters Kluwer.

- Ceylan, Z. (2020). Estimation of COVID-19 prevalence in Italy, Spain, and France. *Science of the Total Environment*, 729, 138817.
- Cunill, M. et al. (2020). The Impact of COVID-19 on Spanish Health Professionals: A Description of Physical and Psychological Effects. *International Journal of Mental Health Promotion*, 22(3), 185-198.
- Fink, G. (2016). Stress, definitions, mechanisms, and effects outlined: lessons from anxiety. In *Stress: concepts, cognition, emotion, and behavior* (pp. 3-9). New York, USA: Elsevier.
- Fink, G. (2017). *Stress: Concepts, Definition and History*. New York, USA: Elsevier.
- Gheysarzadeh, A. et al. (2020). Report of five nurses infected with severe acute respiratory syndrome coronavirus 2 during patient care: Case series. *New Microbe and New Infect*, 36, 100694.
- Greenberg, N. et al. (2020). Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ*, 368, m1211.
- Hao, C. et al. (2020). Prevalence of posttraumatic stress symptoms in health care workers after exposure to patients with COVID-19. *Neurobiology of Stress*, 13, 100261.

Kandel, E. (2018). *La mente alterata, cosa dicono di noi le anomalie del cervello*. Milano, Italia: Raffaello Cortina Editore.

Karatzias, T. et al. (2020). Posttraumatic Stress Symptoms and Associated Comorbidity During the COVID-19 Pandemic in Ireland: A Population-Based Study. *Journal of Traumatic Stress*, 33(4), 365-370.

Lai, J. et al. (2020). Factors Associated with Mental Health Outcomes Among Health Care Workers exposed to Coronavirus Disease 2019. *JAMA Network Open*, 3(3), e203976.

LeDoux, J. (2016). *Ansia, come il cervello ci aiuta a capirla*. Milano, Italia: Raffaello Cortina Editore.

Li, X., Zhou, Y., & Xu, X. (2020). Factors associated with the psychological well-being among front-line nurses exposed to COVID-2019 in China: A predictive study. *Journal of Nursing Management*, 29(2), 240-249.

Liu, D. et al. (2020). Risk factors associated with mental illness in hospital discharged patients infected with COVID-19 in Wuhan, China. *Psychiatry Research*, 292, 113297.

McEwen, B. (2016). In pursuit of resilience: Stress, epigenetics, and brain. *Annals of the New York Academy of Sciences*, 1373(1), 56-64.

Meng, Y. et al. (2020). Cancer history is an independent risk factor for mortality in hospitalized COVID-19 patients:

A propensity score-matched analysis. *Journal of Hematology & Oncology*, 13(1), 75.

Pappa, S. et al. (2020). Prevalence of depression, anxiety, and insomnia among healthcare workers. *Brain, Behavior and Immunity*, 88, 901-907.

Preti, E. et al. (2020). The Psychological Impact of Epidemic and Pandemic Outbreaks on Healthcare Workers: Rapid Review of the Evidence. *Current Psychiatry Reports*, 22(8), 43.

Redolar, D. (2014). *Neurociencia cognitiva*. Madrid, España: Panamericana.

Ricci-Cabello, I. et al. (2020). Impact of viral epidemic outbreaks on mental health of healthcare workers: A rapid systematic review. *medRxiv*. Preprint.

Riello, M. et al. (2020). Prevalence of post-traumatic symptomatology and anxiety among residential nursing and care home workers following the first COVID-19 outbreak in Northern Italy. *Royal Society Open Science*, 7(9), 1-26.

Roberts, A. et al. (2015). Posttraumatic Stress Disorder and Incidence of Type 2 Diabetes Mellitus in a Sample of Women: A 22-year Longitudinal Study. *JAMA Psychiatry*, 72(3), 203-210.

Rodríguez-Morales, A. et al. (2020). COVID-19 in Latin America: The implications of the first confirmed case in

Brazil. *Travel Medicine and Infectious Disease*, 35, 101613.

Rodríguez-Morales, A. et al. (2020). Preparation and control of the coronavirus disease 2019 (COVID-19) in Latin America. *Acta Médica Peruana*, 37(1), 3-7.

Salmon, G., & Morehead, A. (2019). Posttraumatic Stress Syndrome and Implications for Practice in Critical Care Nurses. *Critical Care Nursing Clinics of North America*, 31(4), 517-526.

Sandín, B. et al. (2020). Psychological impact of the COVID-19 pandemic: Negative and positive effects in Spanish people during the mandatory national quarantine. *Revista de Psicopatología y Psicología Clínica*, 25(1), 1-22.

Sapolsky, R. (2013). *¿Por qué las cebras no tienen úlcera? La guía del estrés*. Madrid, España: Alianza Editorial.

Schuster, M., & Dwyer, P. (2020). Post-traumatic stress disorder in nurses: An integrative review. *Journal of Clinical Nursing*, 29(15-16), 2769-2787.

Serrano, M. et al. (2020). Impact of viral epidemic outbreaks on mental health of healthcare workers: A rapid systematic review and meta-analysis. *Journal of Affective Disorders*, 277(1), 347-357.

Simonnet, A. et al. (2020). High Prevalence of Obesity in Severe Acute Respiratory Syndrome Coronavirus-2

(SARS-CoV-2) Requiring Invasive Mechanical Ventilation. *Obesity. A Research Journal*, 28(7), 1195-1199.

Song, X. et al. (2020). Mental health status of medical staff in emergency departments during the Coronavirus disease 2019 epidemic in China. *Brain, Behavior, and Immunity*, 88, 60-65.

Sumner, J. et al. (2019). Not all posttraumatic stress disorder symptoms are equal: Fear, dysphoria and risk of developing hypertension in trauma-exposed women. *Psychological Medicine*, 50(1), 1-10.

Sun, N. et al. (2020). A qualitative study on the psychological experience of caregivers of COVID-19 patients. *American Journal of Infection Control*, 48(6), 592-598.

Tung, H. et al. (2017). The Relationships Among Symptom Distress, Posttraumatic Stress Symptoms and Depression in Patients with Female-specific Cancers. *Cancer Nursing*, 43(3), 181-188.

Wang, Y. et al. (2020). Factors associated with post-traumatic stress disorder of nurses exposed to corona virus disease 2019 in China. *Medicine*, 99(26), e20965.

Wankowicz, P., Szylińska, A., & Rotter, I. (2020). Assessment of Mental Health Factors among Health Professionals depending on their contact with COVID-19 patients. *International Journal of Environmental Research and Public Health*, 17(16), 5849.

- Williamson, E. et al. (2020). Factors associated with COVID-19-related death using OpenSAFELY. *Nature*, 584, 430-436.
- Wolf, E. et al. (2017). Contributions of Polygenic Risk for Obesity to PTSD-Related Metabolic Syndrome and Cortical Thickness. *Brain, Behavior and Immunity*, 65, 328-336.
- Xiao, S., Luo, D., & Xiao, Y. (2020). Survivors of COVID-19 are at high risk of posttraumatic stress disorder. *Global Health Research and Policy*, 5(29), 1-3.
- Yen, L., Rei, K., & Shin, S. (2020). COVID-19: The first documented coronavirus pandemic in history. *Biomedical Journal*, 43(4), 328-333.
- Zhang, J. et al. (2020). Associations of hypertension with the severity and fatality of SARS-CoV-2 infection: A meta-analysis. *Epidemiology & Infection*, 148, e106.

VI

Scientific production on Computational Thinking in Peru: A systematic review

Fernando Pari-Tito
Osbaldo Turpo-Gebera
Yvan Delgado-Sarmiento
Merly Clariza Lazo Manrique
Rocio Marivel Diaz Zavala

Introduction

Today's society is characterized by a context of globalization and by the rapid growth of Information and Communication Technologies —ICT—, constituting modern and important resources at present, and habitual of daily activities; both on a personal, professional and labor level (Rueda-Rueda, Rico-Bautista, & Flórez-Solano, 2019). Likewise, the creation of mechanisms for the incorporation of different technological advances in various sectors has been promoted (De-la-Hoz-Franco et al., 2019). The education sector is immersed in such a reality, so the teaching-learning process must adapt to these changes (Martínez-Serrano, 2019), through the creation and reformulation of educational policies that integrate relevant tools in educational environments student learning (Aguiar, Velázquez, & Aguilar, 2019; Herrera, 2015).

For Vilanova (2018), the development of 21st century competences or ICT competences must be incorporated into educational processes, so that students manifest higher-order skills, which are considered essential to function in the near future, and that at present they are not so emphasized. 21st century competencies include skills such as information management, problem solving, creativity, critical thinking, effective communication, collaboration, teamwork, and autonomous learning, among others (Vázquez, Bottamedi, & Brizuela, 2019).

The current digital scenario requires the development of strategies that modernize learning processes, including initiatives for the acquisition of digital skills that allow all citizens to function in a highly digitized society (Muñoz-Repiso, García-Valcárcel, Caballero-González, 2019). In this context, there is an increasing trend towards the presence of a trend that promotes the development of programming skills, in order to ensure that students acquire an active and creative role in the use of technologies, by mastering new skills cognitive and practical (Pérez, Álvarez-Zurita, & Guevara, 2019). Along the same lines, Computational Thinking —CT— emerges with great popularity, being incorporated in the educational curriculum and in the improvement and/or updated use for teachers (So, Kim, & Ryoo, 2020; Vilanova, 2017). Wing (2006) assures that the CT “implies solving problems, designing systems and understanding human

behavior, based on the fundamental concepts of computer science” (p. 33).

Therefore, and to better understand the CT, it is necessary to divide it into four axes, which are highly relevant and independent during the solution formulation process but are closely related to each other (Vázquez, Bottamedi, & Brizuela, 2019). Broadly speaking, CT involves identifying a complex problem and then breaking it down into smaller parts and making it more feasible to handle (decomposition axis). Each of these decomposed problems can be analyzed individually and in greater depth, identifying similar problems that were previously solved (pattern recognition axis), looking only at the details that are important and relevant, while eliminating irrelevant information (axis of abstraction). Finally, simple steps or rules can be created to solve each of the subproblems found (algorithm axis) (Brackmann et al., 2016).

Several authors consider the development of CT skills as key for education (Angeli, & Giannakos, 2020; Brackmann et al., 2016; de Kereki, 2018; Monjelat, 2019; So, Jong, & Liu, 2019). However, the integration of these necessary skills in the study plans remains a challenge and education professionals need pedagogical perspectives to properly integrate the concept of computational thinking in their daily work (González, 2019).

On the other hand, research work on CT is booming, where there is different information in different contexts. Angeli & Giannakos (2020) developed a five-step plan that is presented as a cycle, this will help countries to understand and develop the CT, because it is expected that through intense research and progress in practice in each area, inform each other and evolve over time. The first area would address the definition of CT competencies to provide a baseline and a possible common language in different contexts (for example, different countries, educational levels, etc.) on its conceptualization. The next area would be to create powerful metaphors as a mechanism to transform the abstract concepts of CT into more concrete and easy to understand ideas. The third area would be to investigate the effectiveness of pedagogies and technologies to improve and allow the development of such skills. The fourth area would focus on preparing teachers for their teaching, as the last area would be to integrate the appropriate technological tools to allow the teaching of CT in their respective teaching contexts (Angeli, & Giannakos, 2020).

In general terms, the analysis of the scientific production on CT in Peru is of interest, given the lack of research that gives an account of the state of the matter. In this intention, it is about showing its progress, difficulties and perspectives. Likewise, identify thematic lines of research for the continuity and sustainability of future studies. In this way, it will be possible to determine more plausible scenarios and conditions for the training exchange between subjects and

agents involved in the CT. Having an updated review of the literature on the evolution of the CT will help to evaluate and consider, pertinently and in a timely manner, technopedagogical interventions based on scientific evidence and appropriate to the national reality. Specifically, the study will provide information on the fields of knowledge and the predominant methodological orientations in the research work of the CT, bringing us closer to their understanding.

Computational thinking in scientific production

For the following research paper, a systematic review was carried out. Systematic reviews make it possible to outline the available information regarding a topic, where quantitative and qualitative elements from the selected primary sources are considered (Manterola et al., 2013).

The search strategy was carried out through the main academic databases: Scopus, Web of Science (WoS), SciELO, Google Scholar and the Peruvian repositories (RENATI and ALICIA). Research papers published until April 2020 were included. For the strategic search, the following search criteria were used: Computational thinking and Peru (Peru), both in Spanish and English; in addition to the descriptor "AND."

In the first place, the titles and abstracts of all the articles identified were independently evaluated, through the search strategy used, by the authors of this research work. Second, the reviewers independently assessed the full articles and proceeded to their selection, according to the previously established inclusion criteria. Finally, an exhaustive analysis of the research works was carried out to establish their integration or exclusion in this review, with the principles of the PRISMA declaration (Moher et al., 2009).

The analysis prepared from the selected research works is represented in Figure 1, from the comparison and contrast of the ordered data (Turpo-Gebera et al., 2020), showing the fields of knowledge and the methodological trends.

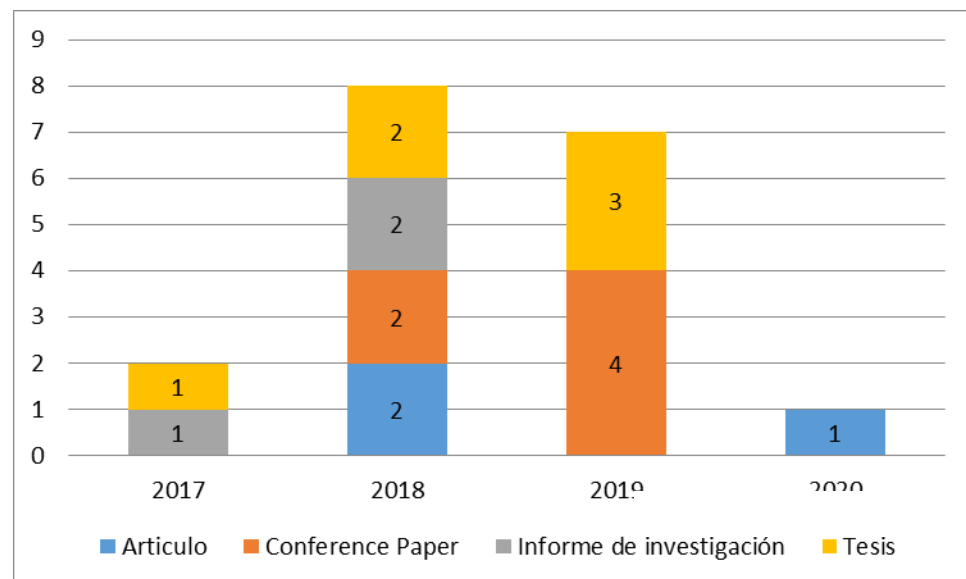


Figure 1 Evolution of the scientific production of CT in Peru (2017-2020).

The scientific production of the research papers on the CT is concentrated in the Conference Paper and Thesis papers: 12 out of 18 (67 %). Also, in the last two years a drop in scientific productions has been observed in Peru.

Fields of knowledge about the Computational thinking

The research emphases of the studies on CT show the concentrations or groupings of its field of knowledge and its applications in the educational field.

Table 1. *Temporal evolution of the fields of knowledge on CT*

Fields of knowledge	Sub-fields of knowledge	2017	2018	2019	2020	Total
Teaching career	Capacity building		1			1
Languages or Instruments	Robotics		1	2		3
	Videogame			1		1
	Programming	1		3		4
Languages or platforms	Web programming	1	1	1		3
Continuous training	Learning management		5		1	6
Total		2	8	7	1	18

Scientific production on CT is grouped around four fields or areas of knowledge, defined around the training levels (Table 1). The subfields that comprise them express particularities that highlight their evolution. Of the total research papers, 44 % (8 of 18) revolves around languages or instruments; along the same lines, it is evident that continuous training takes a relevance from research work, 33 % (6 of 18). To a lesser extent, the remaining levels are found as the predominant object of study or hegemonic field of knowledge.

Methodological trends in research on Computational thinking

In the analyzed research papers, a diversity of terms was found that refer to the methodologies addressed (Methodology, Methodological framework, Methodological design, Research methodology, Method, Means and materials, Method, Technique and Instruments and Operational framework of the research) in the CT studio. On the basis of such names, the methodological aspects are recognized from the constituent components or elements. As Table 2 shows, the dominant research orientation in the studies on CT in research works is in the quantitative approach, 94 % (17 of 18). This approach is widely considered in theses and lectures (12 of 18). The rest of the research approaches are undervalued or underestimated as a methodological trend.

Table 2. *Research approaches in the theses on CT in Peru*

Research focus			
Research work	Qualitative	Quantitative	Total
Article	0	3	3
Conference Paper	1	5	6
Investigation report	0	3	3
Thesis	0	6	6
Total	1	17	18

Source: author own elaboration.

The preponderance of the quantitative approach, revealed in Table 2, indicates the presence of designs based on the verification of research results through statistical measurements, a revealing aspect of the predominant research emphasis in scientific production in Peru (Turpo, & García, 2019). The trend of the quantitative approach in research in Peru is also revealed in a recent study on Blended learning by Turpo-Gebera et al. (2020), when analyzing doctoral studies in education in Peru.

Table 3. *Research designs of the theses on CT in Peru*

Research design	Article	Conference Paper	Investigation report	Thesis	Total
Correlational	0	1	0	1	2
Descriptive	0	1	1	2	4

Experimental	1	0	0	0	1
Explanatory	1	0	2	2	5
Exploratory	1	2	0	1	4
Not precise	0	2	0	0	2
Total	3	6	3	6	18

The research designs that prevail (Table 3) respond to studies that involve the manipulation of variables (experimental, explanatory and exploratory): 10 out of 18 (56 %) are part of the dynamics of provocation of the phenomenon. A process instituted from the CT, as an independent variable, whose effects are measured in the results, through comparison. For Campbell & Stanley (1967), they thus allow, "to verify educational changes and the only way to establish a cumulative tradition in which changes can be introduced without danger of a capricious discarding of the old wisdom in favor of inferior novelties" (p. 172). The designs that follow in order of prioritization are given by the correlational (11 %), descriptive (22 %), and non-precise (11 %) designs. In general terms, quantitative designs assume statistical hypothesis testing to verify their effects.

Table 4. *The study subjects in the research work on CT in Peru*

Subjects of study	Research work				Total
	Article	Conference Paper	Investigation report	Thesis	
Students (Elementary and middle school)	1	0	0	0	1
Elementary students	0	1	1	3	5
Middle school students	0	1	0	2	3
College students	2	2	2	1	7
Children, teenagers and adults	0	1	0	0	1
Does not inform	0	1	0	0	1
Total	3	6	3	6	18

Source: author own elaboration.

In the methodological approaches to research on CT in scientific production in Peru, as shown in Table 4, a diversity of subjects participates as part of the study. The predominant group of subjects are university students, mainly undergraduate, who participate in 7 of the 18 researches (39 %). Another sector of study subjects is given by elementary school students, as well as middle school students of basic education. In essence, only subjects of formal or schooled

education are considered, but not those of non-formal or alternative education.

Regarding the techniques and instruments for collecting information, the following figures summarize the preferences considered in the investigations on CT.

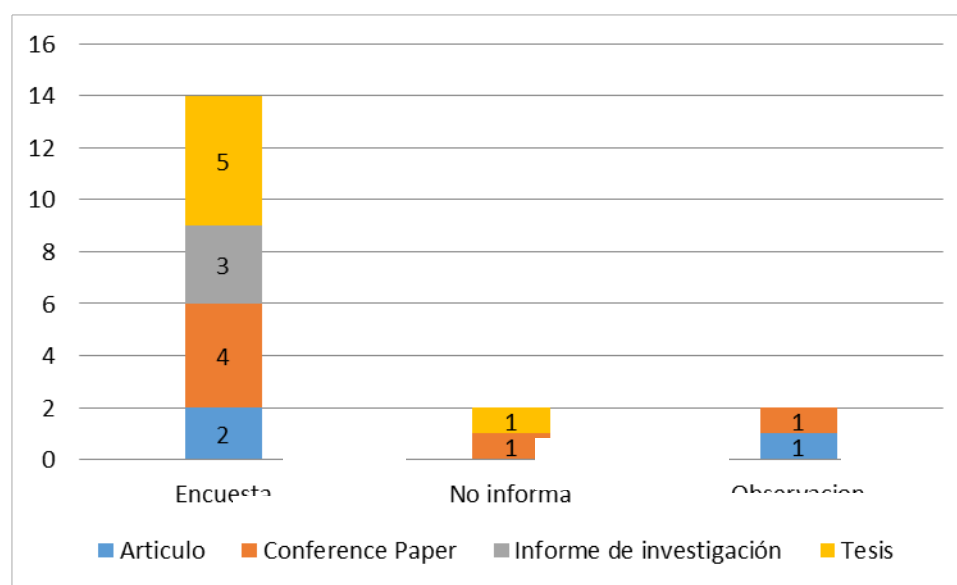


Figure 2. Preferred information gathering techniques in scientific production on CT. Source: author own elaboration.

The predominant technique for collecting information in research on CT is the survey, used in 14 of 18 studies (78 %), primarily in theses and in conference paper. The prioritization of the surveys shows the emphasis of research based on

quantitative approaches (Turpo, & García, 2019). Observation, and to a lesser degree, researches that do not inform regarding the techniques used are also preferred.

Regarding the data collection instruments, there are propensities for their use, basically due to the prioritized techniques (Figure 3).

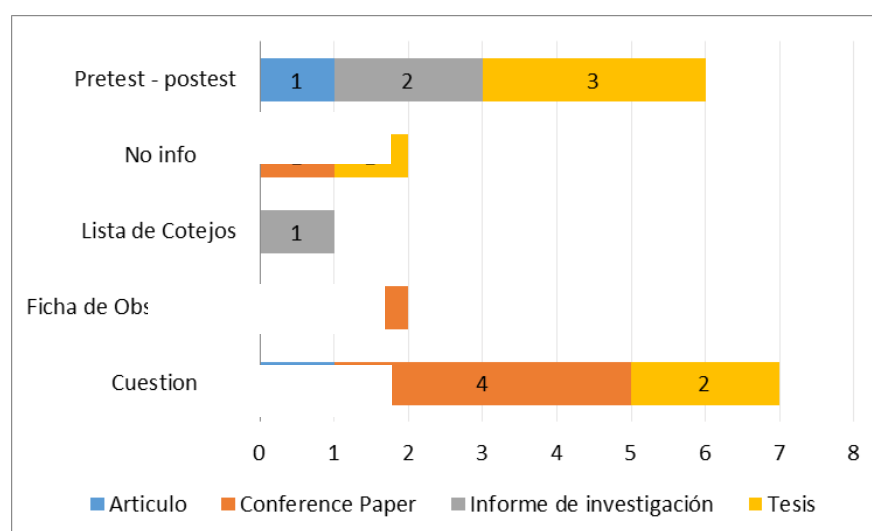


Figure 3. Preferred data collection instruments in the scientific production of CT. Source: author own elaboration.

Due to the prevalence of quantitative designs in research on CT, the survey constitutes the information gathering technique for priority use. The use of the survey allows obtaining information, economically, and in large volumes, facilitating processing and interpretations, more quickly and efficiently. For García (1993), the survey makes it possible to

have a representative sample of the population, and from there, to explain a series of characteristics. The instrument prioritized in the surveys is the questionnaire, since it fully responds to these intentions: 7 out of 18 investigations (39 %) express its use. The rest of the instruments are used less, evidencing the little importance assigned to the other research designs.

Conclusions

The analysis of the theoretical orientations and the methodological tendencies on the CT of the research works in Peru, have allowed its identification as an emerging field of study, enabling the achievement of the study objectives. The results show the areas of knowledge addressed, as well as the methodological guidelines emphasized. The patented absences and hegemonies summarize the evolution of the modality, both temporal and formative, the thematic particularities that define it, as well as the research approaches and designs, the subjects and techniques and instruments that researchers favor.

The study on CT shows the concentrations of studies produced in certain contexts, as well as their temporal evolution. On the latter, a recent research interest in Peru has been appreciated in recent years, more at the level of thesis research and conference paper. This differentiation reveals not only the adoption and normalization of the CT, but also its

recognition as an opportunity to continue training in the skills of the XXI century (González, 2019). From this perspective, the CT is in line with social and educational demands, although it has a distant use in technological aspects from other latitudes; but it advances to a progressive approximation.

The identification of the fields of knowledge of the CT revealed by the investigations shows the emphasis of use, basically, for the Languages or instruments, and primarily, of a university nature, treated with broad significance. In this way, they highlight the diversity of training contexts, although each scenario shows the peculiarity of the nuances that mark its course (Siemens, Gašević, & Dawson, 2015).

Among the methodological orientations registered in research on CT, the prevalence of certain trends in research approaches is observed, more quantitative than qualitative, as well as research designs, which presuppose the manipulation of variables (quasi-experimental, with a group of control and pre-experimental, without control group), followed by correlational and descriptive designs. Such emphasis is far from that found by Islas (2014), of a prioritization of documentary studies; but they do agree on the limited use of qualitative and mixed approaches.

The critical and evolutionary path of research on CT in Peru reveals its conceptions, registering as an emerging object of study and theoretical consideration. It also expresses its potential and validity as knowledge that contributes to the existing explanatory frameworks (Postigo et al., 2020). In essence, the approach to the reality of the CT opens up multiple possibilities for future research, among them, the indispensable and successive literature reviews that update its evolution. In addition, it will make it possible to investigate properly formative aspects, essentially, on the didactic interactions that the subjects construct, the virtual and face-to-face resources used in academic and social exchanges, as well as the training of teachers in techno-pedagogical processes, satisfaction with educational services, among others. Also, it would be possible to inquire about organizational aspects, times, materials, instructional designs and other concurrent circumstances.

References

- Aguiar, B.O., Velázquez, R.M., & Aguiar, J.L. (2019). Teacher's innovation and the use of ICTs in the Higher Education. *Espacios*, 40(2), 8-19.
- Angeli, C., & Giannakos, M. (2020). Computational thinking education: Issues and challenges. *Computers in Human Behavior*, 105, 106185.
- Brackmann, C. et al. (2016). Computational thinking: Panorama of the Americas. In International Symposium on Computers in Education (SIIE), Salamanca, Spain.

- Campbell, D., & Stanley, J. (1967). *Diseños experimentales y cuasiexperimentales en la investigación social*. Buenos Aires, Argentina: Amorrortu Editores.
- de Kereki, I.F. (2018). MOOC: Computational Thinking (applied) for teachers. In 16th LACCEI International Multi-Conference for Engineering, Education, and Technology: "Innovation in Education and Inclusion," Lima, Peru.
- De-la-Hoz-Franco, E. et al. (2019). Information and communication technologies and their influence on the transformation of higher education in Colombia to boost the global economy. *Información Tecnológica*, 30(1), 255-262.
- García, M. (1993). La encuesta. In García, M., Ibáñez, J., & Alvira, F. (Eds.), *El análisis de la realidad social. Métodos y técnicas de investigación* (pp. 141-170). Madrid, España: Alianza.
- González, C.S. (2019). Strategies for teaching computational thinking and effective use of technologies in childhood education: An inclusive proposal. *RiiTE. Revista Interuniversitaria de Investigación en Tecnología Educativa*, 7, 85-97.
- Herrera, A. (2015). Reseñas. Una mirada reflexiva sobre las TIC en Educación Superior. *REDIE. Revista Electrónica de Investigación Educativa*, 17(1), 1-4.

- Islas, C. (2014). The B-learning: An approach to the state of knowledge in Latin America, 2003-2013. *Apertura*, 6(1), 86-97.
- Manterola, C. et al. (2013). Systematic reviews of the literature: what should be known about them. *Cirugía Española*, 91(3), 149-155.
- Martínez-Serrano, M.C. (2019). Perception of the integration and use of information and communication technologies (ICT). Study about teachers and students of primary education. *Información Tecnológica*, 30(1), 237-245.
- Moher, D. et al. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Medicine*, 6(7), e1000097.
- Monjelat, N. (2019). Programming technologies for social inclusion with scratch: Computational practices in a teacher's professional development course. *Revista Electrónica Educare*, 23(3), 1-25.
- García-Valcárcel, A., & Caballero-González, Y.-A. (2019). Robotics to develop computational thinking in early Childhood Education. *Comunicar*, 27(59), 63-72.
- Pérez, H.O., Álvarez-Zurita, A., & Guevara Herrera, C.R. (2019). Mastery of computational thinking skills in the students of the Sucre Superior Technological Institute of Quito – Ecuador. *RiiTE. Revista Interuniversitaria de Investigación en Tecnología Educativa*, 7, 48-60.

- Postigo, G.P. et al. (2020). Systems based on critical thinking for social change from the university. *RISTI. Revista Ibérica de Sistemas e Tecnologias de Informacao*, E31, 121-136.
- Rueda-Rueda, J. S., Rico-Bautista, D., & Flórez-Solano, É. (2019). Educación en TIC: enseñar a usar, enseñar a protegerse y enseñar a crear tecnología. *Revista Ibérica de Sistemas e Tecnologias de Informação*, E19, 252-264.
- Siemens, G., Gašević, D., & Dawson, S. (2015). *Preparing for the digital university: A review of the history and current state of distance, blended, and online learning*. Alberta, Canada: Athabasca University.
- So, H.J., Jong, M.S.Y., & Liu, C.C. (2019). Computational Thinking Education in the Asian Pacific Region. *The Asia-Pacific Education Researcher*, 29(8), 1-8.
- So, H.J., Kim, D., & Ryoo, D. (2020). Trajectories of Developing Computational Thinking Competencies: Case Portraits of Korean Gifted Girls. *The Asia-Pacific Education Researcher*, 29(1), 85-100.
- Turpo, O., & García, F. (2019). Methodological guidelines in studies on Blended Learning in Peruvian universities. *RISTI. Revista Ibérica en Sistemas y Tecnologías de la Información*, E21, 9-22.
- Turpo-Gebera, O. et al. (2020). University Research on Blended Learning in Peru: Fields of Knowledge and

Methodological Trends. *Revista Educación*, 44(2), 526-540.

Vázquez, E.A., Bottamedi, J., & Brizuela, M.L. (2019). Computational thinking in the classroom: the challenge in Latin American education systems. *RiiTE. Revista Interuniversitaria de Investigación en Tecnología Educativa*, 7, 26-37.

Vilanova, G.E. (2018). Tecnología educativa para el desarrollo del pensamiento computacional. *Sistemas, Cibernética e Informática*, 15(3), 69-73.

Wing, J.M. (2006). Computational Thinking. *Communications of the ACM*, 49(3), 33-35.

VII

Coping with stress in teaching university-level researchers: A gender perspective

Andrés Fernando Luque Ruiz de Somocurcio
Roxana Yolanda Castillo-Acobo
Yesenia Marisela Casapia Guzman
Yuri Félix Chávez-Luque

Introduction

The current emphasis of the Latin American university is focused on the research management model that implies the development of scientific, critical, innovative and technological thinking that aims to unify the impact of knowledge, formative research, publications and orient itself to collaborative research, interdisciplinary, multidisciplinary and transdisciplinary. Changes that require new profiles, professional and academic skills, with which results will be achieved in the quality goals and continuous improvement of the academy. Facing these changes implies having strategies to cope with the work stress of the university professor that are presented in the development of research activities. Currently, they are controlled processes, oriented to the

fulfillment of objectives, results and times, which is inherent in the professional training process as a competence that the student and university graduate must acquire in their performance for professional and work practice.

It is the duty of the university professor to develop scientific skills, such as writing, formulation of research projects and writing to later present publications or innovative products (Guerrero, 2003). In addition to the new responsibilities assigned to the university professor within the framework of the new University law, such as extension, projection and scientific and technological intellectual production. Thus, the work of university teaching constitutes one of the most stressful jobs in the academic field.

Added to this complex situation are gender differentials such as age, job status appointed or hired, gender roles within the home, number of children, among other aspects that may affect their performance as a research professor. The task is demanding, absorbing, perfectionist and likely to spend more time in research activities that are taken home; all this could lead to problems such as lack of motivation or health problems caused by stress, not feeling valued in their different activities and manifesting in predisposition to work stress, anxiety, perhaps even somatizing with physical and emotional discomforts that can affect their health and productivity at work.

The global epidemic of stress in university professors

Olivo (2017) refers that the World Health Organization — WHO— believes that work stress is a global epidemic. Dattoli et al. (2015), in Montevideo study the stress level suffered by professors of different levels, 21.4 % of elementary school professors who have the syndrome of burnout at work — SBW— and 24.3 % presented high level of the same diagnosis. At the national level in university professors from different professional schools, the burnout syndrome is evidenced, due to care work stress, with significant differences according to specialties, there are health problems and in relation to their status as hired and appointed (Ponce et al., 2005).

Other studies indicate that women present higher levels of perceived stress than men (Heiman, 2004; Romero, 2009; Yune et al., 2011). Cabanach et al. (2013) conclude that there are differences between men and women in the academic or university environment, in relation to coping, the former use positive thinking, planning it and positive reevaluation to reduce stress, while women seek social support to face stress.

Olivo (2017) agrees that the female gender has higher levels of stress compared to the male gender. Santander (2017)

mentions that women cope with better conflict situations in the workplace as they learn to take care of others.

For Acosta, (2011) work stress is a pathological state and is caused by working conditions that an individual has to face on a daily basis, harming their emotional and physical well-being, affecting their professional performance. Guerrero (2003) concludes that the feeling of depersonalization is directly proportional to the level of emotional exhaustion in university professors. The purpose of stressors, psychological or physical, is to adapt to new situations, but when stress remains in the individual's daily life for a long time, it becomes chronic and this generates health problems.

Coping is "those constantly changing cognitive and behavioral efforts that are developed to handle specific external or internal demands that are evaluated as surplus or overflowing of the individual's resources" (Lazarus, & Folkman, 1991, p. 164).

There are work-related stress situations that affect professor productivity, and on the other hand, there are signs of stress in university professors dedicated to research, which allows us to investigate another edge of the problem. That is why this research aims to compare the coping styles from a gender perspective of professors who are dedicated to research with

competitive funds, then correlate the data collected in the psychosocial questionnaire with a gender perspective with the test of coping between both genders.

This is a non-experimental study of a transect, descriptive comparative type, in which the incidence and values in which one or more variables are manifested are investigated and their relationships are described at a given moment (Hernández, Fernández, & Baptista, 2003).

70 university professors who carry out research with competitive funds participated, of which 64 % are men and 35 % women. The inclusion criteria were: (i) professors who won competitive funds for basic and/or applied research projects at the university; (ii) who were enrolled in UNSA investigates. The study subjects made their verbal consent to participate in the research explicit.

Two instruments were applied, the psychosocial survey with a gender perspective and the COPE Stress-Coping Questionnaire. The psychosocial survey with a gender perspective was statistically validated in order to give reliability and consistency to the measurement instrument; it was subjected to the test-retest method, finding an internal consistency coefficient (Cronbach's alpha of 0.981 and 0.864). Finally, the data was statistically ordered in order to determine

the significant differences, first to see normality by means of the Kolmogorov test; then, as no normality was found, the test was applied Mann-Whitney U, giving reliability to the data obtained.

It began by developing an identification mapping of the participating population, who make up the technical teams of the research projects already selected with competitive funds. Before applying the instruments, they were informed of the objectives and importance of the study, each participant received an informed consent. Subsequently, the psychosocial survey on gender implications in science and technology at the university level is applied directly together with the COPE test. Afterwards, the review and qualification of the instruments.

A preliminary psychometric analysis was performed, through the Kolmogorov-Smirnov normality test. According to Table 1, it is observed that there is no normal distribution of the results in the tests used to measure coping with stress. In all cases, the levels of significance are lower than the critical level ($p < 0.05$). Therefore, to carry out the subsequent analyzes, the non-parametric U statistic of Mann-Whitney and the Kruskal-Wallis were used.

Table 1. Normality Analysis

	Kolmogorov-Smirnov		
	Statistic	gl	Sig.
	al		
Support at Home	0.167	70	0.000
Receive Support	0.410	70	0.000
Active Coping	0.122	70	0.011
Planning	0.172	70	0.000
Suppression of other Activities	0.229	70	0.000
Postponement of Coping	0.194	70	0.000
Search for Social Support	0.201	70	0.000
Emotional Support	0.230	70	0.000
Positive Reinterpretation and Personal Development	0.149	70	0.001
Acceptance	0.213	70	0.000
Come to Religion	0.262	70	0.000
Analysis of Emotions	0.223	70	0.000
Denial	0.247	70	0.000
Inappropriate Behaviors	0.233	70	0.000
Distraction	0.289	70	0.000

Then, to establish the significant differences between the groups (male and female), the critical level of 5 % (0.05) has been taken into account. It was possible to establish significant differences according to gender in the subscales of the COPE test, such as: seeking emotional support, emotional support, positive reinterpretation, personal development, inappropriate behaviors and distraction; this because the significance values calculated for the Mann-Whitney U test,

are below the accepted critical level ($p < 0.05$). Then it is established that women are the ones who mostly seek emotional support compared to men, it is also observed that women have more emotional support compared to men; on the other hand, on the positive reinterpretation and personal development subscale, it is also women who have more developed these characteristics; for their part, in inappropriate behaviors, those behaviors derived from procrastination as a way of avoiding the stress caused by their responsibilities, it is men who most frequently have this behavior compared to women; finally, on the distraction subscale, it is women who seldom do so compared to men, so it is observed that it is men who resort to using different activities or stimuli as a means to cope with stress.

Regarding the remaining subscales, no significant differences could be established between men and women, since the significance values calculated for the Mann-Whitney U test are above the critical level ($p > 0.05$). This means that both men and women cope with stress on these subscales in the same way.

Table 2. Comparison according to sex (Mann-Whitney U test)

Subscales	Male		Female		U	P
	(n = 45)		(n = 25)			
	M; (Ric')	Mdn	M; (Ric')	Mdn		
Support at Home	61.3; (60.0)	68.0	73.9; (27.0)	75.0	415.000	0.072
Receive Support	68.2; (40.0)	75.0	75.5; (33.0)	80.0	438.00	0.124
Active Coping	65.1; (33.0)	68.0	76.8; (20.0)	85.0	404.000	0.051
Planning	64.0; (26.0)	75.0	68.8; (33.0)	80.0	475.000	0.284
Suppression of other Activities	56.4; (40.0)	60.0	78.2; (13.0)	85.0	232.500	0.001
Postponement of Coping	54.7; (48.0)	52.0	78.6; (15.0)	85.0	219.500	0.001
Search for Social Support	60.75; 70.0 (29.0)		72.9; (30.0)	80.0	340.500	0.006
Emotional Support	68.2; (20.0)	82.0	71.6; (25.0)	75.0	541.000	0.791
Positive Reinterpretation and Personal Development	43.1; (5.0)	20.0	45.3; (55.0)	35.0	496.000	0.413
Acceptance	69.47; 77.0 (27.0)		76.8; (18.0)	80.0	425.000	0.092
Come to Religion	29.0; (32.0)	20.0	24.6; (10.0)	25.0	559.00	0.970

Analysis of Emotions	43.2; 55.0 (58.0)	20.8; 20.0 (10.0)	272.500	0.001
Denial	39.69; 25.0 (60.0)	18.80; (8.0)	314.000	0.002

According to Table 3, no significant differences were found between professors in the areas, Engineering, with those in the Social and Biomedical sciences, in all subscales, since the significance values calculated for the Kruskal-Wallis test are above the critical level ($p > 0.05$). This means that who belong to this areas face stress in these subscales in the same way.

Table 3. Comparison according to areas (Kruskal-Wallis test)

Subscales	Engineering		Social Sciences		Biomedical		H(3)	P
	(n = 19)		(n = 7)		(n = 42)			
	M; Mdn (Ric')		M; Mdn (Ric')		M; Mdn (Ric')			
Active Coping	68.5; (30.0)	75.0	76.4; (25.0)	85.0	63.0; (40.0)	68.0	1.090	0.580
Planning	71.2; (40.0)	75.0	75.5; (33.0)	80.0	68.2; (40.0)	75.0	0.831	0.660
Suppression of other activities	65.1; (33.0)	68.0	76.8; (20.0)	85.0	65.1; (33.0)	68.0	0.272	0.873

Postponement of Coping	64.0; (26.0)	75.0	68.8; (33.0)	80.0	64.0; (26.0)	75.0	0.342	0.843
Search for social support	56.4; (40.0)	60.0	78.2; (13.0)	85.0	56.4; (40.0)	60.0	0.797	0.671
Emotional support	54.7; (48.0)	52.0	78.6; (15.0)	85.0	54.7; (48.0)	52.0	1.387	0.500
Positive Reinterpretation and Personal Development	60.75; (29.0)	70.0	72.9; (30.0)	80.0	60.75; (29.0)	70.0	1.000	0.607
Acceptance	68.2; (20.0)	82.0	71.6; (25.0)	75.0	68.2; (20.0)	82.0	0.678	0.712
Come to Religion	43.1; 20.0 (5.0)		45.3; (55.0)	35.0	43.1; (5.0)	20.0	4.274	0.118
Analysis of emotions	69.47; (27.0)	77.0	76.8; (18.0)	80.0	69.47; (27.0)	77.0	0.036	0.982
Denial	29.0; (32.0)	20.0	24.6; (10.0)	25.0	29.0; (32.0)	20.0	0.380	0.827
Inappropriate Behaviors	43.2; (58.0)	55.0	20.8; (10.0)	20.0	43.2; (58.0)	55.0	1.912	0.384
Distraction	39.69; (60.0)	25.0	18.80; (8.0)	15.0	39.69; (60.0)	25.0	0.117	0.943

The results to establish the significant differences between the groups (single, cohabiting, married and divorced) have taken into account the critical level of 5 % (0.05). As can be seen, it has not been possible to establish significant differences between single, cohabiting, married and divorced people in terms of coping in all the subscales, since the significance

values calculated for the Kruskal-Wallis test are above the critical level ($p > 0.05$). This means that singles, partners, married and divorced cope with stress on these subscales in the same way.

Table 4. Comparison according to marital status (Kruskal-Wallis test)

Subscales	Single	Cohabiting	Married		Divorced				
	(n = 19)	(n = 7)		(n = 42)		(n = 2)			
	M; Mdn (Ric')	M; (Ric')	Mdn	M; Mdn (Ric')		M; (Ric')	Mdn	H(3)	P
Active Coping	68.5; 75.0 (30.0)	76.4; (25.0)	85.0	63.0; (40.0)	68.0	60.0; (0.0)	60.0	2.293	0.514
Planning	71.2; 75.0 (40.0)	75.5; (33.0)	80.0	68.2; (40.0)	75.0	75.5; (33.0)	80.0	2.776	0.427
Suppression of other activities	65.1; 68.0 (33.0)	76.8; (20.0)	85.0	65.1; (33.0)	68.0	76.8; (20.0)	85.0	3.157	0.368
Postponement of Ccoping	64.0; 75.0 (26.0)	68.8; (33.0)	80.0	64.0; (26.0)	75.0	68.8; (33.0)	80.0	1.646	0.649
Search for social support	56.4; 60.0 (40.0)	78.2; (13.0)	85.0	56.4; (40.0)	60.0	78.2; (13.0)	85.0	3.929	0.269

Emotional Support	54.7; 52.0 (48.0)	78.6; (15.0)	85.0	54.7; (48.0)	52.0	78.6; (15.0)	85.0	1.733	0.630
Positive Reinterpretation and Personal Development	60.75; 70.0 (29.0)	72.9; (30.0)	80.0	60.75; (29.0)	70.0	72.9; (30.0)	80.0	1.312	0.726
Acceptance	68.2; 82.0 (20.0)	71.6; (25.0)	75.0	68.2; (20.0)	82.0	71.6; (25.0)	75.0	2.003	0.251
Come to Religion	43.1; 20.0 (5.0)	45.3; (55.0)	35.0	43.1; (5.0)	20.0	45.3; (55.0)	35.0	0.251	0.969
Analysis of Emotions	69.47; 77.0 (27.0)	76.8; (18.0)	80.0	69.47; (27.0)	77.0	76.8; (18.0)	80.0	1.616	0.656
Denial	29.0; 20.0 (32.0)	24.6; (10.0)	25.0	29.0; (32.0)	20.0	24.6; (10.0)	25.0	6.492	0.090
Inappropriate Behaviors	43.2; 55.0 (58.0)	20.8; (10.0)	20.0	43.2; (58.0)	55.0	20.8; (10.0)	20.0	1.249	0.541
Distraction	39.69; 25.0 (60.0)	18.80; (8.0)	15.0	39.69; (60.0)	25.0	18.80; (8.0)	15.0	1.935	0.586

In the rest of the criteria that were compared, between the coping instrument and the psychosocial survey with a gender perspective, no major significant differences were found when

comparing hired and appointed professors, both have similar ways of coping on each subscale. Although hired professors generally tend to have more academic load/work and non-teaching work/load than appointed professors. To differentiate the study groups (professors with a master's degree and a doctor's degree), when applying the Mann-Whitney U test, it has not been possible to establish significant differences between these groups, this means that both professors with a master's degree and a doctor's degree have the same ways of coping with stress in each of the subscales. Regarding the existence or not of differences between the study groups (professors who publish and professors who do not yet), it has not been possible to establish significant differences between these groups, so it is presumed that the pressure to publish is high in both cases; then, to establish the significant differences between the groups (no children, only sons, only male and female daughters and sons) it has not been possible to establish statistically significant differences between professors who do not have children, those who have children, those who have only daughters and those who have both children in each of the coping subscales; then, it was not possible to establish the differences between the groups, type of professor's family and coping, this means that both professors who have a nuclear, single-parent or other family have the same ways of coping with stress in each of the subscales and finally it has not been possible to establish significant differences between those professors who develop activities at home, this means that (both male and female) have the same ways of coping with stress in each of the subscales.

Dialectics

The results of the present investigation coincide with those found by other authors in recent investigations, but they also differ in some aspects. In this section we will refer to the data that were significant according to statistical tests and that when compared with others give us the certainty of our data found, as well as opens the way for new research.

As can be seen, university professors who dedicate themselves to research with competitive funds have better coping strategies than men on the scales of seeking emotional support, positive reinterpretation and personal development, so it is established that women are the ones who have better coping strategies that is understood in turn, from the gender perspective by the differential socialization process by which feminine roles are centered on interpersonal relationships, being articulated to the sphere of private life as links closer. These data are opposed to those found by Ramos and Jordão (2014), they find that men have better ways of coping with stress than women in work settings. Mazzola, Schonfeld & Spector (2011) conclude that women not only care about their family but also about relationships within their work and that is why they perhaps have more and better strategies to cope with stress in the workplace. Another aspect to mention is that female professors show more coping strategies than males, this may be due to their commitment to the university, to their commitment to their work as professors and to the commitment assumed to carry out research; this conclusion

coincides with that of Bellman et al. (2003) in their research on gender differences in the use of social support as a moderator of work stress, where they indicate that women reflect a greater commitment than men within institutions. Now our results would be contrary to those found by Torkelson & Muhonen (2004), who propose the theory that both sexes sharing the same responsibilities will have the same coping strategies, but as we see in these results, it is women who have more strategic elements to cope with stress. On the other hand, we found agreement in the research by Martínez (2010) indicate that women have a ruminative coping style centered on their own emotions, that is, they think of emotional strategies or resources to face difficult situations at work.

Regarding positive reinterpretation, thoughts that have to do with optimism, positivism, even with resilience, we see that female professors have better scores than males; these data coincide with those found by Cassullo & García (2015), who find that the majority of his samples has as a coping strategy positive reinterpretation and planning, as styles focused on solving the problem, although he does not specify whether it is characteristic of the female gender, in his sample they have more than 50 % women, so we deduce that a large percentage of women have this type of strategy; this aspect is supported by the perspective of Bellman et al. (2003) where they conclude that the female gender identifies better with the values of the institution than males. So that's why when faced with a conflict or stress situation, women have a more positive perspective or problem solving; then, the data that we found

contradicts the research developed by Ramos & Jordão (2014) where the positive reinterpretation appears in a negative sense; in the same way Cabanach et al. (2013) where they indicate that men invoke more positive reinterpretation as a way to cope with stress and coincide with the strategy of seeking support in women; on the other hand, Park, Cohen & Murch (1996) found that this subscale occurs as a form of personal growth after stressful situations in women.

Conclusions

In light of our results we can say that from a gender perspective, we find that there are differences in stress coping strategies; while other research such as that of Barbosa et al. (2009) found that there was little statistical relationship by gender.

Regarding inappropriate behaviors and distraction, it is men who have the highest score on the coping subscale; which leads us to understand that the higher the level of anxiety of professors, this leads them to assume inappropriate behaviors and distraction in their duties. Finally, although our results are promising, our study is not without limitations, there are no professors' narratives of how they feel and how they begin to cope; therefore, new contributions must focus on qualitative research to take into account the narratives of their feelings and the protocol they use.

References

- Acosta, J. (2011). *Gestión del estrés: como entenderlo, como controlarlo y como sacarle provecho*. Barcelona, España: Profit Editorial.
- Barbosa, C. et al. (2009). Burnout Syndrome and Coping Strategies in University Teachers. *Revista Iberoamericana de Psicología: Ciencia y Tecnología*, 2(1), 21-30.
- Bellman, S. et al. (2003). Gender differences in the use of social support as a moderator of occupational stress. *Stress & Health: Journal of the International Society for the Investigation of Stress*, 19(1), 45-58.
- Cabanach, R. et al. (2013). Differences in coping between men and women university students. *European Journal of Education and Psychology*, 1(6), 19-32.
- Cassullo, G., & García, L. (2015). Study of Social and Emotional Competences and its Relationship with Coping in Future Professors of Secondary Schools. *Revista Electrónica Interuniversitaria de Formación del Profesorado*, 18(1), 213-228.
- Dattoli, A. et al. (2015). Burnout Syndrome and Psychosocial Factors in Primary School Teachers in Montevideo. *Ciencias Psicológicas*, 9(2), 273-281.
- Guerrero, E. (2003). A detailed analysis of the degrees of burnout and teacher stress-management techniques in

- University lecturers. *Anales de Psicología*, 19(1), 145-158.
- Heiman, T. (2004). Examination of the Salutogenic Model, Support Resources, Coping Style, and Stressors Among Israeli University Students. *The Journal of Psychology*, 138(6), 505-520.
- Hernández, R., Fernández, C., & Baptista, P. (2010). *Metodología de la investigación*. Ciudad de México, México: McGraw-Hill.
- Lazarus, R., & Folkman, S. (1986). *Estrés y procesos cognitivos*. Barcelona, España: Ediciones Martínez Roca.
- Martínez, J.A. (2010). Estrategias de afrontamiento ante el estrés y rendimiento académico en estudiantes universitarios. *Cuadernos de Educación y Desarrollo*, 2(18). Recovered from <http://www.eumed.net/rev/ced/18/jamg.htm>
- Mazzola, J., Schonfeld, I., & Spector, P. (2011). What qualitative research has taught us about occupational stress. *Stress & Health: Journal of the International Society for the Investigation of Stress*, 27(2), 93-110.
- Olivo, T. (2017). *El estrés laboral y su relación con el bienestar psicológico de los docentes*. Ambato, Ecuador: Universidad Técnica de Ambato.

- Park, C., Cohen, L., & Murch, R. (1996). Assessment and prediction of stress-related growth. *Journal of Personality*, 64(1), 71-105.
- Ponce, C. et al. (2005). El síndrome del “quemado” por estrés laboral asistencial en grupos de docentes universitarios. *IIPSI. Revista de Investigación en Psicología*, 8(2), 87-112.
- Ramos, V., & Jordão, F. (2012). The relationship between cultural and non-cultural elements as a way to describe organizational context. *Psicologia.com*, 16(7), 1-25.
- Romero, M. (2009). *Implicaciones de la respuesta de estrés sobre el proceso de estudio en estudiantes de Ciencias de la Salud*. La Coruña, España: Universidad de La Coruña.
- Santander, A. (2007). *Estrategias de afrontamiento del estrés y burnout en trabajadores del programa de violencia familiar de la ciudad de Córdoba*. Córdoba, Argentina: Universidad Empresarial Siglo 21.
- Torkelson, E., & Muhonen, T. (2004). The role of gender and job level in coping with occupational stress. *Work & Stress*, 18(3), 267-274.
- Yune, S. et al. (2011). The effects of attribution tendencies, academic stress, and coping efficacy on academic adjustment of medical students. *Korean Journal of Medical Education*, 23(3), 167-174.

VIII

Family violence and self-esteem in college students

Yessika Madelaine Abarca Arias
Marylin Marie Monrroy Fernández

Introduction

Family violence is the intentional use of physical force or power against oneself, towards another person, groups or communities and which has as probable consequences physical injuries, psychological damages, developmental disorders, abandonment and even death. Including the intention to cause damage in the condition of these acts.

Studying the psychological effect of these abusive relationships is essential, because many times the damage continues even after treatment; as occurs with different symptoms and diseases such as panic attacks, depression, negative ideas, suicidal ideas, apathy, low self-esteem, stigmatization, among others, which are not easy to erase when the abuse has been prolonged, there are even those who are affected by so much so that they never manage to recover.

Violence, translated into terms of mistreatment, abuse or harassment is the concern of authorities and the State, in relation to this, in Peru there is Law 30364 and its regulations that establish that public policies must be developed, implemented, monitored and evaluated. In charge of combating violence against women and members of the family group, this evaluation becomes a source of information for the construction of social indicators.

In the process of normal development and the progressive evolution of the family, together with the members who are within the same system, conflicts and crises are generated, which can go beyond the response capacity, giving rise to an environment of tension in the family group, being able to trigger inappropriate behaviors called family violence. Thus, family violence is conceived as: "any action or omission carried out by one or more members of the family, to other relatives, inflicting physical, psycho-emotional, sexual, economic or social harm."

On the other hand, self-esteem must be worked as an incentive to eradicate aggression. To achieve this improvement, programs, talks and workshops must be implemented in Educational Institutions to increase the self-esteem of students; allowing students to control their emotions, showing their feelings and assuming new responsibilities to face challenges, which will allow them to act independently and show their achievements (Gonzales, 2017).

Taking into account the problems described in previous lines, the need arises to elaborate, implement, monitor and evaluate public policies that make it possible to create social indicators that make the offer of services to victims viable and to enforce the sanctions established by current laws; whether it is an action or omission that causes physical or psychological harm, abuse without injury, including serious and/or repeated threat or coercion, as well as sexual violence, that occurs between spouses, former spouses, partners, former partners, ascendants, descendants, collateral relatives up to the fourth degree of consanguinity and second degree of affinity, who live in the same household.

Family violence in college students

Violence is considered as a phenomenon of occurrence worldwide where it is seen that people are affected in their safety, well-being, possibilities of education and personal development. During the last decades, violence has been shown as a social malaise that constitutes a non-static construction, for which the conceptualizations and the ways of intervening it vary based on the cultural changes that society experiences (Baena-Vallejo, Carmona-Otálvaro, & Rengifo-Arias, 2020).

In this sense, according to the WHO, the violence is the intentional use of physical force or power, in fact, or as a threat, against oneself, another person, or a group or community, that causes or has a high probability of causing injury, death, psychological damage, disorders of the development or deprivation; this definition is intentionally linked to the act itself, regardless of the consequences that are caused. Unintentional incidents, such as traffic accidents and burns, are excluded.

The inclusion of the word “power” and the “intentional use of physical force” increases the nature of a violent act, as well as the conventional understanding of violence to accommodate acts that are the result of a power relationship, including threats and intimidation. Saying “use of power” refers to including carelessness or acts by omission, in addition to the more obvious acts of violence by action. Therefore, “the intentional use of physical force or power” should be understood to include neglect and all types of physical, sexual and psychological abuse, as well as suicide and other acts of self-harm.

Acts of violence can predict depression and anxiety to develop by an indirect effect; they will also depend on the self-esteem that each adolescent has and the social support that they may have from their environment, since they develop a protective role to achieve the well-being of adolescents (Erdoğan, Balkis, & Turkoğlu, 2019).

Family violence is considered a social problem that affects families from different social strata; where it is clear that women under 20 years of age are more exposed to violence, some of them said they are victims of child abuse, another group mentioned that members with alcoholism appear in their families, and there is also the group of young people who have low self-esteem (Solano et al., 2019).

In Turkey, students are exposed to violence with 15.4 %, it is also mentioned that 46.2 % state that a family member exercises violence against them, 27.3 % report that some teachers are violent, which generates great concern in the academic community; among the types of violence exerted, it is mainly psychological, followed by physical and to a lesser extent sexual violence, making the relationship with the self-esteem variable, a positive and weak relationship was observed (Muslu, Cenk, & Sarlak, 2017).

Israeli university students mention that 69 % of women and 31 % of men report that verbal violence takes place in their families; however, it is clear that this type of violence does not cause great damage because they give greater importance to physical appearance that becomes a high predictor of their self-esteem, the same ones that can generate improvements in the quality of life (Karni-Vizer, & Walter, 2018).

In the Maghreb countries report that males in adolescence suffer physical abuse with 43.8 % and 51 % of adolescent females are exposed to feeling violent emotions, so there is a high suicide rate, this is due to family conflicts, school failure and drug use or abuse; therefore, exposure to violence must be reduced, especially that which generates damage at an emotional and physical level, being necessary to apply violence prevention strategies and strengthen the self-esteem of young people who are in the Maghreb countries (Mlouki et al., 2019).

In Peru, the cases of family and sexual violence treated in the Women's Emergency Centers of the Ministry of Women and Vulnerable Populations in the period 2002-August 2015, show that aggression against women (girls, adolescents, adults and older adults) is considerably higher than that exerted against men. It is also evidenced that more than 460 thousand cases of women were affected, which represents 88 %; 12 % of men were affected, which represents a little more than 63 thousand victims.

In 2019, 63.2 % of women between 15 and 49 years of age suffered some type of violence at some point in their life by their husband or partner, the cities of Apurímac, Cuzco and Puno stand out, the type of physical abuse exerted was by pushing and jerking; 58.9 % were victims of psychological violence caused many times by jealousy, followed by insistence on knowing where they are going, threats are also

presented such as leaving the house or taking away financial aid or taking their children; 30.7 % were physically attacked with slaps, threats with a knife or other weapons and 6.8 % suffered sexual violence in which they were forced against their will all.

Likewise, in the cases treated in the Aurora National Program, it refers that in the month of November in relation to cases with characteristics of femicide this year there was a decrease of 33 % compared to 2019; where 83 % of the reports are in the adult stage, this decrease is due to awareness campaigns and effective communication for behavior change.

At Universidad Autónoma de Ica, psychology students have an average level of self-esteem of 56 % and 25 % a high level; in reference to violence, the type of abuse exercised, 25 % mention that they have suffered psychological violence, 53 % stated that they did not experience violence (Reyes, 2017).

Typology of Violence

In 1996, the World Health Assembly, through Resolution WHA49.25, declared that violence is a public health problem worldwide, therefore the World Health Organization structured a typology on the violence to characterize all types of violence and the links between them. There are few taxonomic classifications and none are complete.

Violent acts committed by an individual or a small group of individuals are considered, including violence against a partner, youth violence and other forms of family violence where abuse of children and the elderly is considered, sexual assaults by strangers, rape and violence in institutional settings such as schools, workplaces, nursing homes and prisons. Interpersonal violence has a wide range of acts and behaviors such as physical, sexual and mental violence, up to abandonment and deprivation.

Community and youth violence is also visible and is considered a crime (for example, violent behavior with a partner and mistreatment of children and the elderly), they do not show visibility to the public eye; thus, in several places, the courts and the police are not prepared to deal with this type of violence, very few are prepared to recognize sexual violence or act against it. The variability of interpersonal violence presents multiple risk factors; some have mental and behavioral characteristics, there is little control in personality disorders, low self-esteem and behavior problems; others are linked to a lack of emotional and supportive ties, early contact with domestic violence (either as a direct victim or as a witness), and family or personal histories marked by divorces or separations.

Collective violence is subdivided into political, economic and social violence. Unlike the other two general categories, the subcategories of collective violence indicate possible motives for violence committed by larger groups of people or by the state. Collective violence inflicted to promote sectoral social interests includes, for example, criminal acts committed by organized groups, terrorist groups and mass violence. Political violence involves wars and other related conflicts, state violence, and similar acts carried out by larger groups. Economic violence is generated by attacks by organizations motivated by economic profit.

Community violence is violence that occurs between people who are not related and who may or may not know each other, and generally occurs outside the home. The word community is frequently used to indicate the location where violent events occurred and to suggest the inclusion of relationships between people, the definition of violence is complex due to the difficulty in determining the center of behaviors associated with violence.

In the first class, the forms of violence are considered, such as the mistreatment of children, the elderly and violence against a partner. In the second, there is youth violence, violence in establishments such as schools, work centers, among other spaces; rape or sexual assault by strangers also occurs.

In the students of the biomedical area of the Universidad Nacional de San Agustín (UNSA), the family plays an important role in the determination of health, which needs to be approached in an integral way. In the study carried out by the authors it is observed that the students of the biomedical area oscillate between the ages of twenty to twenty-two years, predominantly female, live with both parents, have between one and three siblings and the vast majority study and work, Table 1 identifies that there is no violence by their parents and other relatives; however, they sometimes raise their voices when they give orders and generally feel that the family environment encourages them to continue studying.

Table 1. *Family violence in university students*

Violence	N°	%
With violence	18	7.9
Without violence	211	92.1
Total	229	100

Note: This table shows that university students from the UNSA biomedical area live in a family environment without violence.

Source: author own elaboration.

Training, components and levels of self-esteem

Self-esteem is considered an integral attitude that each person has towards himself/herself and can be positive or negative, it is made up of two essential elements, the first refers to the feeling of ability that one has to achieve success and the second in relation to personal worth, these are fortified by social adaptation and happiness, generating less vulnerability to risky behaviors; within the university context, high self-esteem is related to emotional well-being and future job performance; however low levels are associated with negative evaluations they feel about life, generating difficulties in the process of adapting to adverse situations, whit a higher risk of suicidal behavior (Ruiz-González et al., 2018).

Healthy self-esteem is based on the ability of people to be able to respond to the opportunities that arise in the university environment and in the interrelation with others, flowing in an active and positive way (Branden, 2011).

The training process begins from birth when the little one begins to become aware of his own body as something different from the environment that surrounds him. Little by little he/she learns that a sound, in the case of his name, differentiates him/her from the rest (Ramírez, 2005).

Self-esteem has a series of components of various kinds, among which it points out Aragon (1999):

(i) Cognitive component: Determined by self-control, self-concept, self-awareness, self-recognition, self-image, self-understanding, and self-perception. All of them have a mental representation that each one elaborates of himself/herself; to perceptions, knowledge, opinions about personality and beliefs. Personal knowledge is essential to be able to direct and self-regulate. Self-esteem is also influenced by the effectiveness of each one to solve problems with their own initiative and for personal self-realization.

(ii) Emotional component: It does not allow separating the emotions and feelings from the desires and needs of the human being. Feelings determine the self-esteem that is the basis of the self-realization that one wants to achieve. This component as a set of feelings is called self-worth, self-evaluation, self-appreciation and self-acceptance. To the extent that these feelings are assertive, the person can manage his/her own personal growth. Individuals must be authentic, recognizing their strengths and limitations.

(iii) Behavioral component: It focuses on self-esteem that allows each individual to know, evaluate and accept themselves, involving actions towards the environment, where there is interaction and adaptation to the environment. The person with high self-esteem manifests itself through a permanent activity, which is defined in terms of behavior such as: the congruent, the coherent, the responsible, the self-directed, the self-direction and the autonomy, among others.

The degree of self-esteem that has a person has important consequences in many aspects of life, it can condition learning, projects, responsibility, profession; in short, it notoriously conditions our personal development, our way of seeing and understanding the world. A positive self-esteem or a negative self-esteem, confers a series of characteristics to the person depending on the case, provides a series of advantages or disadvantages (Carmona, 2013).

The levels of self-esteem where each person reacts to the same event in a different way, visualizing unequal expectations about the future, against reactions and dissimilar self-concept; characterizing the self-esteem of each person as high, medium and low self-esteem, defining them Coopersmith (1967) as follows:

(i) High self-esteem: People are assertive, expressive, they trust their own perceptions, they are academically and socially successful, they are always expecting success, they consider their work to be of high quality and they maintain high expectations in relation to future jobs, they are creative, they respect themselves, they feel proud of themselves and focus on realistic goals.

(ii) Average self-esteem: People are expressive, they depend on social acceptance, a high percentage of positive affirmations predominate, being more moderate in their expectations and skills.

(iii) Low self-esteem: People feel isolated, discouraged and depressed, they do not consider themselves attractive, they cannot defend themselves, express themselves and they feel weak to overcome their fears, they do not like to provoke the anger of others, their attitude towards themselves is negative, they lack internal tools to tolerate situations and anxieties.

In the students of the biomedical area of the UNSA, regarding self-esteem, it is specified that from the study group the young women between 20 and 22 years old, who live with their parents and siblings are encouraged to have high self-esteem; Table 2 shows the level of self-esteem of university students.

Table 2. *Level of self-esteem in university students*

Self-esteem	N°	%
Low	17	7.4
Medium	40	17.5
High	172	75.1
Total	229	100

Note: This table shows that university students in the biomedical area of UNSA have high self-esteem.

Source: author own elaboration.

Considering the level of self-esteem and family violence in university students in the biomedical area of the UNSA, it can be mentioned that students have high self-esteem and live in an environment without violence; those with low self-esteem, participated or were involved in some type of violence and those of average self-esteem participated in acts of violence; this is demonstrated by the statistical Chi-square test ($X^2 = 11.90$), presenting a significant statistical relationship ($P < 0.05$).

Table 3. Relationship between the level of self-esteem and family violence in university students

Self-esteem	Domestic violence				Total	
	With violence		Without violence		N°	%
	N°	%	N°	%		
Low	5	29.4	12	70.6	17	100
Medium	3	7.5	37	92.5	40	100
High	10	5.8	162	94.2	172	100
Total	18	7.9	211	92.1	229	100

Note: This table shows the relationship between the level of self-esteem and family violence in university students in the biomedical area of UNSA.

Regarding violence, it is observed in Table 1 that 92.1 % live in an environment without violence. Urbina & Eugenio (2015), in their research carried out in Ecuador, they mention that there are serious problems of domestic violence in eighth and ninth year elementary school students that affect their self-esteem and damage their integrity.

Regarding self-esteem, in Table 2 the students of the biomedical area have high self-esteem with 75.1 %; making a

comparison with the study of Reyes (2017) where he mentions that psychology students, in relation to the level of self-esteem, 25 % show that they have high self-esteem, while 56 % have an average self-esteem and 19 % low self-esteem; comparing the results, we see that our students mostly have better self-esteem, which is often a reflection of the good practices of values and communication that exist in their homes.

Regarding Table 3, the relationship between the variables was demonstrated; similar studies such as that of Gonzales (2017), whose objective was to determine if family violence affects the self-esteem of adolescents concluded that most families experience family violence either physical, psychological, sexual and patrimonial or economic; without a doubt, family violence is taking a greater rise in families and in society without being able to avoid it; this violence degenerates and damages students' self-esteem, leading them to a high risk of self-destructive behaviors such as using drugs, consuming alcohol, having early sex, depression, frustration, defeatism, destructive feelings, eating disorders such as anorexia or bulimia, and finally, in some cases, death.

Conclusions

Among the general characteristics of the study sample, it stands out that the biomedical university students of Universidad Nacional de San Agustín are mostly female, that

the average age ranges from twenty to twenty-two years old, they live with both parents, they have between one and three siblings and the vast majority study and work.

Almost the entire university population under study (92.1 %) are not victims of domestic violence, while only 7.9 % suffer from such violence; situation that makes them feel, in general, that the family environment encourages them to continue studying; however, they recognize that their parents sometimes raise their voices when they give orders.

Three-quarters of the study population (75.1 %) presented high self-esteem, followed by 17.5 % of students with medium self-esteem and only 7.4 % presented low self-esteem.

From the results of the data normality analysis, a non-parametric test (X²) was applied to establish the degree of relationship between the variables studied, concluding that there is a statistically significant relationship ($P < 0.05$), between intrafamily violence and the level of self-esteem in the students of the biomedical area of Universidad Nacional de San Agustín.

References

- Aragón j., & Cortes de Aragón L. (1999) *Autoestima, comprensión y práctica*. San Pablo. Caracas, Venezuela.
- Baena-Vallejo, G., Carmona-Otálvaro, J., & Rengifo-Arias, C. (2020). Proposal of intervention on family violence: an approach according to the function and sense of the violent phenomenon in family dynamics. *Estudios de Psicología*, 37, 1-13.
- Branden, N. (2011). *El poder de la autoestima*. Barcelona, España: Paidós.
- Carmona, A.B. (2013). *Proyecto de mejora de autoestima: hacia una educación integral del alumno* (Thesis). Facultad de Educación, Universidad Internacional de La Rioja, Murcia, España.
- Coopersmith, S. (1967). *The Antecedents of self-esteem*. San Francisco, USA: W.H. Freeman & Company.
- Erdinç, D., Balkis, M., & Turkoğan, T. (2019). Relational Violence, Social Support, Self-Esteem, Depression and Anxiety: A Moderated Mediation Model. *Journal of Child and Family Studies*, 28(3), 2404-2414.
- Gonzales, L. (2017). *La violencia familiar afecta la autoestima de los adolescentes en Lima-Perú* (Thesis). Facultad de Educación, Universidad Católica Sedes Sapientiae, Lima, Perú.

- Karni-Vizer, N., & Walter, O. (2018). The Impact of Verbal Violence on Body Investment and Self-Worth among College Students. *Journal of Aggression, Maltreatment & Trauma*, 29(3), 314-331.
- Muslu, G., Cenk, S., Sarlak, D. (2017). An Analysis of the Relationship Between High School Students' Tendency Toward Violence, Self-Esteem, and Competitive Attitude. *Journal of Interpersonal Violence*, 35(23-24), 5976-5996.
- Mlouki, I. et al. (2020). Youth violence in Maghreb countries. A systematic review. *La Tunisie Medicale*, 98(7), 527-536.
- Ramírez, J. (2005). *Un enfoque de evaluación del rendimiento escolar basado en el aspecto*. Ciudad de México, México: Fondo de Cultura Económica.
- Reyes, C. (2017). *Relación de violencia familiar y nivel de autoestima en estudiantes del tercer ciclo de la Facultad de Psicología de la Universidad Autónoma de Ica, 2017*. (Graduate thesis). Escuela de Posgrado, Universidad Autónoma de Ica, Ica, Perú.
- Ruiz-González, P. et al. (2018). Relación entre la autoestima y la satisfacción con la vida en una muestra de estudiantes universitarios. *INFAD Revista de Psicología*, 1(1), 67-76.

Solano, C. et al. (2019). Factors associated with family violence in university students of health sciences. *Revista Cubana de Salud Pública*, 45(2), 1-18.

Urbina, G., & Eugenio, M. (2015). *Efectos de la violencia intrafamiliar en la autoestima de los estudiantes de octavo y noveno año de la Escuela de Educación Básica 11 de Diciembre, Provincia de Santa Elena, 2015*. (Thesis). Escuela de Psicología, Universidad Estatal Península de Santa Elena, Guayaquil. Ecuador.

IX

Social presence of university students in virtual teaching-learning environments in times of Covid-19

José Manuel Calizaya López
Joshua Aáron Díaz de la Vega Calizaya
Felipe Mario Zapata Delgado

Introduction

This book chapter corresponds to results of research on the social presence of university students in virtual environments in times of Covid-19, before the provisions of the Government of turn of isolation and social distancing, which is why they were taken the measures to implement virtualized at all educational levels in the country.

That is why, through the observation carried out in the virtual platforms, a central problem that has been presented in the use of virtual teaching-learning environments was identified, the social absence of students on the network, and although they may be connected in many cases fulfill the assigned tasks; this does not mean that they actively participate and interact in these environments, showing a lot of passivity in the students influenced by socio-academic factors and especially by access to these virtual spaces.

In this sense, the study analyzing the social the social presence of university students in virtual environments in the face of new teaching-learning methods, a result of the COVID-19 pandemic. In this regard, to better understand the structure of this research, topics such as the social presence of the student on the network, and the use of virtual environments and the level of learning obtained in this process, were defined, developing both theoretical aspects and research results to analyze these study variables.

For this purpose, the work was developed in the months of July and August 2020, and corresponds to an ex-post, non-experimental study. 795 students participated in the research process, who were randomly selected. Among them, 51.3 % were female, while 48.7 % were male. The mean age was 20.35 years, with a standard deviation of 2.21 years.

Social presence was evaluated using the social presence measurement scale of online minds (Harms, & Biocca, 2004), version adapted to Spanish by Agut et al. (2011). The initial instrument consisted of 36 items and 5 dimensions and was reduced to 23 items and 5 dimensions, corresponding to co-presence, perceived understanding of the message, perceived affective understanding, perceived affective interdependence, and perceived behavioral interdependence. A Likert scale is used that ranges from 1 to

7, taking into account the aspects of agreement or disagreement. To determine the total score of social presence, the arithmetic mean of all the items is calculated, while to obtain the total scores by dimensions, the arithmetic mean of the items belonging to each dimension is calculated.

Perceived learning was measured with the scale of Richardson & Swan (2003), the instrument is unidimensional and consists of 9 items with a Likert scale that ranges between 1 and 7. And the degree of use of EVEA was measured through a Likert scale that ranges from 1 (never) to 7 (many times). Information was also collected about sex, age, occupation, year and area of studies.

For the application of the instrument, the scales were adapted to the Google forms format, then the instrument was applied individually to people through social networks and email, after information on the objective of the research, the scale instructions and confidentiality of the data provided (admitting the respective informed consent).

Regarding the statistical analysis, exploration of the data indicates that they do not approximate a normal distribution ($p < 0.05$). Descriptive and comparative analysis of social presence, EVEA and perceived learning according to number of groups was carried out. To compare two independent samples, the Mann-Whitney U was used, its effect size (ES) calculated from the probability of superiority (PSest) the

interpretive rules, No effect ($P_{Sest} \leq 0.0$), small ($P_{Sest} \geq 0.56$), medium ($P_{Sest} \geq 0.64$) and large ($P_{Sest} \geq 0.71$) (Ventura, 2016; Grissom, 1994). The comparison of more than two independent samples was made with the Kruskal-Wallis H, its effect size (TE) used was (η^2) eta squared (Tomczak, & Tomczak, 2014) being its interpretative norms ($\eta^2 \geq 0.04$ minimum necessary), ($\eta^2 \geq 0.25$ moderate), ($\eta^2 \geq 0.64$ strong) as proposed by Dominguez (2018), and to establish the correlations, Spearman's Rho was used.

Regarding the information of the participants, it is specified that according to the economic dependence of the student, it was observed that: 70.1 % depend on their parents; 18.2 % indicate that the economic dependence is their own; and 11.7 % specify that depend on other family members. According to the occupation, it was possible to determine that: 69.7 % of students only study; while 30.3 % study and work. Regarding the area of studies, 43.8 % (348) of those evaluated are from the area of social sciences, 38.8 % (308) from the area of engineering and 17.4 % (138) from biomedical. Another aspect considered was the year of studies, where it was observed that 14.2 % are first-year students, 27.5 % correspond to second-year students, 24.9 % are third-year, 13 % are fourth-year, 13.1 % from fifth year and 7.3 % from sixth year. Regarding the resource or technological equipment that they use to enter the virtual environment, it was found in the survey that 43.6 % connect through their cell phone (mobile phone), 36.7 % use a laptop, 17.7 % use a PC and 1.9 % a tablet. And as for internet access, 72.2 % revealed that they

can access the internet, 27.4 % said that they can sometimes access and 1.9 % made it known that they can hardly ever access the internet.

The social presence in virtual environments

The COVID-19 pandemic has caused infinite unexpected situations in the world, not only at an economic and health level but also in various work, academic, and family environments. The unavoidable consequences of the pandemic are unpredictable situations, which attracted the world's attention without warning and which have forced us to change habits and behaviors in unexpected ways.

In Peru, the pandemic has impacted all sectors, both productive and services, however, the greatest effect has been fundamentally in the health and education sectors. The main measure considered by the Peruvian State to mitigate the number of infections were isolation and social immobilization (Renzo, & Medina, 2020), so that teachers and students of the basic and university system went from a face-to-face education to an education virtual, where all activities are carried out through educational platforms, communication platforms or emails, in order not to stop the teaching process and comply with the academic curriculum (Enoki, 2020; Rojas et al., 2020).

This new educational situation was unexpected and in most cases there was not adequate preparation to attend to the different situations that the online education process entails. In such a way that both institutions, teachers and students have found themselves in the need to take on new challenges every day. This adaptation has generated some difficulties for social actors, on the one hand, most of the teachers were not trained in topics about technological tools to teach in virtual environments, in addition, several students had limitations for permanent access to the internet, either because of their limited financial resources or the work situations of their parents, which were also affected by the pandemic.

In relation to the teaching methodology, it was also affected by this situation, synchronous and asynchronous classes focus on the accumulation of activities, which are not necessarily productive, and which are framed in the need to comply with the school curriculum, rather than in the need to teach properly. This type of situation considerably affects stress in students, who in addition to having to face the adversities of the pandemic, also have family situations that influence their emotional states (Suárez, Flor, & Rosales, 2020; Murillo, & Duk, 2020; Estrada et al., 2020).

The student in general, is used to academic activity in person, even when there are virtual elements, such as homework, forums, and others, their main inclination is towards explanation and follow-up in person. Schooling in Latin

America has historically been face-to-face (Vesuri, 1997), and in recent years there has been a trend towards a participatory education, which seeks the interaction of the teacher with the academic needs of the student, in a closer and more committed way (Puiggrós, 1983; Pizan, Barros, & Yupari, 2020).

These indications about the contextualization of education in Latin America do not neglect the educational reality of Peru, where education has represented in the last year, a fundamental axis in the pandemic, to turn to a new way of teaching and learning.

Virtual teaching-learning environments (EVEA) are integrated systems for learning, which are supported by web tools to manage information and communication in the teaching process (Agut et al., 2011). In this system, students interact with each other, and also achieve the teacher-student relationship, being necessary that through the EVEA the user feels the presence of the other (Medina, 2016).

In this sense, the social presence in the network is understood as the ability or capacity of its actors to integrate and belong to a virtual learning community in order to participate and cooperate in their educational processes. A fundamental contribution of these tools consists in establishing positive

social relationships and that these processes are shared, in this way then it is possible to affirm that if the user meets these conditions, they will not experience loneliness or absence in virtual environments (Esteve et al., 2017).

In connection with the ways of understanding social presence in the network proposed by Gutiérrez & Gallego (2017), co-presence is identified, the degree to which the person does not feel alone, the psychological involvement with the other, degree of attention and understanding between users and behavioral interaction, degree of belief about the actions carried out by the user are considered interdependent or sensitive to the other person (Baez, & Ossandón, 2015).

Therefore, maintaining a social presence in virtual classes is essential to ensure a better quality of education, although a high number of students are punctual and participate in the delivery of activities and tasks, social presence is still scarce, making that the quality of teaching is not optimal.

In this sense, as a result of the field work, the following could be verified: Table 1 describes the numerical values of the variable social presence of the student in network environments, the average was 84.56 out of a maximum range of 156 points, and the median indicates that 50 % of students have scores lower than 84, showing that the score is

moderate; this indicates that the majority of students are connected to the virtual environment, but do not show adequate interaction and participation; it could be said, partially, that who they are not alone in the virtual environment, they moderately understand the message of the interlocutors; however they feel that they are not understood emotionally and are sometimes affected by the behavior with some interlocutors. This is a consequence of the traditional forms of teaching, which have had an impact on the new modality of studies, since there is no teacher preparation to take on the new educational trends.

Although the student may be connected to the virtual classroom, it does not mean that they have an active social presence, so the degree of social presence in virtual environments by students presents irregularities; and moderate levels were observed in the evaluation, indicating that the implementation of educational strategies to seek active participation of the student in the network has not yet been completed.

Regarding the comparisons of social presence and its study dimensions (Table 2), considering the social variables, it was observed statistically significant differences according to gender and age; while when evaluating the student's occupation, no significant differences between men and women were found. When evaluating participation in virtual classrooms, it was possible to show that women have greater

interaction than men, and also demonstrate better affective and behavioral understanding. It could also be observed that younger students have a greater participation in virtual classrooms, stating that they feel greater co-presence in contrast to older students. However, older students show greater affective and behavioral interdependence.

When evaluating the aspects associated with the year and area of study, it could be observed that the students of the first years feel higher levels of co-presence in virtual environments than the students of the upper years; however, in the comprehension assessment affective the students of the last year of studies are the ones who show this indicator better than students of the other years of studies. And with respect to the area of studies, it is the students of social sciences who demonstrate better levels of social presence in the network than the students of engineering and biomedical areas (small effect size).

Table 1. *The social presence of students in the virtual environment*

Social Presence		M	DE	Md	Min	Max
Global social presence		84.56	23.59	84	24	161
Co-presence		19.12	5.99	20	5	35
Perceived understanding of the message		15.14	4.54	16	4	28
Perceived understanding	affective	13.58	4.55	13	4	28
Perceived interdependence	affective	17.93	6.01	18	5	35
Perceived interdependence	behavioral	18.79	6.11	18	5	35

Note: M = Average; SD = Standard Deviation; Md = Median; Min = Minimum; Max = Maximum.

Source: author own elaboration.

Table 2. Comparisons of social presence according to socio-educational variables

	Sig* (TE)	Sig** (TE)	Sig*** (TE)	Sig**** (TE)	Sig***** (TE)
Global social presence	0.000 (0.34)	0.000 (0.04)	0.466	0.000 (0.13)	0.231
Co-presence	0.000 (0.37)	0.001 (0.20)	0.007 (0.12)	0.000 (0.05)	0.146
Perceived understanding of the message	0.000 (0.38)	0.000 (0.06)	0.572	0.000 (0.05)	0.724
Perceived affective understanding	0.000 (0.42)	0.264	0.049 (0.02)	0.000 (0.21)	0.374
Perceived affective interdependence	0.000 (0.32)	0.000 (0.25)	0.804	0.000 (0.33)	0.240
Perceived behavioral interdependence	0.000 (0.36)	0.000 (0.07)	0.305	0.169	0.459

Note: Sig = Significance; TE = Effect Size.

*Comparison between sexes; **comparison by age; ***comparison by years of study; ****comparison by study area; *****comparison by occupation.

Source: author own elaboration.

Learning in virtual environments

Certainly the objective of virtual environments is to improve learning in higher education through access to resources and methodological strategies. However, the level of learning differs between one student and another (Lechuga et al., 2014).

In this way, virtual learning is known as online learning, developed virtually through platforms that allow adequate interaction between its users (Ruiz, 2020). In this regard the level of learning can also be conditioned by variables intervening parties such as sex, age, marital status, place of origin, economic situation, family harmony, health, and internet access (Rojas et al., 2020). Some authors point out that to improve online learning, interactive learning platforms, virtual specialized libraries, training for teachers and students on the management of information and communication technologies, acquisition of virtual simulators to develop practices, among other elements that enrich the teaching process, must be implemented (Cayo, & Agramonte, 2020).

Therefore, this work also analyzes learning in virtual environments, taking into account different socio-educational variables that intervene in the training of students.

Online teacher skills

The traditional teacher is no longer representative in modern education, since the new teaching role must focus on other aspects that go beyond the master class, among the most outstanding elements of the virtual teacher can be mentioned: (i) encourage participation in students; (ii) change the pedagogical approach of the students; (iii) use the virtual classroom to support teacher management; (iv) improve video and image content to gain student attention; (v) appropriate use of the internet and social networks.

Pedagogical competences that the teacher must have in virtual environments

In the new virtual educational environments, the teacher plays a fundamental role, characterized mainly by orienting himself to collaborative environments, where the development of social skills is integrated, with greater communication and greater incentives for participation, trying to make everyone integrate into the teaching process.

Shows a representative diagram of the new functions of the teacher, and it can be seen that the teacher no longer has an essential physical presence, therefore they must fulfill other roles that include being the motivator of education, who promotes participation and is integrated in the teaching processes as a participant in the activities and not as someone outside the processes, also has the responsibility of being a collaborator in the teaching tasks and activities, while still being a counselor, guide and with significant contributions in the academy.

Teacher's pedagogical competences in virtual environments

New teaching strategies must be selected with great care in order to cover the contents and offer dynamic academic environments, where activities promote autonomous research and collaborative work. They must then also recognize the learning styles of their students, provide personalized advice and accompany them in tutorials and reinforcements when necessary. Some relevant aspects of the new pedagogical skills of the virtual teacher would be the following: (i) offer broad information but leave room for individual and autonomous inquiry by students; (ii) take into account the desired learning outcomes to be able to design activities and academic exercises that are adapted to virtual environments; (iii) lead discussions, brainstorm and debates, to finally generate summaries that contribute to the knowledge of the

students; (iv) guide on the use of the virtual library, bibliographic sources, publication of works online.

In this sense, when evaluating the daily use of virtual teaching environments, the results show that 36.2 % of students use EVEA between 3 to 4 hours a day, 23.3 % between 1 to 2 hours, 20.5 % between 5 to 6 hours, 11.6 % less than 1 hour and 8.4 % more than 6 hours (Figure 2).

In this regard, Table 3 shows that when making the comparisons, it was possible to see that it is men who use the virtual environment for more average hours a day compared to women (small effect size); in relation to age they are the youngest age students who use virtual environments the most compared to older ones (small effect size); and according to the area of study, it is students from the engineering area who use the EVEA more than students of social and biomedical sciences (small effect size). Regarding the technological resources or equipment that students use, those who access with a cell phone are those who use the virtual environment more than those who have a laptop or computer (moderate effect size).

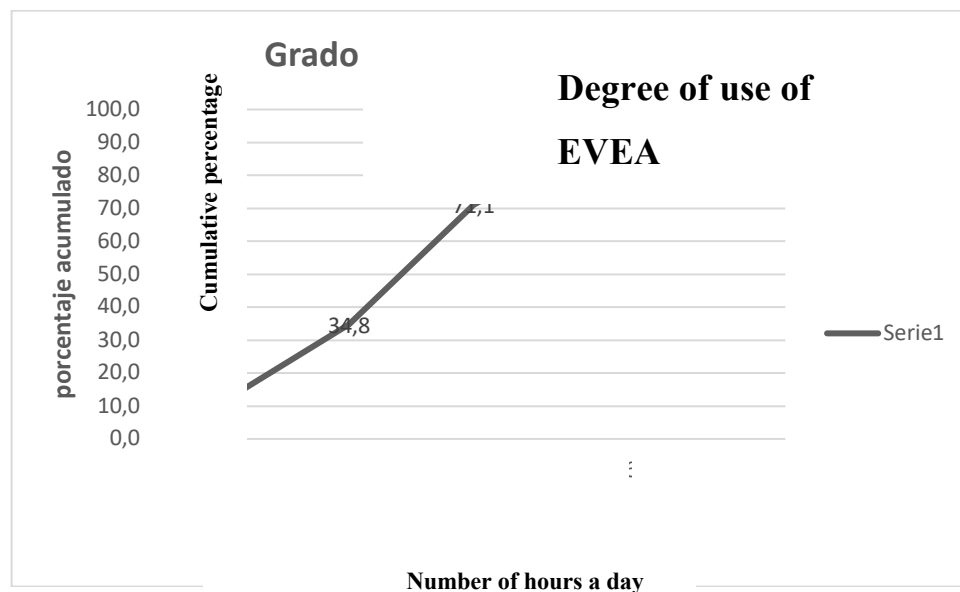


Figure 2. Degree of use of EVEA per day. Source: author own elaboration.

Table 3. Comparisons of the use of the EVEA according to social and academic variables

	Sig* (TE)	Sig** (TE)	Sig***	Sig**** (TE)	Sig***** (TE)
Using the EVEA	0.035 (0.46)	0.000 (0.25)	0.119	0.000 (0.14)	0.026 (0.59)

Note: Sig = Significance; TE = Effect Size.

*Comparison between sexes; **comparison by age; ***comparison by years of study; ****comparison by study area; *****comparison by resource or technological equipment.

Source: author own elaboration.

Figure 3 describes the student's perception of the level of learning in virtual environments, according to the measurement it was found that for a significant number of students the perceived level of learning is medium, while for others it is high and for a smaller group is considered low. In this sense, it can be described that students consider that their perceived level of learning has not changed with respect to face-to-face education, despite the fact that the quality of learning is not the most adequate due to the fact that a good number of teachers do not use the tools of information and communication technologies appropriately; likewise, several students do not have economic resources, especially to pay for Internet services, which limits their access. The great concern of students lies in not losing the academic year, seeking to pass courses without having obtained quality learning.

The learning perceived according to socio-educational variables was compared, finding statistically significant differences only in the indicators related to the quality of the learning, where it was possible to appreciate that only the students with higher performance and greater discipline value this aspect. Another item related to the qualification was valued by those young students, from the area of social sciences, who are applied in their studies, who contributed important results in this question. However, the older students showed considerable acceptance in the item related to learning, stating that learning is significant and appropriate to achieve the expected knowledge (Table 4).

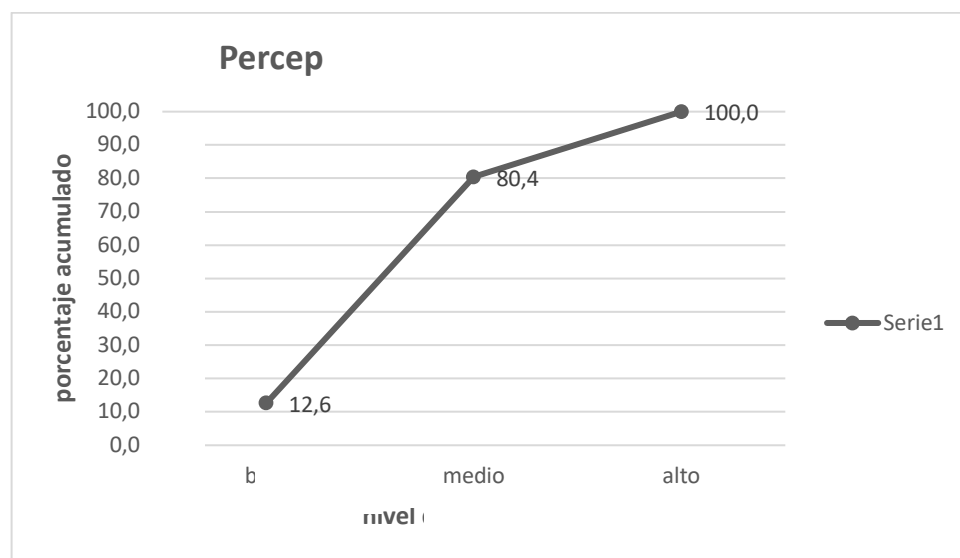


Figure 3. Perception of the level of learning in the virtual environment (EVEA). Source: author own elaboration.

Table 4. Comparisons of the perception of the level of learning according to social and academic variables

	M	Sig*	Sig** (TE)	Sig*** (TE)	Sig*** * (TE)	Sig***** (TE)
Learned the same or even more than in face-to-face classes.	3.75	0.882	0.574	0.082	0.472	0.494
The quality of learning in the classes was excellent.	3.78	0.777	0.541	0.281	0.894	0.048 (0.46)

What you have learned allows for better performance.	4.03	0.517	0.832	0.220	0.531	0.381
Do things you didn't know how to do before.	4.35	0.594	0.062	0.099	0.575	0.244
With what you have learned, you get a good grade.	3.81	0.255	0.000 (0.02)	0.256	0.017 (0.01)	0.030 (0.45)
You earned a lot with this type of work.	3.94	0.184	0.077	0.507	0.725	0.588
What you have been learned you have made it possible to consolidate knowledge.	3.95	0.840	0.046 (0.01)	0.032 (0.01)	0.851	0.891
Solving problems alone or in interaction with colleagues allowed better learning.	4.14	0.804	0.432	0.449	0.794	0.793
Having to adopt active learning	3.75	0.947	0.000 (0.02)	0.134	0.630	0.502

allowed
for better
understan
ding.

Note: Sig = Significance; TE = Effect Size.

*Comparison between sexes; **comparison by age; ***comparison by years of study; ****comparison by study area; *****comparison by occupation.

Source: author own elaboration.

Once the information collection process was completed, it was observed that there is no significant relationship between social presence and virtual environments (Table 5), nor a significant relationship between social presence and learning, but it is possible to affirm that virtual environments influence learning considerably, therefore that learning can be achieved in a positive and significant way with the good use of virtual tools, with high levels of discipline and self-learning.

Table 5. *Correlations of social presence, EVEA and learning*

Rho Spearman	Social Presence	EVEA	Learning
Social Presence	1		
EVEA	,030	1	
Learning	,042	,397**	1

Note: **correlation is significant at the 0.01 level (2-tailed).

Source: author own elaboration.

Virtual environment analysis

According to the evaluation of the social presence of university students in virtual environments in the face of new teaching-learning methods, a result of the COVID-19 pandemic, the study revealed that the quality of teaching can be maintained even with virtual spaces, and that it will depend on the teaching strategies and the student habits of the actors involved.

One of the most outstanding aspects to consider for improvements in the virtual teaching process is teacher training in areas of technology management, use of computer equipment and use of computer tools.

The adaptation of teaching methodologies in the new classrooms must be in tune with the student's needs, without neglecting the academic objectives. In such a way that the teacher must incorporate teaching in the family environment of the students and with it, get involved in the learning process.

Traditional education loses ground in the new times, the assessment of the quality of teaching prevails over the

assessment of qualifications, as well as interdisciplinarity now comes to represent the work teams of the new era.

This study has considered an analysis of the main aspects involved in online learning, a product of the Covid-19 pandemic, noting that the pandemic represents only one of the stressors in students, since the use of technological tools and Information technology is not easily accessible to everyone, and it is a considerable stressor on the student population.

Another factor observed in this research is the teaching methodology, which cannot be the same in the case of face-to-face classes, and which is confused between teachers and students when it comes to evaluations. Well, this factor saturates students with academic activities and also presents shortcomings in the ways of teaching classes, achieving a substantial imbalance to achieve the expected success. Some authors ensure that social presence, based on the social and emotional projection of people in the context of virtual environments, can produce important positive aspects in learning (Esteve et al., 2017). Therefore, immersive virtual spaces with multiple users can allow the generation of much more optimal learning strategies than those where the social presence is not significant.

The new educational trends with inclusive virtual environments should consider the participatory integration of all those involved, to create dynamic and collaborative learning scenarios that favor social presence and make it possible to consolidate work teams for the development of activities. In this sense, the research carried out revealed that the social presence in the virtual classes of the social and engineering careers require a greater methodological contribution to achieve a greater social presence.

In this study, it was possible to analyze and verify that social presence is essential in learning, since it creates interrelationships of people that allow the cognitive integration of learning. Virtual classes should not be detached from the fundamental factors of education that include teacher engagement, the construction of knowledge and social spaces.

Thus, social activities are related to affective interaction, open communication and the cohesion of the people who interact in the virtual classroom community (Gutiérrez-Santiuste, Rodríguez-Sabiote, & Gallego-Arrufat, 2015). These elements cannot be separated from each other, because they are essential for effective online teaching, which not only contributes to the generation of knowledge, but also links human and social aspects.

Conclusions

The current educational situation unexpected by the Covid-19, has generated some difficulties for its actors involved, especially when interacting in virtual classrooms, showing levels of social absence on the network especially by students, as explained Esteve et al. (2017), if you do not have the ability or capacity to integrate and interact in the virtual classroom, it is most likely that you will experience loneliness or absence in these environments.

New educational trends open the way to a universe of options for learning, but they must be subject to responsible training for the actors involved, who are generally teachers. If this condition is not met, it is most likely that online learning will not improve (Cayo, & Agramonte, 2020).

The new teaching methodologies must include virtual scenarios that integrate work groups and motivate the participation and self-learning of students. Changing teaching paradigms from one day to the next is not a simple task, adaptation to change must come from institutions to social entities, leaving traditional education aside and making way for new teaching processes.

The results found in this work also reveal a high level of anguish and stress in the student population, mostly a product

of the new academic demands and economic limitations of the majority, as well as the excess of activities requested to meet the teaching requirements, considering these aspects with intervening variables that also influence the level of online learning, with the probability of obtaining an academic failure (Lechuga et al., 2014).

Therefore, the research carried out revealed the need to improve study policies, to achieve a balance between academic demands and new teaching methodologies, being necessary to continue researching the subject in question in other educational spaces to have greater guidelines that allow explaining the new virtual teaching-learning processes in these difficult times produced by Covid-19.

References

- Agut, S. et al. (2011). Social presence in virtual learning environments: Spanish adaptation of the Networked Minds Social Presence Measure. *Revista Latinoamericana de Psicología*, 43(2), 279-288.
- Baez, M., & Ossandón, Y. (2015). Psychometric Properties Networked Minds Social Presence Measure and its Application in the Teaching Learning Virtual Environment UTA^{med}. *Universitas Psychologica*, 14(3), 843-854.

- Cayo, C., & Agramonte, R. (2020). Challenges of virtual education in dentistry in times of pandemic COVID-19. *Revista Cubana de Estomatología*, 57(3), e3341.
- Domínguez, S. (2018). Magnitud del efecto, una guía rápida. *Educación Médica*, 19(4), 251-254.
- Enoki, E. (2020). Distance learning in Dentistry actions of higher education facing COVID-19. *Revista Cubana de Estomatología*, 57(3), e3308.
- Esteve, V. et al. (2017). Social presence in 3D virtual environments: Reflections upon a teaching experience in the university. *Revista de Medios y Educación*, 50, 137-146.
- Estrada, E. et al. (2020). Attitude of university students towards virtual education during the COVID-19 pandemic. *Revista Brasileira de Educação do Campo*, 5, e10237.
- Grissom, R. (1994). Probability of the superior outcome of one treatment over another. *Journal of Applied Psychology*, 79(2), 314-316.
- Gutiérrez, E., & Gallego, M. (2017). Social presence in a virtual collaborative learning environment: Analysis of a oriented inquiry community. *Revista mexicana de investigación educativa*, 22(75), 1169-1186.
- Gutiérrez-Santiuste, E., Rodríguez-Sabiote, C., & Gallego-Arrufat, M. (2015). Cognitive presence through social and teaching presence in communities of inquiry: A

correlational-predictive study. *Australasian Journal of Educational Technology*, 31(3), 349-362.

Harms, C., & Biocca, F. (2004). Internal consistency and reliability of the networked minds social presence measure. In Alcañiz, M., & Rey, B. (Eds.), *Seventh Annual International Workshop: Presence 2004*. Valencia, España: Universidad Politécnica de Valencia.

Lechuga, M. et al. (2014). Use of Educational Virtual Environments and OpenCourseWare in Chemical Engineering Courses of the University of Granada, Spain. *Formación universitaria*, 7(4), 3-14.

Medina, I.V. (2016). Use of the virtual teaching and learning of the subject human morphology. *Educación Médica Superior*, 30(3), 591-598.

Murillo, J., & Duk, C. (2020). The Covid-19 and the Educational Gaps. *Revista Latinoamericana de Educación Inclusiva*, 14(1), 11-13.

Pizan, E., Barros, S., & Yupari, I. (2020). Impact of COVID-19 on the education of medical students in Peru. *Revista de la Facultad de Medicina Humana*, 20(3), 534-535.

Puiggrós, A. (1983). Discusiones y tendencias en la educación popular latinoamericana. *Nueva Antropología*, 6(21), 15-40.

- Renzo, C., & Medina, C. (2020). COVID-19 and the education of medical students. *Revista Cubana de Investigaciones Médicas*, 39(2), e758.
- Richardson, J., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Network*, 7, 68-88.
- Rojas, J. et al. (2020). The return to the university during the pandemic: Perspectives within a public school of midwifery. *Scielo Preprints*.
- Ruiz, G. (2020). Covid-19: Thinking about Education in an Unprecedented Scenario. *Revista Mexicana de Investigación Educativa*, 25(85), 229-237.
- Suárez, F., Flor, O., & Rosales, L. (2020). Sistema de identificación de conductas para identificación de riesgo. *RISTI. Revista Ibérica de Sistemas e Tecnologias de Informação*, E31, 309-317.
- Tomczak, M., & Tomczak, E. (2014). The need to report effect size estimates revisited. An overview of some recommended measures of effect size. *Trends Sport Sciences*, 1(21), 19-25.
- Ventura, J. (2016). Effect size for the Mann-Whitney: Contributions to Article Valdivia-Peralta et al. *Revista Chilena de Neuro-Psiquiatría*, 54(4), 353-354.

Vesuri, H. (1997). Pertinencia de la educación superior latinoamericana a finales del siglo XX. *Nueva Sociedad*, 146, 102-107.

X

Emerging technologies in university settings: digital identity from the educational and psychological perspective

Carmen Llorente-Cejudo
Andrés Luque Ruiz de Somocurcio

Introduction

In the studies that we have reviewed, at any of the educational levels through which the student passes throughout their academic training, there is no doubt that digital competence has taken a special role around the different curricular aspects, due of course, to the great demand of society and the labor market.

The higher education educational system has been doomed, especially in recent times, to a curricular development where technologies have occupied the wide spectrum of the range of resources that, both Professors and students, have had to integrate into their teaching process and learning to respond to the educational needs that have arisen, until reaching what is known as a true digital transformation and at the same time developing other processes; as mentioned by Luna-Romero,

Vega & Luna Romero (2019), radical changes are required to the higher education system of the region, and that are in the evaluation and accreditation processes.

A digital transformation that, in these times, is even more interesting and notable, if we take into account that the needs to incorporate technologies in our day-to-day lives, and in all sectors of our lives, had not occurred in previous decades. And to this, Llorente (2020) He already pointed this out, when he established that from early childhood education to university level, it was achieved in record time, with few resources, with enough pressure but with great commitment and personal effort, since education professionals have developed digital capacities to attend virtual and telematic needs. efficiently.

A changing environment, and with peculiar characteristics that, still the lack of objective distancing from the events that are taking place, make us not see with total clarity the complexity of the changes that are being unleashed in the educational environments of higher education. Bauman (2010) already made reference to a liquid modernity, where the immediate and the ephemeral made their appearance everywhere, and where they appeared as a distinctive characteristic. And thus those contexts that until now were presented as safe and stable, become ephemeral and trivial:

We are facing a volatile world of liquid modernity; where almost no shape remains unchanged and time is no longer enough to set and guarantee long-term reliability (at least; no one tells us when they can set; and there is little chance that they will ever reach that state). (Bauman, 2010, p. 44)

Of course, there is no doubt that, in all this network of changes and transformations, Information and Communication Technologies (ICT) take on an importance and a special significance, since they are, at the same time, cause and consequence; even more so if we focus on the Internet in all its applications and modes, and where the appearance of the social web, and the so-called social networks, have brought about new possibilities for citizens (electronic democracy), where we are offered new and genuine forms of participation. As Cabero & Aguaded (2014) pointed out, it is no longer possible to imagine a scenario without ICT, and even the most technophobic have embraced, almost unconditionally, its multiple networks. As Cejas et al. (2020) say, there are significant differences between the teacher who manages teaching strategies with support in ICT, and a teacher who does not.

So, as a result of what was reviewed, we asked ourselves some questions: how complex the digital identity will be in professors and students?; how is the process of acquiring

digital skills linked to digital identity?; what are the digital profiles that exist between professors and students?; what impact does the formation of digital competencies bring about the digital identity of the teacher and student?

We can conclude in this first part by reaffirming the importance of studying the relationship between the use of technologies and the digital identity of higher education professors and students, as well as the way in which these new skills are acquired.

Challenges in the incorporation of emerging technologies in higher education spaces

For several decades now, it is a fact that the implementation of technologies (teaching and learning platforms (LMS), interactive tools, technological resources, etc.) has been carried out in a fluid way, offering us the possibility of putting studies into practice that offers results and conclusions that allow us to consider different decisions regarding its implementation in the classroom by professors. This has led to rethinking and adopting different challenges to take into account, gaining in recent times a special relevance due to the omnipresence and popularization of connectivity technologies in all areas, and not only with regard to the school environment. But, as already pointed out in the diversity of studies and research, the great challenge usually appears in regard to teacher training; and we would dare to point out, as

regards the digital competences of professors and students in particular, it is needed. Thus, in multiple and repeated investigations, professors make mention of the fact that incorporating ICT in their educational practice is one of the problems that most concern them, and thus be able to take on the challenge of being a guide in practice within the teaching-learning process (Rivero et al., 2016).

For this, the development of digital skills, at any of its educational levels, has taken on a relevance like never before. And that is why, digital competence is constituted as a prerequisite so that students of all ages can fully benefit from the new possibilities offered by technology for a more effective, motivating and inclusive learning.

Years ago, the focus of attention was directed towards other elements. This was pointed Cabero (2004) when warned us of the need to look beyond, and overcome the vision of merely instrumental training, to focus interest in more dimensions didactic-curricular such as: semiologic/aesthetic, curricular, pragmatic, psychological, producer/designer, selector/evaluator, critic, organizational, attitudinal and researcher.

Likewise, if we take into account the needs of students as digital natives, this training placed its emphasis on digital

literacies linked to: the value of practice and reflection on it, the participation of professors in its construction and determination, its design as an unfinished product, focus on the means available to professors, place itself within training strategies broader than mere individualism and reach broader dimensions such as planning, design and evaluation, and encourage the co-production of materials between professors and students. And so an efficient transfer of knowledge can be given by promoting the understanding and generation of new knowledge in the student (Avgerou, Niall, & Renata, 2016).

Thus, the need to define what are the curricular elements that make up the necessary training for the acquisition of digital competence, at any educational stage, is generated; therefore it is necessary to create a common framework with wide recognition and consensus. Cabero et al. (2018) emphasize the need to claim the need for students to be trained in a digital competence that leads them to evaluate and discriminate the relevance of the existing information on the Internet and the open resources that circulate through it, and this training of professors can be considered from new perspectives as pointed out by the TPACK model (Cejás et al., 2016).

Importance of digital identity in university contexts

Understanding the concept of digital identity implies understanding and being aware that we are in a connected world, where the Internet and social networks are already part of our true idiosyncrasy today, and where their rapid development has caused, among other factors, to be recognized in a positive way both by society in general, and by the educational community in particular (Gialamas, Nikolopoulou, & Koutromanos, 2013). Therefore, if we establish our focus of attention in the educational field, and more specifically in professors and students, we can observe how the predisposition that one has to connect to the network, to make use of mobile devices, social tools, etc., have caused these to have been incorporated in a habitual way in the teaching and learning processes, even becoming, in many cases, the true protagonists of the educational process, representing a *modus operandi* of the teacher to project their work (Lombillo et al., 2018).

And in all this, when we made reference in previous sections about the importance of the acquisition of digital competence, it is time to point out how, from the pedagogical perspective, one of the aspects that most concern today is to know how aware we are the professors and the students, as far as the concept of digital identity is concerned, and which was already referred to in the framework of digital competences to be developed. And in this sense, Martínez

(2018) already pointed out how the digitization of society provided each user with a digital identity that grows exponentially, and that develops in parallel to identity we have in the physical or real world, establishing relative processes to the handling of personal information that are increasingly configured as more intensive, demanding and automated, and that control our vital spaces. On many occasions, the importance of transforming the teaching role as a person who has to be in charge of designing meaningful learning situations is highlighted, so there is no doubt that acquiring and developing the different digital competencies, specifically, those that affect our digital identity, is a challenge that university education students, that is, future professors, must achieve for their personal benefit and for the benefit of their students.

Thus, if we have to offer a first definition of digital identity, we could understand it by that concept that refers to all that information from the inquiry about ourselves in the different Internet search engines (full name, telephone number, etc.) and that sometimes it can be present on the network in a way that its own owner is little aware of, and which can be, without our consent, manipulated or labeled, in such a way that an identity can be generated that, in many of its aspects, will not be authorized by the interested parties themselves. For this reason, Correa et al. (2015) mention the teaching digital identity is a dynamic, permanent process that gives meaning and reinterprets beliefs, values and experiences, in the light of current contexts, experienced within and out of school by

professors and their visions, beliefs and expectations in an environment characterized by the digitization of their experience.

But, how can a positive impact be promoted from the educational field? It is at this moment when, and once situated on the understanding and relevance that digital competence and digital identity present, we must analyze it from the educational framework and, in later sections, also the psychological one.

If we take a moment of deep reflection, we can realize that our digital identity is our letter of introduction to the rest of the world, both personally and professionally. And it is that, on many occasions, we are not aware of the fact that all the information on the network about us is permanently recorded and registered online and in the case of professors, digital identity implies being visible, that is to say, give relevant information about who you are in relation to teaching, research and management (Sánchez-Santamaría, & Aliaga, 2018).

As professors, our digital identity offers a view of our registration on the network, whether consciously or not, with regard to our communicative and social competence, a fact that takes special significance if professors make use of and

are participants in different social networks. As we mentioned previously the most advisable thing is to decide which social network or web you want to use for personal and professional purposes, in this way, the personal network must add the privacy you want, while the professional one can be accessed by any person or client.

That is why, having a good digital reputation is, nowadays, as necessary and important as having a good presentation resume. Thus, in a context where the lack of credibility and false news stands out, it cannot be ignored that our reputation has been configured as one of the indispensable factors of any corporate and personal communication (Atarama & Cortez, 2015).

To this, collaborative work is added as a determining factor when exchanging scientific and technical capital within the academy since we form a community to exchange results and collaborate in the production of research (Salinas, 2019). There are a variety of research that have studied factors that influence the productivity of research collaboration such as Internet use (Vasileiadou & Vliegenthart, 2009), age or gender (Meishar-Tal, & Pieterse, 2017), informal communication (SooHo & Bozeman, 2005), citizenship (Lee & Bozeman, 2005), geographical position (Duque et al., 2005).

In addition, in the digital identity, the values, morals, ethics and beliefs of a user are also reflected. This can have both positive and negative repercussions. It is necessary to have a minimum of ethics in the network to be able to use it for good purposes, since in relation to beliefs a considerable distance between the beliefs held by professors and the educational use they make of ICT (de Aldama & Pozo, 2016).

Finally, it should be noted that all data and files, which are shared and that make up the digital identity, are transferred by the user himself voluntarily and legally to the profiles that make up their digital identity and the companies that manage them; in such a way it is very easy not to know what this data is being used for, in addition to being very difficult to delete it. Therefore, we have to be careful when uploading information about ourselves to the network, as our digital identity is very important.

Digital identity from the field of psychology

The use of technology plays a leading role in developing the skills of professors and students in the 21st century. It is, from here, where the idea of the knowledge society is reinforced; in other words, the use of technologies becomes transcendent when understanding that they are mediators to access knowledge. Oyarzo (2016) maintains that the network has gradually gone from being a depository of information to a social instrument for the creation of knowledge. However, the

use of ICT is something recent in our history, that is why we have to talk about digital literacy of professors, which implies the appropriate and critical use of technologies. In this regard, Claro et al., (2018), affirm that the digital literacy of professors includes the correct and critical use of ICT in education with the purpose of proposing solutions to cognitive problems that arise daily, in addition, it must be able to serve as a mediator between technology and training processes.

The degree of use of ICT in a decisive way is determined by the level of appropriation of the technologies in use; it is necessary to consider that the level of appropriation is a complex and multifactorial phenomenon (Del Prete, Almenara, & Halal, 2018). One of the inhibiting reasons in the appropriation of these skills is the lack of training in the pedagogical application of technological tools. That is, they must develop competencies, which implies that cognitive aspects must be considered not only in the technological but also in the pedagogical and we cannot leave aside the emotional aspects as well as the values, ethics, attitudes.

On the other hand, at the student level, we will say that ICT are very familiar to them since they were born in full development of digital and communication technologies; or as Chiecher & Lorenzati, (2017) would say, the characteristic feature of teenagers and young people is that they were born in this technological world, which develops through technologies.

A first aspect when referring to the digital identity of the teacher in the academic field, is related to their beliefs about the teaching-learning process as a determining factor. These beliefs stem from a form or style of behavior of an individual, groups and/or an institutional culture that is learned through socialization and enculturation. These beliefs have to do with two paradigms in the academic field: constructivism and behaviorist or traditional; the first builds and produces learning and fosters teamwork, and the second focuses on the transmission of knowledge regardless of reflection and/or knowledge analysis (Arancibia, Cabero & Marn, 2020). Now the term belief is adjusted to those mentioned by García, Azcarate & Moreno, (2006), they which indicate that beliefs are characterized by the following indicators: associated with personal ideas, influence the teaching-learning processes, have an affective value, are a form of knowledge, and are justified without any rigor. So, the beliefs about the teaching of professors have a lot to do with the integration that they make of technologies in their teaching work (Prestidge, 2012). Another aspect related to the formation of digital identity at the teaching level is the type of teacher that integrates technology, and for this purpose we have 5 teacher profiles, as suggested by Admiraal (2017): (i) professors focused on the student with technology, (ii) critical professors critical of the use of technology in school, (iii) professors uncomfortable with technology, (iv) professors uncomfortable with learning-centered teaching, and (v) critical professors with a clear stance.

But when the teacher learns to properly handle ICT, they go on to the process of appropriation and innovation, at that moment the digital identity is generated with greater force (Sandia, Luzardo, & Aguilar-Jiménez, 2019) according to the Adell (2008) model, which considers innovation as the fifth level of performance (access, adoption, adaptation, appropriation and innovation). There it is important to mention the time that the teacher invests to be able to plan and design activities for the students, and in the same way the time that the students use to respond to the demands of the professors through their digital identity. So, there is a considerable saving of time and money, since schedules can be accommodated to the needs of professors and students (González-Ruiz et al., 2018).

The virtual didactic material presented by the teacher promotes the digital practice of the student, so it must motivate the fulfillment of the activities. This idea is supported by the historical-cultural approach, where learning is the fundamental factor of development conceived as a social activity. For this, it is necessary to take into account design, aesthetics, the scientific style that promotes thinking and creates a space for social integration, reflection, knowing judgments, evaluations and confronting ideas with other students (Torres & García, 2019). These materials must be creative in their design to teach in a different way, motivating

the student, to be informed, arouse their curiosity, observe, among other skills (García, 2017).

The digital identity can be seen represented by the characteristics of the learning environment; for this purpose, the teacher must adapt or personalize the virtual environment to the digital characteristics of the student. As Sandoval (2017) indicates, the content and transmission must be adapted to the needs, rhythms and ways of learning of the student and this adapted learning manages to respond to the needs more effectively. In part, this determines that use: digital portfolio, software, QR code, chat, blog, video among other technological tools that are used from different technological supports; what Torres & García, (2019) call MADIVA, which is shaping the digital identity of the teacher but also the student.

A basic activity in the academic field is research in professors and students, so the digital identity of each of these actors is framed to solve the problems of the research. Now the interviews, questionnaires and web experiments arrive where before the physical research tools did not arrive; as Berrocal & Megias, (2016) refer, virtual platforms facilitate management tasks, data consultation, research and information dissemination.

It is also necessary to mention some psychological aspects that can be affected by the use of technologies and communication, such as concentration, among other cognitive functions of the person; as indicated by Makewa, Ngussa & Kuboja (2018), when stating that ICT are an interference in the development of intelligence due to the immediate availability of information, although there are also others who claim that these can serve to improve other cognitive aspects.

Finally, we affirm that there is relevant information on the issue of emerging technologies in university settings, both from an educational and psychological perspective, opening up new spaces to investigate the different aspects that make up digital identity, something so transcendent for people, that networks and platforms through which they communicate every day in the university environment are part of their personal identity. What is exposed here is the first part of a set of reflections based on the bibliography found in mostly impact publications.

Controversy

To point out that for the formation of the digital identity of professors and students there are several aspects to be investigated in detail and that we have not covered all these aspects, focusing on the most important from our pedagogical and psychological perspective. A pending issue in the research is the level of exclusion of professors and students

with limitations in the development of competencies or who take a long time to adapt to new technologies; thus, Astudillo-Torres, Chevez-Ponce & Oviedo (2020), indicate that more research is needed in relation to ICT and the exclusion of students and professors. On the other hand, academic institutions should think about implementing policies aimed at developing a digital identity in their professors through the process of developing competencies in ICT as stated by Granados, Vargas & Vargas (2020) by indicating that institutional changes are required in methodologies, showing innovation among professors and documenting experiences to make decisions within Institutions generating policies towards professors.

The issue of recognition on the part of the institutions in relation to the time that the professor uses in developing competencies to form their digital identity, continues to be a concern, since the time that is invested in the preparation of materials so that their sessions are more attractive, they will not be recognized by their academic institutions, both today and years ago, as Del Prete, Almenara & Alhal (2018) observed when seeing that professors are not always recognized by the Institution and have the feeling of having to invest a lot of time.

Conclusions

If we are sure of one thing in our conclusions regarding trends in emerging technologies and digital identity, it is that the use of ICT should be seen and directed towards the knowledge society as a mediator to appropriate knowledge; therefore, we can reach one of our first conclusions, and that is that training in digital literacy and digital competences is a greater need for professors than for students, since for them it is part of their architecture of life, relationships, leisure, etc.; in short, what Prensky (2001) called as, digital natives.

And the following conclusion is related to considering that the use of ICT configures the digital identity, which is related to beliefs in the teaching-learning process through technologies, influencing constructivist and behavioral paradigms.

From our point of view, and taking into account that this chapter constitutes the basis of a future study, we believe that it is common to find in classrooms the fact that, when the teacher progressively appropriates the use of ICT, it becomes much more innovative in everything that refers to its teaching and learning process, and all this has repercussions and influences the idea that has been deepened, and that is known as digital identity.

There is a need, and this is shown by different studies and research (Barroso-Osuna, Llorente-Cejudo, & Palacios-Rodríguez, 2019; Sampedro, & Marín, 2015) for both professors and students to update their digital identity much more frequently, especially regarding to social networks, and to those tools of a professional nature (Linkedin, Academiaedu, etc.), but nevertheless, the fact that they keep their digital identity updated when it comes to leisure and free time social networks is noteworthy. All of this means that from this approach future research is structured to investigate and delve into the reasons why this specific phenomenon occurs. Thus, we can affirm that a direct relationship can be established between the material promoted by the teacher and the practice through the digital identity of the students. In this sense, technological tools in the educational and psychological field promote a digital identity in professors and students that can well be extrapolated to the field of research.

To conclude, we would like to end this chapter with a conclusion to which special emphasis is placed, and is the one referring to the need to foresee from higher education institutions the creation of training programs and actions educational for use of social networks linked to the digital identity.

References

- Adell, J. (2008). *Competencia digital de los profesores*. Recovered from <https://www.youtube.com/watch?v=sLLlwJcQ--Y>.
- Astudillo-Torres, A., Chévez-Ponce, F., & Oviedo-Vargas, Y. (2020). La exclusión social y las tecnologías de la información y la comunicación una visión estadística de su relación en la educación superior. *LiminaR. Estudios Sociales y Humanísticos*, 18(1), 177-193.
- Atarama, T., & Cortez, C. (2015). The reputation management in the digital environment: Twitter as a tool of reputational communication in the Peruvian universities. *Revista de Comunicación*, 14, 26-47.
- Avgerou, C., Niall, H., & Renata, L. (2016). Growth in ICT uptake in developing countries: New users, New uses, New challenges. *Journal of Information Technology*, 31(4), 329-333.
- Barroso-Osuna, J., Llorente-Cejudo, C., & Palacios-Rodríguez, A. (2019). Digital Competence and Identity in Social Networks. Perceptions of Teachers in Training. *AULA. Revista de Humanidades y Ciencias Sociales*, 66(2), 53-64.
- Bauman, Z. (2010). *44 cartas desde el mundo líquido*. Barcelona, España: Paidós.

Cabero, J. (2004). *Las TIC en la universidad*. Sevilla, España: MAD.

Cabero-Almenara, J., & Aguaded, I. (2014). Progress and challenges in promoting educational innovation with emerging and interactive technologies. *Comunicar*, 30, 67-83.

Cabero-Almenara, J. et al. (2018). Teachers' and students' perceptions on virtual training and the tools used in it. *Diálogo Educativo*, 18(56), 149-163.

Cejas, F. et al. (2020). The irruption of information and communication technologies (ICT), a challenge in the management of digital competences of University Professors in Ecuador. *RISTI. Revista Ibérica de Sistemas e Tecnologias de Informação*, 37, 132-148.

Correa, J. et al. (2015). Teacher Education, Educational Technology and Teacher Digital Identity. *Revista Latinoamericana de Tecnología Educativa*, 14(1), 45-56.

de Aldama, C., & Pozo, J. (2016). How are ICT used in the classroom? A study of Professors' beliefs and uses. *Electronic Journal of Research in Educational Psychology*, 14(2), 253-286.

Del Prete, A., Almenara, J., & Halal, C. (2018). Motives inhibitors of the use of Moodle in higher education teachers. *Campus Virtuales*, 7(2), 69-80.

- Gialamas, V., Nikolopouliou, K., & Kutromanos, G. (2013). Student Professors' perceptions about the impact of internet usage on their learning and jobs. *Computers & Education*, 62, 1-7.
- Granados, J., Vargas, C., & Vargas, R. (2020). The training of competent and innovative professionals through the use of active methodologies. *Universidad y Sociedad*, 12(1), 343-349.
- Lombillo, I. et al. (2018). Educational Innovation in the Use of Teaching Materials – A Proposed Solution Including Information and Communication Technologies. *Revista Cubana de Educación Superior*, 37(3), e12.
- Llorente, C. (2020). ¿Estamos en la 1ª, y de momento, única Transformación digital educativa? Ensalzamiento a los docentes: necesidad y compromiso. *Aula Magna 2.0*. Recovered from <https://cuedespyd.hypotheses.org/8580>.
- Luna-Romero, Á.E., Vega Jaramillo, F.Y., & Luna Romero, M.E. (2019). Information and communications technologies in the consolidation of Higher Distance Education in Latin America. *Revista Conrado*, 15(67), 32-37.
- Martínez, R. (2018). Digital transformation and privacy-oriented design at the university. *RUIDERAe*, 13, 1-26.

- Meishar-Tal, H., & Pieterse, E. (2017). Why do academics use academic Social Networking Sites? *The International Review of Research in Open and Distributed Learning*, 18(1), 2-22.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-6.
- Rivero, C. et al. (2016). Information Technology (IT) in college formation: Achievements and challenges in Psychology and Education. *Revista de Psicología*, 34(1), 185-199.
- Salinas, J. (2019). Qualitative meta-synthesis of scientific collaboration and digital academic identity in social networking sites. *RIED. Revista Iberoamericana de Educación a Distancia*, 22(2), 97-117.
- Sánchez-Santamaría, J., & Aliaga, F. (2018). Contribuciones de las revistas científicas a la identidad digital de los investigadores e investigadoras. *Aula Magna 2.0*. Recovered from <http://cuedespyd.hypotheses.org/5448>.
- Sandia, B., Luzardo, M. & Aguilar-Jiménez, A. (2019). Appropriation of Information and Communication Technology as Generators of Educational Innovations. *Ciencia, Docencia y Tecnología*, 30(58), 267-289.

- Sampedro, B., & Marín, V. (2015). Knowledge the future social educators about 2.0 tools. *Pixel-Bit. Revista de Medios y Educación*, 47, 41-58.
- SooHo, L., & Bozeman, B. (2005). The impact of research collaboration on scientific productivity. *Social Studies of Science*, 35(5), 673-702.
- Vasileiadou, E., & Vliegenthart, R. (2009). Research productivity in the era of the internet revisited. *Research Policy*, 38(8), 1260-1268.

XI

Basic profile of postgraduate thesis on pedagogical leadership

Gabriel Adalberto Vela-Quico
Telmi Janet Cáceres-Coaquira
Héctor Exequiel Gamero-Torres
Alicia Miguelina Vera-Manchego

Pedagogical leadership, theories and research in managers

Society expects a lot from its universities. Not only because education allows the sustainable development of the community in which it is engaged, but also because through research the engine of the culture of all humanity is ensured. One of the classic forms of university research is graduate thesis. There, perhaps the best proof of their performance as academics takes place. Thesis and their publication are also sources of the quality of the universities. On the other hand, when research the educational of the postgraduate courses of the universities, they can show the meaning of the current contributions by identifying the state of the art as opportunities for graduates pending their qualifications (López, & Moreno, 2017). Although master's or doctoral students often face difficulties and confusion when writing their thesis, which constitute obstacles that can affect the

process of their research and the quality of the thesis (Ochoa, & Moreno, 2019).

One of the lines of research refers to educational management and within it studies on pedagogical leadership that can also be called —with important differences— educational leadership, school leadership, directive leadership, leadership for learning, distributed or shared leadership, among others (Soto, Torres, & Barboza, 2019). The emphasis of this is approach that its work goes beyond the administrative, autonomy, accountability, budget and seeks to move from a limited direction to the administrative, and to a leadership for learning, which links its exercise with achievements students' academics and with the results of the educational establishment. Pedagogical leadership refers to providing direction in management as well as to exert influence (Leithwood, & Louis, 2011).

Pedagogical leadership is specified in practices called performances, which in the case of Peru are regulated in the "Framework of Good Executive Performance" of 2014. It is assumed that pedagogical leadership is the set of actions planned and related to each other —which mobilizes the entire organized educational community— and whose synergy will allow to achieve the expected results that include the achievement of learning, and the assurance of access and permanence in the basic education of the students; with the

pedagogical leadership of the director or whoever takes their place, called directive.

However, many researches on school leadership comes from the field of administration, whose perspective can lose the focus of the school as a global reality and not like any other organization, for example, a company. This perspective does not allow us to understand the particularities of schools whose nature is essentially human and political, from which the traditional elements of organization theory (authority, roles, defined objectives, coherence of action) are challenged to reflect from their specificity the pragmatic vision of its reality, that is, the “micro politics” of the school. In other words, it is necessary to investigate a “learning leader” who creates the conditions so that everyone can learn continuously and who work collaboratively for improvement (Bolívar, Caballero, & García-Garnica, 2017).

For their part, Bolívar, López & Murillo (2013) point out that there are three major current dimensions of research on leadership: pedagogical or learning leadership, distributed leadership and leadership for social justice. The current understanding of leadership moves away from the vision of the director as the only agent with power, to adopt a distributed or shared perspective. At the same time, a pedagogical leadership capable of influencing the improvement of learning is sought, creating conditions for teachers to do better. And also, finally, a leadership for social

justice, which ensures a good education for all students, from an inclusive and equitable perspective (Bolívar, López & Murillo 2013).

In this sense, it is important to identify what topics are being investigated in the postgraduate courses of a School of Education, with what type of paradigms and what methods as instruments are being used. In addition, inventory in what type of schools or educational institutions the investigations are carried out. And also explore the quality of the presentation of the thesis abstract. For these reasons, this research seeks to investigate: What are the main characteristics of scientific production specified in the master's and doctoral thesis of a School of Education related to the pedagogical leadership research line?

Look from the practice of pedagogical leadership: graduate thesis

This research is of an applied and descriptive level (Hernández, Fernández, & Baptista, 2003). As the study is on research papers officially approved by the university, it was decided to take all the master's and doctoral thesis of the graduate unit contained in the institutional repository of a School of Education of state management in Peru. 524 thesis of both academic degrees were inventoried, which are open access. The inclusion criteria were directive leadership, pedagogical leadership or school leadership, or that made

direct reference to the research subject being a directive, director or deputy director of both an educational institution or several of them. All thesis were included without distinction of academic year or whether or not the thesis is an educational professional or not. Based on these criteria, 44 thesis were identified that made up the final sample. The study had access to the abstract of the thesis as well as the full text in digital version.

To collect the information, a document analysis sheet designed expressly for the study was used based on other similar studies (Sime, & Díaz-Bazo, 2019), which explore general aspects, study areas, design, theme and instruments applied. The same instrument was applied to all thesis. To locate the content of the thesis summary in one of the categories, the entire text of the work was taken into account, allowing the analysis to conform to the basic criteria of scientific research. In this translation process, it will not necessarily be absolutely faithful, but rather responds to the interpretation of the categories studied. The content of the file explores five fields: general aspects (title of the thesis, name of the author of the thesis, name of the advisor, elements of the abstract), areas (period of study, level of the educational system, management of the educational institution, number of institutions investigated, gender of the manager), design of the research (paradigm that supports it and the type of study), the topic addressed (main variable, secondary variable, reference to the type of leadership), the instruments applied (main instrument or base and secondary instrument).

Thesis containing different keywords such as “managerial leadership,” “director’s leadership,” “school leadership,” “transforming leadership,” among others, were analyzed. The thesis were located by year of support or oral defense. We find that in 2015 thesis are started with this line of research (2.3 %) and it has its high point in 2018 (52.3 %) (Figure 1).

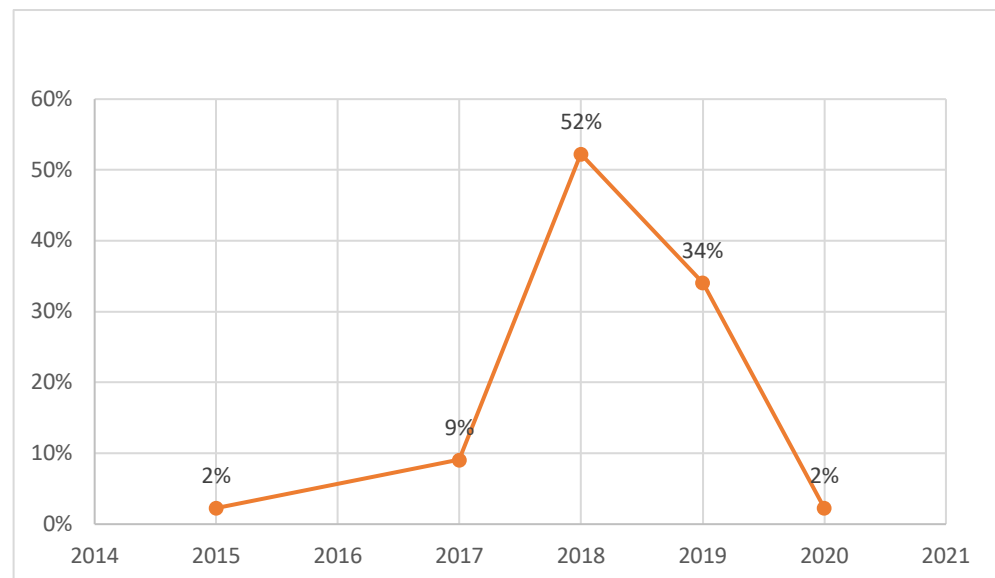


Figure 1. Thesis distribution per year. Source: author own elaboration.

In the study of the general aspects of the thesis, the presence or absence of the elements that are expected to be found in the abstract such as purpose, method, results and conclusions

in a clear and brief way was relevant, which we call "sufficient." It is assumed in "excess" if it presents additional or repetitive elements (title, part of the introduction, acknowledgments). It is assumed "insufficient" if it lacks the basic elements. It was found that 27.3 % have an insufficient summary and 15.9 % in excess (Table 1):

Table 1. *Summary elements*

Summary elements	Qualitative	Quantitative	f	%
Excess		7	7	15.9
Insufficient	1	11	12	27.3
Enough		25	25	56.8
Total	1	43	44	100.0

It was also studied what modality and educational level the pedagogical leadership studies were carried out within the educational system of Peru. It was found that 36.4 % correspond to basic education schools that provide elementary and middle education services at the same time; followed by only middle education (25.0 %). Only one school was privately managed (P), the rest were state-run (E).

We observed that the majority of thesis were carried out on a male director (52.3 %) and directors from a single school (68 %). This male proportion is similar to the total of managers whose proportions are almost similar. This can also be explained due to the fact that in the case of initial education

managers there are a majority of women. Studies whose population is from a single institution are also appreciated, which in many cases replicate a thesis by changing schools (Table 2).

Table 2. *Number of schools and gender of the manager*

Year	One school			Several schools			Total
	Both	Woman	Man	Both	Woman	Man	
2015				1			1
2017			3	1			4
2018	7		8	6		2	23
2019	3	1	7		1	3	15
2020	1						1
f	11	1	18	8	1	5	44
%	25	2.3	40.9	18.2	2.3	11.4	100.0

An important analysis was to identify thematic research priorities related to pedagogical leadership. The variables or categories were considered according to the title of the thesis since it synthesizes the content of the research. It was found that about a third of the thesis address issues related to teaching performance (31.8 %), followed by managerial styles (27.3 %) and institutional climate (20.5 %). Likewise, there is a weak relationship with aspects related to soft skills (2.3 %) and other emerging issues.

An important exploration was to identify the methodological conceptions of the study. A trend marked by thesis with the quantitative paradigm was found, being basically correlational (59.1 %) and descriptive (25.0 %) studies

Finally, the thesis being aimed at answering a research question can use different methods. In the analyzed thesis, the use of survey-type instruments created by the authors and validated by the so-called "expert judgment" predominate, which does not ensure validity and reliability of the range of postgraduate thesis (63.6 %). Internationally accepted instruments such as tests, batteries or inventories were used but to a lesser extent. It also reveals a prevalence of positivist methods to approach the generation of knowledge.

The research is part of empirical studies to explore the characteristics of master's and doctoral thesis related to the line of research of pedagogical leadership in the framework of educational management.

The work is important because universities are educational institutions by excellence with greater responsibility for promoting in their graduate training programs, specialties, masters and doctorates, research's that responds to contextualized problems and increases scientific-technical knowledge. In this sense, thesis are a relevant production, the

consequence of a significant effort by students and teachers; and the thesis is the product of a university historical tradition that legitimizes the relationship between knowledge and writing. Writing is not only part of the academic culture but also creates said culture. The thesis represents a type of written document of a public nature, available and open to opinion for others, insofar as it consists of the definitive evidence of a satisfactorily completed research process, generically endorsed by the regulations of each State, and by each university and graduate program (Díaz, & Sime, 2016).

In this sense, it is important to take care of all the formal and substantive aspects of the thesis. There are deficiencies in the writing of the summary of works (43.2 %, due to insufficient or excess) that are expected to be impeccable, despite the fact that there is a filter within the "thesis" and "thesis seminar" subjects contained in the plan of studies of the master's degree and doctor degree, of the advisor of the thesis, the opinion of the jury and the act of oral support itself. The academic and scientific communities recognize different means through which it is possible to disseminate knowledge (articles, thesis, books, chapters and presentations), and in all of them a process of greater rigor is expected since in addition to writing it, it must be published (Braga-Ferreira, Malerbo, & Silva, 2003). This coincides with other deficiencies noted in Europe in which there are also limitations in postgraduate training, which is why the creation and implementation of conceptually defined national postgraduate systems is proposed, which have an integral character related to the

potentialities and professional needs, which can be based on known and applied advanced experiences (Manzo, Rivera, & Rodríguez, 2006). And it coincides with the challenge of the 21st century university. It is important to highlight that only through research and postgraduate studies can human resources be trained, at the level of specialists, masters and doctorates, with the high quality that the country requires (Murillo, 2019).

The thesis is the traditional product of postgraduate degrees, under no circumstances can the degree be obtained without having done research. But the old tradition confined her to library shelves. They also had little academic impact. However, its digitization and availability in cyberspace allows greater accessibility and has stimulated various studies to explore the impacts of electronic thesis based on their citations in other sources and the number of times they have been viewed (Sime, & Díaz-Spleen, 2019).

At the same time, from the universities it is sought that the knowledge that flows from the graduate thesis mobilizes the decision-makers of public policies and the professionals involved. The challenge of the 21st century, second decade, is the publication of articles (Sharmini et al., 2015) since in this way the investigative capacities are developed, the productivity of the investigations is measured. In addition, the thesis made a book gives the rank of importance to scientific articles —co-authored— by peer review and the rigorous

process that this implies. In the case of Peru and the postgraduate studies in education, there is little sustainability of teachers or graduate doctors as future researchers (trajectory). All of this hurts the university accreditation processes.

A second aspect related to the results of the highest ranking university thesis in education is the still dominant trend of positivist epistemologies, theories and methodologies, with empirical approaches, and of construction of research appearances by the presence of tables or graphs. This gives way to a permeability in the demands of the abstract and formal aspects of the thesis. Additionally, quantitative trends have a great domain and even in some cases qualitative studies are undervalued. In this framework, a greater demand is required for doctoral thesis since these thesis require more in-depth research.

The results show that the thesis related to pedagogical leadership have been incorporated since 2015, having its greatest significance in 2018 but it has not remained in an ascending way. Under this approach, the manager assumes an essential role in creating the institutional conditions for the achievement of learning and the integral formation of students. However, under the keyword "pedagogical leadership" expressions are confused that, although they have the same meaning, do not imply the same thing. Conduct, direction, school management and directive management are

used on numerous occasions interchangeably and in some cases as synonyms, but the conceptions and logic that underlie each model must be made explicit and distinguished: traditional, pedagogical and neoliberal (Frago, 2001). The latter assimilates the director to a manager or company manager. This approach is not present in the normative document of the ideal of a good director in Peru. It should be noted that Chile led the research on executive leadership for several years (Castillo, & Hallinger, 2018).

This results reveal the trend of pedagogical leadership thesis focused on themes linked to teaching performance and management styles in state-run basic education institutions. This trend is proposed more by teaching thesis than by directive thesis. The trend is also explained by ongoing evaluations for teachers in the Peruvian state education system. And also due to the existence of an official instrument of the Ministry of Education to observe the performance in the classroom with which the permanence of a teacher in his job. The rubrics have also been investigated as satisfactory in predicting teaching performance. Similarly, there are findings found that indicate the significant relationship between the use of the rubric as a formative and summative evaluation tool and the ability to evaluate the quality of teaching performance in Educational Institutions in the case of Elementary. Unlike other themes that link pedagogical leadership with management of school resources, facilities, organizational structures, or government policies, educational reform,

accountability and the quality of education (Castillo, & Hallinger, 2018).

And finally, the marked trend is to carry out thesis with the quantitative paradigm, being basically correlational studies (59.1 %) and descriptive (25 %), what is explained by the tendency to carry out studies with the presence of data and tables, which are more familiar with undergraduate studies. Precisely a key limitation of the present work was the exclusion of the broad content of the thesis. However, it coincides with other research that reveals that empirical studies represented a large majority (79 %) of the Latin American corpus (Castillo, & Hallinger, 2018).

It is necessary to propose a greater legitimacy of research policies in education. Accompanied by financing. This includes the articulation of the master's and doctoral thesis projects with the research lines. The advantages of this reorientation benefit the social, scientific and political role of the university.

References

Bolívar, A., Caballero, K., & García-Garnica, M. (2017).
Evaluación multidimensional del liderazgo

pedagógico: claves para la mejora escolar. *Ensaio: Avaliação e Políticas Públicas em Educação*, 25(95), 483-506.

Bolívar, A., López, J., Murillo, F.J. (2013). School leadership. A review of current research perspectives. *Revista Fuentes*, 14, 15-60.

Braga-Ferreira, C., Malerbo, M.B., & Silva, M. (2003). Errores en las referencias bibliográficas de la producción académica: un estudio de caso. *Scire: representación y organización del conocimiento*, 9(1), 133-138.

Castillo, F.A., & Hallinger, P. (2018). Systematic review of research on educational leadership and management in Latin America, 1991-2017. *Educational Management Administration & Leadership*, 46(2), 207-225.

Díaz, C., & Sime, L. (2016). *Las tesis de doctorado en educación en el Perú: un perfil de la producción académica en el campo educativo*. Lima, Perú: Pontificia Universidad Católica del Perú.

Frago, A.V. (2001). Culturas escolares, reformas e innovaciones educativas. *Con-ciencia Social*, 5, 27-45.

Hernández, R., Fernández, C., & Baptista, P. (2003). *Metodología de la investigación*. Ciudad de México, México: McGraw-Hill.

- Leithwood, K., & Louis, K.S (Eds.). (2011). *Linking Leadership to Student Learning*. San Francisco, USA: Jossey-Bass.
- López, D., & Moreno, M. (2017). Diagnóstico sobre la investigación educativa en posgrados en educación de la Universidad La Salle Oaxaca. In XIV Congreso Nacional de Investigación Educativa — COMIE, San Luis Potosí, San Luis Potosí, México.
- Manzo, L., Rivera, N., & Rodríguez, A. (2006). La educación de posgrado y su repercusión en la formación del profesional iberoamericano. *Educación Médica Superior*, 20(3), 15-35.
- Murillo, G.P. (2019). Scientific Research and Postgraduate, an Indispensable Tool in the University of the 21st Century. *Revista Conrado*, 15(69), 35-40.
- Ochoa, L., & Moreno, E. (2019). Analysis of Written Comments from Graduate Thesis Advisors. *Revista Colombiana de Educación*, 76, 143-171.
- Sharmini, S. et al. (2015). Assessment of a doctoral thesis. *Assessment & Evaluation in Higher Education*, 40(1), 89-102.
- Sime, L., & Díaz-Bazo, C. (2019). *Los doctorados en educación: tendencias y retos para la formación de investigadores*. Lima, Perú: Pontificia Universidad Católica del Perú.

Soto, A.C., Torres, J.M.T., & Barboza, E.C. (2019). Distributed leadership in secondary education institutes of Melilla, España. *Revista de ciencias sociales*, 25(3), 42-58.

XII

Techno-pedagogical discourses on the uses of Information and Communication Technologies in education

Osbaldo Turpo-Gebera
Rocio Marivel Díaz Zavala
Fernando Pari-Tito
Juan Zarate-Yepez

Introduction

We are part of a rapidly evolving society. A dynamic of change driven by growing scientific-technical advances, fundamentally by Information and Communication Technologies (ICT) (Dillon et al., 2020). A context where multimedia information prevails, manifests in an accessible, volatile and diffuse way in almost all performance environments (Muñoz, & Cubo, 2019).

ICTs pose new challenges to respond assertively to the new social demands of science and technology, etc. (García-Martín, & Canton-Mayo, 2019), as well as professional preparation and citizenship training. In this sense, education embodies the possibility of generating consensus games and innovative contribution to previous knowledge (Bernal, 2009),

in order to contribute creatively to society. In the educational field, diverse discourses are constructed configured by a set of processes, participants and circumstances (Sampedro, & Maldonado, 2017), which express positions on a certain social form and a specific content (Bernstein, 2001).

In educational processes, ICTs are more and more present, their course leads to the acquisition of new cultural practices. In schools, teachers have faced their interference developing different considerations, revealing different modes of discursive representation about ICT in education (Turpo, 2013; Turpo-Gebera, 2020), based on how they understand its use and what meanings it associates. ICTs have established a system of interconnectivity where the symbolic truth is stated by “the presence of objects that one can look at, touch, manipulate, [as] part of this designation” (Bergala, 2007, p. 109). Their presence presupposes a combination of media and modes of communication that generate very new and challenging expressions (Ruiz, & Torres-Soto, 2020), as well as knowledge practices enabled by said media.

This process of relationship implies for people to have a set of “permissibilities,” that is, actions and procedures for new forms of interaction with culture, more participatory, more creative and with original appropriations (Arzola, 2014). In that sense, the Internet represents an environment conducive to propagating discourses on different social dynamics, a privileged terrain for the production of knowledge and

democratizing communication (Landau, 2012). This is based on interacting with those who visit and review its contents. Technology-mediated settings are also conducive spaces for its configuration, such as school classrooms where digital devices are present, showing social life and a particular way of signifying it (Fernández, & Malvar, 2019).

The composition or assembly of technology and pedagogy constitutes an environment where a diversity of discursive types is regulated, with certain incidences in their configuration. These structuring presuppose a typological delimitation and express a symbolic control over what is said or not said. According to Bernstein (2001), discourses define a “medium through which consciousness adopts a specialized and distributed form through forms of communication that convey a certain distribution of power and culturally dominant categories” (p. 139).

Technological uses in education

The teaching performance scenarios are mediated by the use of ICT. In these interventions, a series of discourses are constructed that make it possible to “generate, communicate and negotiate meaningful content through coded texts” (Lankshear, & Knobel, 2008, p. 64). For Alfaro and Fernández (2020), discourse configures ways of being in the world, integrating words, acts, gestures, attitudes, beliefs, ends, movements and body postures, etc. They form connected

pieces of language with meaning, through conversations, stories, arguments, essays, explanations, orders, interviews, ways of obtaining information, etc.

The discourses evidenced by the presence and mediation of ICTs in the educational reality reflect some impressions on the instituted socialization and educability. Constructed discourses are not aseptic, they depend on extra-discursive realities, to which it refers and signifies (Parikh-Foxx, Grimmet, & Dameron, 2020). They express practices in "texts," and thus, configure identities and social positions, producing knowledge and beliefs. Likewise, they reveal the opportunity and relevance of the possibilities of its pedagogical use and its value in social progress and development (García, 2007).

The structure of all discourse contains a polysemic matrix, with different meanings. For Velásquez-Palacios (2015), the function of discourse implies a reflection and theoretical positioning on its configuration and analysis. The construction of the pedagogical discourse involves a set of decisions about the consequences of the definition of the discourse, the assessment of its formative function and the basic configuring units (Bernstein, 2001; Blanch, 2020).

The pedagogical discourse contemplates a set of discursive rules, such as: (i) distributive rules that regulate the

relationship between power, social groups, forms of consciousness and practice, as well as their productions and reproductions, fundamentally mark and specialize “the thinkable” and “the unthinkable,” as well as the practices that they carry with them for different groups through specialized pedagogical practices in various ways; (ii) contextualization rules that regulate the constitution of the techno-pedagogical discourse, following processes of appropriation, relocation, refocusing, selective relationship with other discourses, building their own order and their own arrangements; and (iii) evaluation rules that are built in the pedagogical practice itself, creating the licenses to speak within its own time milestones, thus, the dominant practices allow a differential evaluation with respect to other practices, together with the effectors of the same and the social groups that presuppose (Bernstein, 2001; Turpo-Gebera, & González-Miñan, 2020).

The discourses that associate pedagogy with technology constitute meanings that make up an intertextual network of discourses that approach, reject or contaminate (Rodríguez, 2017), as well as reveal the transformations that the informational society experiences in education about the conception of information, of knowledge, etc. (Strieder, Torija, & Quílez, 2017). In this understanding, differential patterns of discourses are produced, as well as establishing the rules to intertwine and relate who can transmit something to someone and under what conditions. The interior and exterior limits of the hegemonized discourse are also set as legitimate, (re)contextualizing it and making it possible to recognize

“what discourse is inserted into the other?” (Bernstein, 2001, p. 188).

This study addresses the various discursive constructions of teachers in some urban schools in Peru on the uses of ICT in educational processes. Some discourses that we have called “techno-pedagogical discourses,” as they are structured from the planes of the intersection between pedagogy and technology.

For Mella (2003), Flores-Fuentes & Navarro-Rangel (2020), the meanings of the use of ICT in schools are installed from the relationships of teachers with the educational environment. Properly, from the school practices the different discourses about their uses are constructed, in that sense, the declared uses constitute resources for assigning meaning to their narratives. Seen this way, the problem is aimed at describing: What discursive constructions do basic education teachers express about the uses of ICT in education?

Discursive construction of the techno-pedagogical

To address the discourses of teachers on the uses of ICT in education, a qualitative, descriptive approach has been used. The technique used corresponds to the semi-structured interview, based on a set of questions around their considerations on: (i) presence of technological devices in school; (ii) digital connectivity in society; (iii) pedagogical intentions of their use; (iv) prospects of their learning for the future.

16 teachers from different educational levels (2 from initial education, 6 from elementary and 8 from middle) have been interviewed, most of them are women (10). These teachers were selected due to the intensive use of ICT in their teaching activity. All of them work in public schools in large cities (Lima, Arequipa, Chiclayo, Tacna).

For data treatment, the qualitative data analysis methodology of Tech software was assumed. A process that consisted of: (i) a structural phase, of recognition of the discourses, based on construction rules proposed by Bernestein (2001); and (ii) an interpretive phase, of identification and categorization of the elements and their connections, thus as manifest regularities.

The interactions that teachers manifest during their pedagogical practice configure a set of positions around the uses of ICT in educational processes. The discourses recovered express an educational intention made up of linguistic and extralinguistic elements that are hegemonically erected over the others (Table 1).

Table 1. *Descriptors of the configurations of techno-pedagogical discourses*

Techno-pedagogical discourses	Descriptors
ICT as a panacea	Relieves teaching tasks in overcrowded classrooms Eases the work of overloaded teachers Utilitarian purpose
ICT as an instrumental tool	Functional guarantee of results Resource that enables various forms of use Contributes to educational intentions
ICT as a "neutral" device	Indirect influence Independent use of educational forecasts Substitution due to obvious deficiencies
ICT as a cultural artifact	Facilitates ongoing sociability Democratize access Enables new social "constructions" Serves as a communication ecosystem
ICT as a power resource	Domain view "from above" Domain view "from below"

The conceptual approaches to each type of identified techno-pedagogical discourses result from the descriptors that

configure them. In such structures, ICTs are immersed in the sociocultural fabric, not only in an artifactual or instrumental way, but they go beyond the questions of the devices and their uses (Huerger, 2000) in education. The discourses revealed “acquire meaning in relation to the practices they transform and from which they are transformed” (Da Porta, 2000, p. 113).

In today’s society, discourses are traversed by a techno-communicational imaginary (Muñoz, Lobos, & Valenzuela, 2020). At its base are ICTs, due to their high performative capacity. These discourses are products of the central meaningful imaginary, as promoters of practices and generator of images, beliefs and social desires revealed in the educational plane.

The plane of dispositions of the intersection of technology and pedagogy allows to make visible the role acquired by discursive configurations, thus, they facilitate the recognition of the interactivity represented by ICT in their educational uses. The various coordinates establish a continuous didactic dialogue between the agents of the educational process, when constructing the pedagogical mediation.

In this perspective, the priority or emphasis assigned, be it pedagogy or technology, signifies the socio-educational

practices. Not only do they form environments for the transmission of information and knowledge, less of an end in itself, but they constitute spaces of authentic challenges and alternatives for the construction of knowledge.

Conclusions

In each configuration, one of the definition axes is maximized or minimized, facilitating a deep reading of the artifactual opportunities provided. Not only are useful and appropriate technologies combined with pedagogical processes and training, but also, and above all, social, cultural and economic issues are integrated. According to Alcibar, Monroy & Jiménez (2018), they decide between systemic reproduction, turned into a global threat, or support to those who think and act to correct errors turned into systemic errors.

ICTs due to the dominant techno-social rationality impregnate techno-pedagogical discourses with different visions in relation to their dangers, benefits and potentialities. For Mattelart (1997), their uses in education make up a redemptive technology. While for Huergo (2000), they make up an emerging techno-utopian imaginary. These positions reposition the core of the representations of technologies. In this regard, for Zempoalteca et al., (2018), they configure a social history of uses and interpretations, either as hopes and utopias of the current world, or as imaginary meanings of a future desirable and, in turn, as an inevitable destiny.

The linguistic conglomerates that reveal discursive configurations constitute “peculiar discursive sets that respond to clear patterns of marked phrasal arrangement and offer curious and successful symmetries in their textual construction” (Lamiquiz, 1988, p. 459).

Any analysis on the discourses of social subjects considers the historical-cultural specificities. In this course, in the techno-pedagogical discourses the linkages that the categories configure are recognized, not as invariant or universal, but as constructed from certain historical trajectories that give them peculiarity and significance.

The approach made around its construction serves as a reference of proximity to what happens in techno-pedagogical discourses. These discourses, insofar as they structure a configured “place” put the rules, norms and values proposed from the educational dynamics to the test, a use capable of modifying or closing any meaning (Reguillo, 1999).

In the approach to techno-pedagogical discourses there is a dissimilar character that characterizes the appropriation processes. Such processes should not be understood as a practice subtracted from these sociocultural conditioning, but

as a category that refers to certain social knowledge, observable on a daily life scale, but not explicable by the individual and isolated action of the subjects. Following Yeremian (2011), discourses cannot be understood as a “particular case” to be approached in itself, but rather as a mode of condensation of transcendental processes that condition it, but that are accessible in depth on a daily scale.

The recovery of the techno-pedagogical discourses of the teaching subjectivity have put the pedagogical language at stake with the technological culture. In that interaction, they reflect a plurality of contradictory voices, values and interests and the attempt to reconcile them. For Fernández & Baeza (2018), the discursive construction supposes that a text is situated on the meeting line of multiple texts, such as rereading, condensation, displacement and depth. All text, following the terms of techno-culture, is an intertext or hypertextualized.

The techno-pedagogical discursive configurations represent a fragment of the collective memory, built in the sedimentation spaces of the educational processes. An environment where the teaching community speaks and, at the same time, is spoken (Piccini, 1999). Consequently, they reveal a mediated context inserted within a media culture or techno-culture or cyberculture imbricated by different cultural matrices of discourse. And thus, they blur, through the technologies of

the dissemination of meaning, deterritorialized and timeless patterns of action, as characteristics of virtual spaces.

The approach to techno-pedagogical discourses as discursive constructions makes it possible to formulate referents of interpretation about their potentialities, thus, they signify the prevalence of their pedagogical and technological use and, therefore, the promotion and orientation of certain educational platforms.

References

- Alcibar, M.F., Monroy, A., & Jiménez, M. (2018). Impact and Use of Information and Communication Technologies in Higher Education. *Información tecnológica*, 29(5), 101-110.
- Alfaro, J.E., & Fernández, V.H. (2020). The recognition of differences as a basis for inclusive education: assessment as barrier at teacher speech. *Revista Brasileira de Educação*, 25, 1-19.
- Arzola, D.M. (2014). The Distance between the Discourse of Participation and Participative Practices in Secondary Schools. *Revista mexicana de investigación educativa*, 19(61), 511-535.

- Bergala, A. (2007). *Pequeño tratado sobre la transmisión del cine en la escuela y fuera de ella*. Barcelona, España: Laertes editorial, S.L.
- Bernal, A. (2009). Cyberworld and education. Draft for a new educational frame in postmodern contexts. *Teoría de la Educación*, 21(1), 71-102.
- Bernstein, B. (2001). *La estructura del discurso pedagógico*. Madrid, España: Morata.
- Blanch, J.S. (2020). The educational change in front of the technological innovation, the pedagogy of competences and the discourse of the emotional education. A critical approach. *Teoría de la Educación. Revista Interuniversitaria*, 32(1), 101-121.
- Da Porta, E. (2000). El lugar imaginario de las TIC en el discurso educativo. Estrategias y Problemáticas. In X Congreso REDCOM "Conectados, Hipersegmentados y Desinformados en la Era de la Globalización", Salta, Argentina.
- Dillon, F. et al. (2020). Education and TIC: The use of network theory in the analysis of social and academic relationships in educational contexts. *Revista Ibérica de Sistemas e Tecnologías de Informação*, E32, 88-97.
- Fernández, M., & Baeza, P. (2018). Androcentrism in the Critical Multimodal Discursive Cobuilding of Appraisal Meanings in History Teaching. *Literatura y Lingüística*, 38, 251-274.

- Fernández, M.D., & Malvar, M.L. (2019). School counselors' emotional competences from the inclusive education paradigm. *Revista de Investigación Educativa*, 38(1), 239-257.
- Flores-Fuentes, G., & Navarro-Rangel, Y. (2020). Research Perspectives on Indigenous Knowledge and ICT: A Decolonial Approach. *Revista Electrónica Educare*, 24(2), 103-123.
- García, E. (2007). Los discursos sobre las nuevas tecnologías en contextos educativos: ¿Qué hay de nuevo en las nuevas tecnologías? *Revista Iberoamericana de Educación*, 41(4), 1-12.
- García-Martín, S., & Cantón-Mayo, I. (2019). Use of technologies and academic performance in adolescent students. *Comunicar: Revista Científica de Comunicación y Educación*, 27(59), 73-81.
- Huergo, J. (2000). Tecnologías y educación. Interrogaciones desde la trama entre cultura y política. *Razón y Palabra*, 16, 1-19.
- Lamiquiz, V. (1988). Configuraciones discursivas en textos orales. *Annexes des Cahiers de linguistique hispanique médiévale*, 7(7), 457-467.
- Landau, M. (2012). Los docentes en los discursos sobre la alfabetización digital. *Razón y Palabra*, 13(63), 2-12.

Lankshear, C., & Knobel, M. (2008). *Nuevos alfabetismos. Su práctica cotidiana y el aprendizaje en el aula*. Madrid, España: Morata.

Mattelart, A. (1997). Utopía y realidades del vínculo global. Para una crítica del tecnoglobalismo. *Diálogos de la Comunicación*, 50, 9-25.

Mella, E. (2003). The Education in a Society of Knowledge and Risk. *Enfoques Educativos*, 5(1), 107-114.

Muñoz, E., & Cubo, S. (2019). Digital Competence, Special Education Teachers 'training and attitude towards the ICT (information and communication technologies). *Profesorado. Revista de Currículum y Formación del Profesorado*, 23(1), 209-241.

Muñoz, C., Lobos, C., & Valenzuela, J. (2020). Dissociations between pedagogical discourse and reading practices in future teachers: tips for teacher training. *Revista Fuentes*, 22(2), 203-211.

Parikh-Fox, S., Grimmet, M., & Dameron, M.L. (2020). Examining the use of digital storytelling and immersion in a multicultural counseling course. *Journal of Multicultural Counseling and Development*, 48(3), 137-148.

Piccini, M. (1999). Transversalidades: de las teorías de la recepción a una etnología de la cultura. In Piccini, M.,

Scmilchuk, G., & Rosas, A. (Eds.), *Recepción artística y consumo cultural*. Bogotá, Colombia: Consejo Nacional para las Culturas y las Artes.

Reguillo, R. (1999). Anclajes y mediaciones del sentido. Lo subjetivo y el orden del discurso: un debate cualitativo. *Revista de la Universidad de Guadalajara*, 17, 1-14.

Rodríguez, M. (2017). Interculturality, plurinationality and sumak kawsay in Ecuador. The construction of a new model of state through bilingual intercultural education: Discourse and reality. *Perfiles educativos*, 39(157), 70-86.

Ruiz, M.V., & Torres-Soto, A. (2020). Quality of learning of students of pedagogy: influence of the educational model. *Revista Fuentes*, 22(2), 238-250.

Sampedro, B., & Berea, G. (2017). The use of ICTS as resources to work with inclusive education: ratings given by mexican and spanish students. *Bordón. Revista de pedagogía*, 69(3), 89-106.

Strieder, R., Torija, B., & Quílez, M. (2017). Science-technology-society: What are we doing in science education? *Enseñanza de las Ciencias*, 35(3), 29-49.

Turpo, O. (2013). Construction of the Discourse Techno-Teaching in the Network: some Discursive Configurations. *Enl@ce: Revista Venezolana de Información, Tecnología y Conocimiento*, 10(2), 29-50.

- Turpo-Gebera, O. (2020). Media treatment of educational outcomes in the Peruvian press. *Educar*, 56(2), 457-474.
- Turpo-Gebera, O., & Gonzales-Miñán, M. (2020). The teaching of science in basic education: teaching representations of teachers. *Publicaciones. Facultad de Educación y Humanidades del Campus de Melilla*, 50(2), 187-201.
- Velásquez-Palacios, M.I. (2015). Education in the official pedagogical discourse, a matter of education? *Revista Iberoamericana de Educación Superior*, 6(17), 159-174.
- Yeremian, A. (2011). Aproximaciones a la apropiación docente de TIC. Algunas dimensiones para su abordaje. *Cuestión*, 1(31), 12-19.
- Zempoalteca, B. et al. (2018). Factors influencing incorporation of Information and Communication Technologies in public universities: approach based on teacher self-perception. *Revista de la Educación Superior*, 47(186), 51-74.

XIII

Perception of the level of stress in university students in asynchronous educational activities in times of COVID-19

Olger Gutiérrez Aguilar

Introduction

The university education system has been impacted by two relevant aspects in recent months. In the first place, due to the denial of institutional licensing to universities in the region, which covered a good part of the educational demand for university educational, and secondly, the health emergency the country is experiencing. SUNEDU, as the supervisory body of the University System in Peru, proposes urgent measures for the adaptation of a face-to-face education model to a non-face-to-face (virtual) one. In this sense, "the criteria for the supervision of the adaptation of non-face-to-face education, with exceptional character, of the subjects by universities and graduate schools as a consequence of the measures to prevent and control Covid-19." This measure, ordered by SUNEDU, is framed in the national state of emergency, regulated by Emergency Decree No. 026-2020 on exceptional and temporary measures to prevent the spread of Coronavirus (COVID-19). On the other hand, the Vice-ministry of Education, proposes the "Guidelines for the continuity of the university higher educational service, within the framework of

the health emergency, at the national level, provided by Supreme Decree No. 008-2020-SA.”

In this order of ideas, university practice, which integrates and boosts teaching and learning activities, has been impacted on homework and teaching performance. Professionals have to redefine their strategies and resources for their teaching work, and in the same way, the student who has to adapt their learning strategies in special situations, characterized, above all, by involuntary social isolation.

Characterization of the educational problem

The educational practice in the university in these times of isolation and social distancing, is affecting most of the countries that have adopted preventive health emergency measures. This change is reflected in the way of teaching that has gone from a standard conventional system to one within a virtual frame. Such a rapid and sudden change in the educational system could cause intense stress on students, above all, due to the uncertainty (Moawad, 2020), also to the fulfillment of assigned tasks, the completion of ongoing study cycles, as well as the fulfillment in assigned exam roles. Son, So, & Kim (2019), point out that nursing students often experience anxiety and stress when taking exams that assess their fundamental nursing skills. However, there are complementary alternative methods such as aromatherapy and music therapy that have effectively alleviated such

negative emotions among nursing students. In addition, mindfulness practices, art therapy, and the simple act of manipulating clay are also effective and have independently shown positive effects on stress and anxiety in college students exposed to stressors (Beerse, Van Lith, & Stanwood, 2019).

The circumstances that the university system is going through would force the implementation of coping and self-efficacy strategies with students, especially with person-centered approaches. Freire et al. (2020), point out that, in daily academic life, students are exposed to a wide range of potentially stressful situations that could negatively affect their academic performance and health.

Huang et al. (2020) warn that the manifestations of academic stress in students and incivility are positively associated with psychological distress. In this sense, stress being an independent variable, it could be considered as one of the main threats to academic performance in university students around the world. Consequently, students decrease their academic performance, their learning capacity and retention (Hailu, 2020). Therefore, an early detection of manifestations of stress would serve to implement new teaching methodologies, especially in systems of continuous evaluation and student accompaniment. Thus, the perception of the academic context as stressful can be associated with health symptoms (physical and mental) in higher education students

enrolled in different grades (Casuso-Holgado et al., 2019). In this sense, academic stress is the strongest predictive variable, therefore, the authors conclude that academic stress has a negative impact on the health of university students.

New conditions for learning at university

On the other hand, students entering the university system experience a double transformation, the first has to do with the transition from secondary education to university, which starts with a process of identifying internal and external factors to achieve a successful transition (Duche-Perez, Paredes-Quispe, & Gutierrez-Aguilar, 2019). The other transformation is to achieve the retention of students in situations as special as overcoming the effects and consequences of socialization truncated by COVID-19. Adapting to the university has been a topic of interest for academic institutions, as well as for students, especially in international transfers, since it is key to their academic success (Lee, Park, & Cho, 2020). Adaptation at the socio-affective levels, and the adoption of socio-cultural variables, such as adaptation to a second language, have different orientations of achievement goals and academic stressors (Lin, Su, & McElwain, 2019).

Hailu (2020) in his study on stress management behavior and associated factors, indicates that the decrease in academic performance, as well as the decrease in learning and retention capacity, is a consequence of stress. For their part, Wu et al.

(2020) found that study-induced stress, life stress, and uncertainty stress were positively associated with mental disorder; consequently, their study concludes that the higher the perceived uncertainty stress, the higher the prevalence of mental disorders in students.

The measures adopted by governments, with long periods of quarantine, are putting more in evidence high levels of stress and especially the prevalence of depression or anxiety. Huckins et al. (2020), warned in due course about the causal factors of anxiety and depression in university students. Based on relevant data, it can be stated that such factors are affecting more than 27 % of the university population at some point, between entering the university and its graduation. Adams et al. (2020), point out that university years are characterized by psychosocial and biological phenomena that can affect mental health, such as greater sensitivity to social stressors and compromises in the quantity and quality of sleep.

This study, developed with university students from Universidad Católica de Santa María, warns of the presence of socio-educational factors in students, such as dependence on social networks. This behavior is due to the fact that stressed students participate in frequent interaction with the smartphone, which can be explained as a social seeking and supportive behavior, or it may also be that accommodating a large network through the smartphone, induces to stress

(Dissing et al., 2019). Studies by Huberty et al. (2019) have found in mindfulness meditation carried out through a mobile application, an attractive and effective way to reduce stress in university students. Perceived stress has been considered a risk factor for problematic use of social networking sites, but little is known about the underlying processes by which confounding variables may mediate or moderate this relationship (Hou et al., 2019).

In this particular context of non-face-to-face educational experiences, the use of the concepts of the Web for virtual exchanges is beginning to gain strength, especially Computer-Mediated Synchronous Communication (SCMC), which allows teachers and students to use computer (Lenkaitis, 2020) to interact face to face.

Of the different technological options available to the teacher in educational practice, the LMS-Moodle is the tool that best adapts to a pedagogical model in these circumstances. One of the reasons is because the teacher designs synchronous and asynchronous educational activities, in addition to be an effective tool for asynchronous or real-time didactic communication (Naffah et al., 2016).

The learning experiences developed in times of COVID-19, using the LMS-Moodle, are essentially asynchronous activities,

that is, students solve tasks, participate in forums, take evaluations and others, leaving tools such as MS Teams, for the development of synchronous activities, especially through videos in real time (Li et al., 2020).

Being a research that aims to validate an intervention model, with two latent variables (exogenous) and a dependent variable (endogenous), a common factor instrument was developed from a reflective measurement model. The first variable: Factors that influence the level of stress, consists of 8 indicators, designed on a Likert Scale, where 1 is equivalent to a perception of low impact and 10 represents a high impact on the level of stress, through coding (FINE). The second variable: Manifestation of a stress box, is designed on a Likert Scale, with values from 1 to 5, where 1 is a low manifestation and 5 means a high manifestation, with code (MCES). The endogenous variable is evaluated with the question: What is the level of stress that you have experienced during this semester? It is designed on the Likert Scale, with values from 1 to 10, with the code (PESTRES).

For the application of the instrument, the authorization of senior management was obtained, and for the application of the instrument, the questionnaire, designed in Google Forms, was sent to the student's email account. The average time for completing the survey was approximately 20 minutes. The exploratory analysis was done with the SPSS 26 and for the confirmatory analysis, the PLS-SEM (Partial Least Square

Structural Equation Modeling) methodology was used, in order to assess all the analysis relationships with the routes model and it was used SmartPLS version 3.

Asynchronous educational activities

The study was carried out with 312 students from the 29 professional schools of Universidad Católica de Santa María de Arequipa, Peru. The sample was selected from the 15480 students enrolled between the first and ninth semester, 34.29 % being men and 65.71 % women, whose ages range between 16 and 28 years old. The total mean was 19.40 (SD=1.997). The application of the instrument was carried out online, during the months of May and June 2020 in a state of quarantine decreed by the Government.

On the other hand, in the study, questions related to asynchronous educational activities were incorporated, through the LMS-Moodle, which include participation in educational forums, the assignment of tasks to be carried out outside class hours, implementation of glossaries specialized and exercises with Turnitin.

For the exploratory analysis, the data were processed in the IBM-SPSS, whose reliability result expressed in Cronbach's Alpha was of 0.829, that is, good, Table 1 shows the means and standard deviation.

Table 1. *Element statistics*

	Mean	Standard Deviation
FINE_01 Poor or lower academic performance	4.365	2.6136
FINE_02 Economic problems	3.776	2.7314
FINE_03 Excess of academic activities	5.170	2.6621
FINE_04 Health problems	3.712	2.5948
FINE_05 Lack of technical resources for learning	3.952	2.7220
FINE_06 Isolation/Loneliness	4.385	2.9746
FINE_07 Anxiety about the future	5.872	2.8807
FINE_08 Family conflicts	3.708	2.8783
MCES_01 Have you experienced any symptoms caused by increased stress?	1.205	0.4044

MCES_02 Have you required medical assistance due to stress symptoms during this semester?	2.436	1.3570
---	-------	--------

MCES_03 Have you taken medications during this semester to manage your stress condition?	2.321	1.4300
--	-------	--------

PESTRES (Perception of stress level)	7.388	2.0177
--------------------------------------	-------	--------

To establish the level of coupling of the factors, the KMO test and the Bartlett sphericity test were used. The objective was to analyze the correlations between the different observed variables, based on the observed correlation coefficients. The process was carried out through the Principal Component Analysis (PCA) technique, which allows the joint treatment of variables formed from a combination of them, in order to analyze the correlation matrix. The result of the KMO test is 0.863, which means a good sample adequacy for exploratory analysis.

After checking the sample adequacy, the communalities were evaluated, which are the sum of the factorial weights squared for each of the rows, these indicate the proportion of the variance explained by the common factors for each variable. Taking into account the result obtained in the test, the communalities range between 0.508 and 0.969, which means that in the worst case the observed items would explain the

model by 50.8 % and in the best case the model would be explained in 96.9 %.

Regarding the total variance explained, it is noted that the items are grouped into two components according to the theoretical construct that supports the questionnaire. Meanwhile, the accumulated variance would be explained by 69.49 % of the model, the data extraction was based on the eigenvalue greater than 1 of the Principal Component Analysis (PCA) method, using the varimax rotation method. To achieve a better adaptation of the factors, the coefficients less than 0.500 were suppressed.

For the confirmatory analysis, PLS-SEM was used, whose values for the internal consistency of the model are expressed through Cronbach's Alpha. The variable: Factors that influence the level of stress (FIME) and Manifestations of stress box (MCES) present measurement results with 0.899 and 0.985 respectively, and would test the reliability of the construct. The values of the Average Variance Extracted, present values from 0.584 to 0.974, the results exceed the recommended minimum value of 0.50 (Hair et al., 2016), so it is inferred that the convergent validity is acceptable. Regarding the composite reliability, different authors have suggested its application (Bagozzi, & Yi, 1988; Hair et al., 2012), they agree that, if the values are greater than 0.6 then it shows high levels of internal consistency reliability, the values obtained are 0.918 and 0.99. Regarding the coefficient

(rho_A), it allows verifying the reliability of the values obtained in the construction and design of the model (Dijkstra, & Henseler, 2015), therefore, the results should express values of 0.7 or higher to demonstrate reliability composite. The values obtained in the study exceed what is required.

Figure 1 is the graphical representation of the analysis of reliability and validity of the model from R² (Pearson's coefficient), for the variable Perception of Stress (PESTRES). Therefore, taking the values of R² ranging from 0 to 1, the theory explains that the higher the value, the better the level of precision in the prediction. Consequently, for the validation of the model, the R² has a value of 0.350, which is equivalent to saying that 35 % of the variance is explained by the model, while 65 % would be explained by other factors that are not the subject of the study.

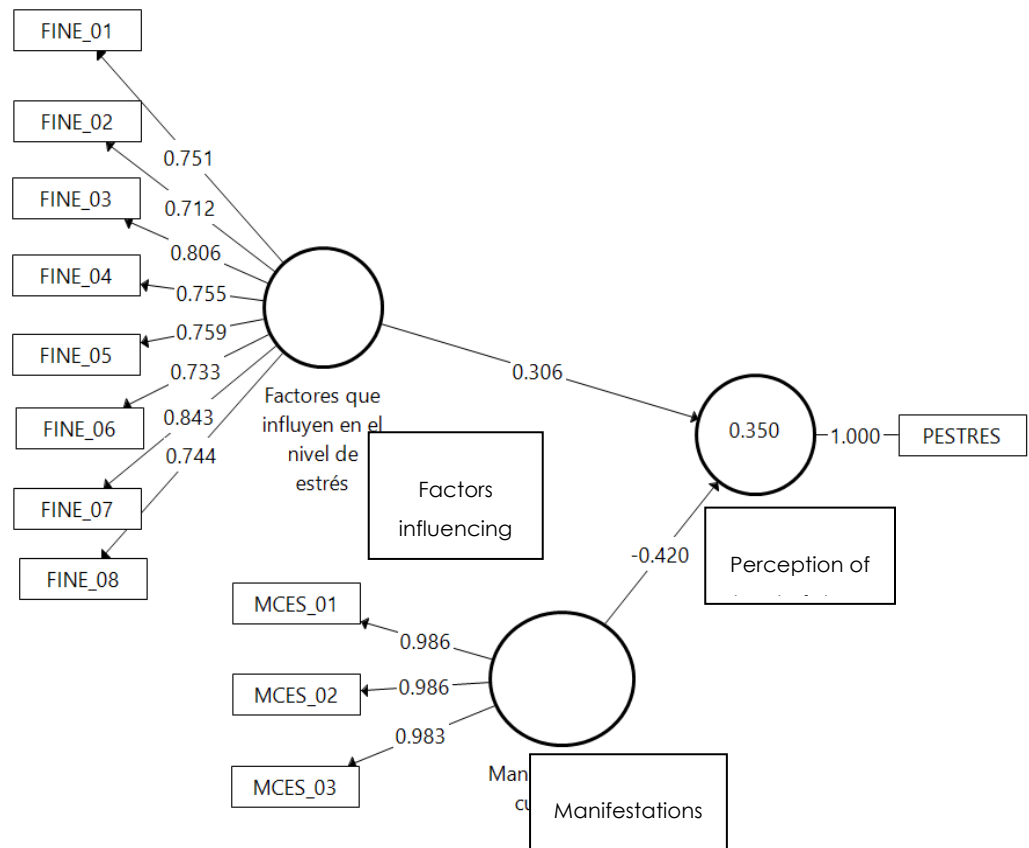


Figure 1. Coefficient R^2 . Source: author own elaboration.

This research aims to find the levels of influence that socio-educational factors and the manifestations of stress could have in university students in asynchronous educational activities in times of quarantine. Thus, the results obtained, according to the confirmatory analysis, indicate that only 35 %

would be explained by the model, while 65 % is explained by other factors and corresponding variables that are not the subject of this study. Barraza (2006), referred to academic stress as a systemic process, of an adaptive and essentially psychological nature, which occurs in the following situations: (i) when the student is subjected to a series of demands that, under the assessment the student's own are considered stressors (input); (ii) when these stressors cause a systemic imbalance (stressful situation) that manifests itself in a series of symptoms (indicators of the imbalance); and (iii) when this imbalance forces the student to perform coping actions (output) to restore the systemic balance.

Toribio-Ferrer & Franco-Bárcenas (2016) indicate that the most affecting stressors in the student population are: exams, academic overload, the short delivery period and the personality/character of the teacher. For their part, Bedoya-Lau, Matos, & Zelaya (2014), defines it as a physiological, emotional, cognitive and behavioral activation reaction to academic stimuli and events.

Some studies, coincidentally, highlight that academic stress is presented, with greater emphasis, in the year of access to the university and that the higher levels are presented with respect to the exposure of work, academic overload, lack of time, performance exams and concerns for the academic future (García-Ros, & Pérez-González, 2015; García-Ros et al., 2012). This situation experienced by students is also produced

by an inadequate transition from high school to university. Eppelmann et al. (2016), explains that the transition from school to work or post-secondary education can represent a critical period during adolescence. During their final years of school, students must make a decision about their academic and professional career and acquire the necessary qualifications. According to the results obtained in the present study, it is women who have manifested higher levels of academic stress (Correa-Prieto, 2015). Feldman et al. (2008) conclude that, in women, the greater intensity of stress was associated with less social support from friends, while in men it was associated with less social support from close people. For Backović et al. (2012), women show high levels of stress in the academic evaluation period. On the other hand, an increase in student academic expectations can increase school-related stress and impede their academic performance (Kaplan, Liu, & Kaplan, 2005).

Conclusion

For university students, the factors that cause various manifestations of stress are different. The expectation that is generated around the culmination of the period of social isolation, further exacerbates the situation of the students, added to it, the overload of work due to asynchronous activities, developed at home, the limitations of access to the Internet due to the precarious connections to access this service only exacerbate the problem; likewise, the exposure of work assigned by teachers, academic overload, lack of time and taking exams, are causes of academic stress.

References

- Adams, S.K. et al. (2020). Sleep in the Social World of College Students: Bridging Interpersonal Stress and Fear of Missing Out with Mental Health. *Behavioral Sciences*, 10(2), 54.
- Backović, D.V. et al. (2012). Gender differences in academic stress and burnout among medical students in final years of education. *Psychiatria Danubina*, 24(2), 175-181.
- Bagozzi, R.P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74-94.
- Barraza, A. (2006). Un modelo conceptual para el estudio del estrés académico. *Revista Electrónica de Psicología Iztacala*, 9(3).
- Bedoya-Lau, F., Matos, L., & Zelaya, E.C. (2014). Academic stress levels, psychosomatic manifestations and coping skills in medical students from a private university of Lima in the year 2012. *Revista de Neuro-Psiquiatría*, 77(4), 262-270.
- Beerse, M.E., Van Lith, T., & Stanwood, G.D. (2019). Is There a Biofeedback Response to Art Therapy? A Technology-Assisted Approach for Reducing Anxiety and Stress in College Students. *SAGE Open*, 9(2), 215824401985464.

- Casuso-Holgado, M.J., et al. (2019). The association between perceived health symptoms and academic stress in Spanish Higher Education students. *European Journal of Education and Psychology*, 12(2), 109-123.
- Correa-Prieto, F.R. (2015). Academic stress in medical students in the la Universidad Cesar Vallejo, de Piura 2013. *Revista del Cuerpo Médico del Hospital Nacional Almanzor Aguinaga Asenjo*, 8(2), 80-84.
- Dijkstra, T.K., & Henseler, J. (2015). Consistent partial least squares path modeling. *MIS Quarterly*, 39(2), 1-20.
- Dissing, A.S. et al. (2019). High perceived stress and social interaction behaviour among young adults. A study based on objective measures of face-to-face and smartphone interactions. *PLOS ONE*, 14(7), e0218429.
- Duche-Perez, A.B., Paredes-Quispe, F.M., & Gutierrez-Aguilar, O.A. (2019). The Transition from high school to university: Identifying internal and external factors for a successful transition in peruvian students of Architecture and Engineering. In EDUNINE2019 - 3rd IEEE World Engineering Education Conference: Modern Educational Paradigms for Computer and Engineering Career, Proceedings, Lima, Peru.
- Eppelmann, L. et al. (2016). Stress, coping and emotional and behavioral problems among German high school students. *Mental Health & Prevention*, 4(2), 81-87.

- Feldman, L. et al. (2008). Relationships between academic stress, social support, mental health and academic performance in Venezuelan university students. *Universitas Psychologica*, 7(3), 739-751.
- Freire, C. (2020). Coping Strategies and Self-Efficacy in University Students: A Person-Centered Approach. *Frontiers in Psychology*, 11.
- García-Ros, R., & Pérez-González, F. (2015). Análisis del estrés académico en la adolescencia: efectos del nivel educativo y del sexo en educación secundaria obligatoria. *Información Psicológica*, 2, 2-12.
- García-Ros, R. et al. (2012). Evaluación del estrés académico en estudiantes de nueva incorporación a la universidad. *Revista Latinoamericana de Psicología*, 44(2), 143-154.
- Hailu, G.N. (2020). Practice of stress management behaviors and associated factors among undergraduate students of Mekelle University, Ethiopia: a cross-sectional study. *BMC Psychiatry*, 20(1), 162-162.
- Hair, J.F. et al. (2012). The use of partial least squares structural equation modeling in strategic management research: A review of past practices and recommendations for future applications. *Long Range Planning*, 45(5-6), 320-340.
- Hair, J.F. et al. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. New York, USA: SAGE Publications.

- Hou, X.-L. et al. (2019). The relationship between perceived stress and problematic social networking site use among Chinese college students. *Journal of Behavioral Addictions*, 8(2), 306-317.
- Huang, N. et al. (2020). How Incivility and Academic Stress Influence Psychological Health among College Students: The Moderating Role of Gratitude. *International Journal of Environmental Research and Public Health*, 17(9), 3237-3248.
- Huberty, J. et al. (2019). Efficacy of the Mindfulness Meditation Mobile App "Calm" to Reduce Stress Among College Students: Randomized Controlled Trial. *JMIR mHealth and uHealth*, 7(6), e14273.
- Huckins, J.F. et al. (2020). Causal Factors of Anxiety and Depression in College Students: Longitudinal Ecological Momentary Assessment and Causal Analysis Using Peter and Clark Momentary Conditional Independence. *JMIR Mental Health*, 7(6), e16684.
- Kaplan, D.S., Liu, R.X., & Kaplan, H.B. (2005). School related stress in early adolescence and academic performance three years later: the conditional influence of self expectations. *Social Psychology of Education*, 8(1), 3-17.
- Lee, G., Park, T.I., & Cho, H. (2020). Maladaptive Perfectionism and College Adjustment of International Students in Korea: A Moderated Mediation Model of Social Support. *Sustainability*, 12(11), 4729.

- Lenkaitis, C.A. (2020). Teacher candidate reflection: Benefits of using a synchronous computer-mediated communication-based virtual exchange. *Teaching and Teacher Education*, 92, 103041.
- Li, C.H. et al. (2020). Virtual Read-Out: Radiology Education for the 21st Century During the COVID-19 Pandemic. *Academic Radiology*, 27(6), 872-881.
- Lin, X., Su, S., & McElwain, A. (2019). Academic Stressors as Predictors of Achievement Goal Orientations of American and ESL International Students. *Journal of International Students*, 9(4), 1134-1154.
- Moawad, R.A. (2020). Online Learning during the COVID- 19 Pandemic and Academic Stress in University Students. *Revista Romaneasca pentru Educatie Multidimensionala*, 12(1), 100-107.
- Naffah, S.C. et al. (2016). Percepciones estudiantiles acerca del uso de nuevas tecnologías en instituciones de Educación Superior en Medellín. *Revista Lasallista de Investigación*, 13(2), 151-162.
- Son, H.K., So, W.-Y., & Kim, M. (2019). Effects of Aromatherapy Combined with Music Therapy on Anxiety, Stress, and Fundamental Nursing Skills in Nursing Students: A Randomized Controlled Trial. *International Journal of Environmental Research and Public Health*, 16(21), 4185.

- Toribio-Ferrer, C., & Franco-Bárcenas, S. (2016). Estrés académico: el enemigo silencioso del estudiante. *Salud y Administración*, 3(200), 11-18.
- Wu, D. et al. (2020). The Impacts of Uncertainty Stress on Mental Disorders of Chinese College Students: Evidence from a Nationwide Study. *Frontiers in Psychology*, 11.

Juliana Raffagilelli

Research Professor at the Faculty of Education and Psychology (Universitat Oberta de Catalunya). Principal Investigator at the project "Professional Learning Ecologies for Digital Scholarship: Supporting professionalism for the Modernization of Higher Education" ("Learning ecologies for the Academic Profession in the digital era: towards the modernization of higher education", funded by the Ministry of Science, Technology and University of Spain under the program "Ramon y Cajal" (2018-2023).

Since 2003, she has been a former senior lecturer, researchers, coordinator of international and European projects, educational technologist and trainer at the University of Florence, the University of Trento, the Institute for Educational Technologies (Italian National Research Council) and the University of Venice. Her research interests focus on professional development for the use of technologies in teaching and other work contexts mediating international / global collaboration. Recently, she has been exploring how to develop educators' critical data literacies and the emerging practices embracing different data epistemologies.

Degree in Psychology from the University of Buenos Aires (Argentina), in 1996, and Master in Training of Trainers of the University of Venice Ca' Foscari (Italy), 2003, PhD in Education (University Ca' Foscari), 2010.

Gerber Sergio Pérez Postigo

Research professor at the Faculty of Educational Sciences - Universidad Nacional de San Agustín de Arequipa-Perú. Master of Science: Education with mention in Higher Education, Doctor in Education. Teacher of Undergraduate, Postgraduate and Second Specialties. Areas of performance: Educational Policies, Educational Supervision, University Didactics, Curriculum. Head of the Pedagogical Advising Office of the University Direction of Teaching Development of UNSA, coordinator of the Internationalization Office of the Faculty of Education Sciences and project coordinator of the Institute for Research, Innovation and Development of Education Sciences (INEDU-UNSA).

ORCID: <https://orcid.org/0000-0003-0680-6673>

ID SCOPUS: 57214145011

Maria Mercedes Zea Urviola

Professor of Primary Education from the Instituto Superior Pedagógico de Arequipa, Master of Science: Education with mention in Educational Management and Administration, candidate for a doctorate in Education from the Faculty of Educational Sciences of the National University of San Agustín de Arequipa - Peru.

ORCID: <https://orcid.org/0000-0002-7916-2007>

Mónica Nelly Camargo Cuéllar

Master's Degree in Education with a major in Curriculum from the Pontificia Universidad Católica del Perú. B.A. and B.A. in Primary Education from PUCP. Master in E-Learning from the University of Seville and currently a doctoral candidate at the same university. TPA teacher in the Faculty of Education in the line of Research and Curriculum and in Graduate, in the course of Design and curriculum diversification. Postgraduate teacher at the Universidad Femenina del Sagrado Corazón-UNIFE in courses such as Curriculum Theory and Planning. Experience as a teacher trainer in the topics of Competency-based approach and formative evaluation. Independent consultant.

ORCID: <https://orcid.org/0000-0002-1388-543X>

Yessika Madelaine Abarca Arias

Doctor in Public Health Sciences at the National University of San Agustín de Arequipa, Master in Public Health with mention in Management, Specialist in Intensive Care, Bachelor in Nursing, Bachelor in Nursing, Bachelor in Education, Doctoral Studies in Higher Education, Post Doctoral Studies in Sciences, Professor of the Faculty of Nursing Undergraduate and Postgraduate, Researcher Teacher in RENACYT: P0021017, with the following publications: "Laborconflicts types and their management in nursing practice" "Diabetes and Risk Factors in Teachers at Ica National University, Peru", "Variables associated with educational management as quality factors " , with ORCID: 0000-0002-3370-5686, SCOPUS: 57214885058 .

Marylin Marie Monrroy Fernandez

Doctor (e) in Nursing Sciences at the National University of San Agustín de Arequipa, Master in Health of the Mother Adolescent Child, Specialist in Emergency and Disaster, Bachelor of Nursing, Bachelor of Nursing, Professor of the Faculty of Nursing Undergraduate and Postgraduate, Research Professor at UNSA: Registration Number: 3536, with the following research "Study of clinical manifestations, laboratory tests, nursing care and costs of Systemic Lupus Erythematosus Erythematosus diagnosis in patients in the Arequipa Region", with ORCID: 0000-0002-7455-5223.

Osbaldo Turpo Gebera

Pedagogue. Doctor in Education (Universidad Nacional Mayor de San Marcos, Peru). Doctor in Education in Knowledge Society (University of Salamanca, Spain). Post-doctorate in Educational Sciences (University of Coimbra, Portugal). Socio-educational Researcher in Training Processes in Virtual Spaces, Media Treatment of Educational Results and in Didactics and Curriculum in Science Education. Professor at Universidad Nacional de San Agustín de Arequipa (UNSA). Director of the Institute for Research, Development and Innovation in Educational Sciences (INEDU-UNSA). Member of the Board of Directors of the National Program for Scientific Research and Advanced Studies - PROCENCIA (CONCYTEC, Peru).

ORCID: <https://orcid.org/0000-0003-2199-561X>

ID SCOPUS: 55635770200

Yvan Valery Delgado Sarmiento

Studies of Systems Engineering in the Republic of Ukraine - Former USSR, Master in Technical Sciences in the Republic of Ukraine - Former USSR, Bachelor in Education, Master in Educational Management and Doctor in Education. Experience in undergraduate and postgraduate teaching in different public and private University and Technological institutions, as well as in Strategic Management of Information and Communication Technologies areas for the public and private sector and Project Advisor in the field of Informatics, Electricity, Electronics, Automation, Robotics and Management in Public and Private companies.

ORCID <https://orcid.org/0000-0003-0249-772X>

Scopus author Id 57214150082

Milagros Gonzales Miñan

Bachelor's degree in Education from the Pontificia Universidad Católica del Perú. Master's degree in Educational Psychology from the Universidad Peruana Cayetano Heredia and PhD in Psychology and Learning from the University of Zaragoza,

Spain. Training stay for educators in Jerusalem (Israel) and a postdoctoral research stay at the University of Valencia, Spain. Professor and researcher at the Antonio Ruiz de Montoya University. In addition, she was director of the Professional School of Education (2015 to 2018) and is currently director of the Graduate School of that house of studies. Her lines of research are related to teaching self-efficacy, values education, formative research and educommunication. Among her most recent publications are: "Self-perception of media competence and its relationship with sociodemographic variables of basic education teachers", "Influence of cinema in the identity construction of in-service teachers" and "Construction of the Scale of Collective Teaching Self-Efficacy of university teachers".

<https://orcid.org/0000-0003-2529-0174>

SCOPUS ID: 56544742200

Juan Zárate Yépez

Bachelor's Degree in Social Communication - Media Production (Universidad Católica de Santa María, Arequipa, Perú). Master's Degree in Education – EFL (Universidad de Piura, Perú). Doctoral Student at Universidad Nacional de San Agustín, Arequipa, Perú.

Gregorio Nicolás Cusihuamán Sisa

Degree in Industrial and Public Sciences, Economist, Bachelor in Journalism, Master in Business Management, PhD in Social Sciences, Head Professor of the Professional School of Communication Sciences, Director of the Research Unit of the Faculty of Psychology, Industrial Relations and Communication Sciences of the UNSA. Member of the editorial committee of the International Journal of Communication Law and New Technologies of the TRABUCOM group of the Complutense University of Madrid. His lines of research in Communication for Social Development, Higher Education: some publications, "Factors that prevent an effective articulation of the province of La Union with the development of the Arequipa region of the contribution", "Information and communication technologies, interculturalism and rural development in the province of La Union, Arequipa Peru" Invisible cultures in higher education in Arequipa, Peru".

ORCID: <https://orcid.org/0000-0002-0568-8065>

Oscar Oswaldo Pacheco Rodríguez.

Bachelor's Degree in Communication Sciences with a major in Journalism from Universidad Nacional de San Agustín de Arequipa, with a Second Major in Advertising and Marketing, Master's Degree in Education Sciences with a major in Higher Education and Doctorate in Communication and Development. He is the main professor of the Professional School of Communication Sciences of the Universidad Nacional de San Agustín de Arequipa, former director of the Research Unit of the Faculty of Psychology, Industrial Relations and Communication Sciences of the UNSA. His research interests are in social communication, university education and journalism. Among his most important publications is the article entitled: The socioeconomic constraints of collaborative learning in a complex perspective in virtual higher education in Arequipa.

ORCID: <https://orcid.org/0000-0002-4378-1586>

Gabriel Adalberto Vela-Quico

Doctor of Education. Doctor of Psychology. Master in Child and Adolescent Educational Clinical Psychology. Professor at the Faculty of Educational Sciences of the National University of San Agustín de Arequipa. Bachelor of Education. Manager of CEBA Guillermo Mercado Barroso. Associate member of Forum Educational. Diploma in School Management with Pedagogical Leadership.

<https://orcid.org/0000-0001-6478-9774>

Telmi Janet Cáceres-Coaquira

Doctor of Education. Master of Science: Educational Management. Second Specialty in Educational Management. Degree in Education from the National University of San Agustín de Arequipa. Manager of CEBA Manuel Gonzales Prada. Diploma in School Management with Pedagogical Leadership.

<https://orcid.org/0000-0001-7112-4842>

Héctor Exequiel Gamero-Torres

Bachelor and degree in education, both from the National University of San Agustín de Arequipa. Master of Science: Education with a minor in Higher Education. Doctor of Psychology. Both degrees carried out at the National University of San Agustín de Arequipa Associate professor at the Faculty of Education of the National University of San Agustín and professor at the Francisco Bolognesi Military College.

<https://orcid.org/0000-0003-0537-4629>

Alicia Miguelina Vera-Manchego

Degree in Education. Specialty: Letters from the Santa María Catholic University, Arequipa. Second specialty in Psychology, Tutoring and Educational Guidance from the National University of San Agustín de Arequipa. Master of Science, with a major in clinical-educational, child and adolescent psychology from the National University of San Agustín de Arequipa

<https://orcid.org/0000-0003-0253-0542>

Rocío Marivel Díaz Zavala

Bachelor's Degree in Education (UNIVERSIDAD NACIONAL DE SAN AGUSTÍN). Master in Research and Teaching in Higher Education (UNIVERSIDAD ANDINA NÉSTOR CÁCERES VELASQUEZ). Doctor in Administration (Universidad Alas Peruanas, Filial Arequipa, Perú). Associate professor at Universidad Nacional de San Agustín, Arequipa, Perú)

ORCID: <https://orcid.org/0000-0003-3745-528X>

Merly Clariza Lazo Manrique

PhD in Social Sciences and Master in Social Management and Sustainable Development, both at the Universidad Nacional de San Agustín de Arequipa. Diploma in Didactics of Higher Education at UNSA. Director of the Academic Department of Social Work at UNSA. Her lines of research are Business Work Climate, Citizen Security, Social Education in communities and food security, Culture in Peruvian Universities. The most important publications are: "Adoption of technologies, education and food security in the Colca and Cotahuasi valleys", "Effectiveness of participatory techniques in training workshops for farmers who manage agricultural technologies in high Andean areas of Cotahuasi and Colca Valley".

ORCID: <https://orcid.org/0000-0002-9451-8710>

Fernando Pari Tito

Bachelor's Degree in Education, specializing in Physical Education (Universidad Nacional de San Agustín de Arequipa, Peru). Master of Science: Education with mention in Higher Education (Universidad Nacional de San Agustín de Arequipa, Peru). Junior Researcher at the Institute for Research, Innovation and Development of Educational Sciences (INEDU-UNSA). Teacher at the San Sebastian Educational Institution.

Reyna Ysmelia Peralta Gomez

Bachelor of Nursing; Magister in Public Health at the National University of San Agustín de Arequipa (UNSA); Doctorate in Collective Health Sciences at UNSA. Senior Lecturer at Exclusive Dedication at UNSA School of Nursing; Director of the Academic Department of Nursing. He has published various articles on a scopus basis such as "Self-transcendence and chronic non-communicable diseases in older adults unemployed from a Peruvian university" and The book Elderly Care in Primary Health Care in Times of COVID-19, chapter 17-PAHO .Has Orcid Registry <https://orcid.org/0000-0001-6673-7513> .Scopus Author ID 57205572681; Researcher RENACYT -CONCYTEC-PERU, registration code P0004285

Jesus Roger Chavez Parillo

Bachelor of Nursing; Master's Degree in Assistenza Avanzata al Paziente critical from the University "Vita e Salute San Raffaele" Milan - Italy; Master in University Teaching and Educational Management; Candidate for Doctor of Nursing from the National University of San Agustín de Arequipa. Bachelor of Law. First place at the national level in the National Nursing Exam 2012. Professor at the National University of San Agustín in Public Health, Mental Health and Health Legislation. Methodologist adviser professor at the Technological University of Peru. Researcher based on Scopus ID 57212005559. <https://orcid.org/0000-0003-4120-001X>

Maria Christeen Chavez Peralta

Bachelor's Degree in Nursing at the National University of San Agustín, Master of Administration and Management in health organizations (UNSA), frontline nurse currently working in ICU-COVID of the Carlos Alberto Seguin Escobedo National Hospital. One of the publications performed was "moobing in nursing., orcid.org/0000-0003-2523-771X, Perú.

Irma Stephani Rodriguez Marin

Bachelor of Nursing, Bachelor of Nursing, Master of Administration and Management in health organizations, candidate for Specialist in Oncology. She works in the medicine service at the Hospital Carlos Alberto Seguin Escobedo de Essalud -Arequipa. orcid.org/0000-0003-3384-6347, Peru.

Pedro Mango Quispe

Master's Degree in Educational Management and Bachelor's Degree in Education from the Universidad Nacional de San Agustín de Arequipa. He has held the positions of Director of a National and Private Educational Institution; later as a teacher at the Universidad Nacional San Antonio Abad del Cusco. He has also worked as a teacher trainer at the Universidad Peruana Cayetano Heredia in programs promoted by the Ministry of Education of Peru. He currently works as a teacher at the Universidad Nacional de San Agustín de Arequipa. E-mail: pmangoq@unsa.edu.pe. ORCID Code: 0000-0003-2395-7158

Carlos Juan Rojas Galarza

Degree of Professor of History from the Universidad Nacional de Educación Enrique Guzmán y Valle. Bachelor's Degree in Education from Universidad Peruana Cayetano Heredia. Master's Degree, Latin American and Caribbean Pedagogical Institute, Havana, Cuba, with mention in

University Teaching and Doctorate studies with mention in Education Sciences at the National University of Education Enrique Guzmán y Valle. Teacher in History, Pedagogy and Curriculum. With published works on didactics and curriculum of historical and social sciences.

ORCID: <https://orcid.org/0000-0002-3426-152X>

ISBN: 978-612-5035-16-5



9 786125 035165