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Analysis of Higher Education and Technical-Productive Policy in Peru

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Abstract

A systematic review was carried out on the production and publication of research papers on the study of Higher Education and Technical-Productive Education in Peru during the Covid-19 pandemic under the PRISMA (Preferred Reporting Items for Systematic reviews) Meta-Analyses) approach. The purpose of the analysis proposed in this document was to know the main characteristics of the publications registered in the Scopus and Wos databases during the period and their scope in the study of the proposed variables, achieving the identification of 49 publications in total. Thanks to this first identification, it was possible to refine the results through the keywords entered in the search button of both platforms, which were Higher Education and Tecnical Education, reaching a total of 16 documents, already excluding duplicates and those that did not meet the analysis criteria. The scientific publications identified were analyzed in an attempt to identify the main characteristics within the execution of research projects related to the study of education based on the technical and productive approach within higher education institutions in Peru so that the present analysis has been limited to all research work published by authors affiliated with institutions in that country.

Keywords: *Higher Education, Technical-Productive Education, Peru.*

Introduction

Within educational management, one of the main aspects to measure the quality of educational processes is the perception of students and their performance inside and outside the classroom. To achieve this measurement, many are the resources used within the different methodologies applied by the administrative management, which is responsible for determining the internal and external characteristics such as strengths and weaknesses and opportunities and threats, and from this, make decisions that go towards the fulfillment of the academic objectives in each institution. In the specific case of higher education, an important deficiency has been identified in the technical-productive modality, such as the suitability of the teaching staff (Ramos-Llanos, 2021). Therefore, it is expected that through the research on the analysis of technical-productive policies in education, continuous training programs will be strengthened to update the knowledge of teachers about strategies that include within the teaching-learning processes, their practice in the real sector since the productivity perceived during the generation of new knowledge has a positive impact on the perception not only of students but of all stakeholders around the institutions of higher education. Therefore, it is important to know the current state of scientific production around studying the *variables of Higher Education* and *Technical-productive Education policies* in Latin America, especially in Peru. This article frames its effort precisely on the research papers published in high-impact journals indexed in the Scopus database between 2017 and 2021, so it is expected to know the current contributions that authors in that country have made to strengthening such policies.

2. General Objective

To analyze from a bibliometric and bibliographic perspective, the production of research papers on the variable Higher Education, Technical-Productive Education, published in high impact journals indexed in Scopus and Wos database during the period 2017-2021.

2. Methodology

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The present research is of qualitative type; according to Hernández et al. (2015), qualitative approaches correspond to researches thaobtain information to review and interpret the results obtained in such studies. For this purpose, the search for information was carried out in the Scopus and Wos databases through the words *Higher Education* and *Tecnical Education.*

3.1 Research design

The research design proposed for this research was the Systematic Review, which involves a set of guidelines to carry out the analysis of the data collected, framed in a process that began with the codification until the visualization of theories (Strauss & Corbin, 2016). On the other hand, it is stated that the text corresponds to a descriptive narrative because it is intended to find out how the levels of the variable affect; and systematic because after reviewing the academic material obtained from scientific journals, the theories on knowledge management were analyzed and interpreted. (Hernández et al., 2015). The results of this search are processed as shown in Figure 1, which expresses the PRISMA technique for identifying documentary analysis material. It was taken into account that the publication was published during the period between the years 2017 and 2021 without distinction of the country of origin of the publication, distinction of the area of knowledge, as well as to any publication, namely: Journal Articles, Reviews, Book Chapters, Book, among others.

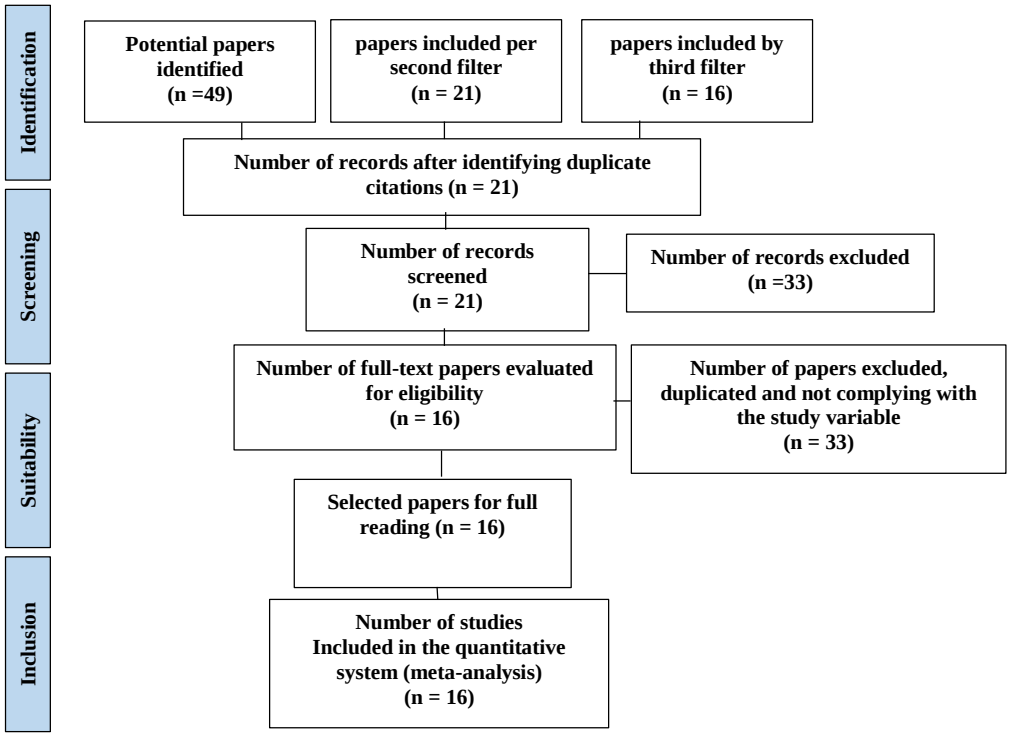

Figure 1. Flow diagram of systematic review performed under PRISMA technique. (Moher, Liberati, Tetzlaff, Altman, & Group, 2009).
Source: Own elaboration; Based on the proposal of the Prisma Group. (Moher, Liberati, Tetzlaff, Altman, & Group, 2009).

4. Results

Table 1 shows the results after applying the search filters related to the methodology proposed for this research after recognizing the relevance of each referenced work.

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No.	TITLE OF THE RESEARCH	AUTHOR/YEAR	COUNTRY	TYPE OF STUDY	INDICATION
1	A proposal of Machine Learning model to improve learning process and reduce dropout rate at technical training institutes	Apaza, L. A. A. V., Huamani, J. A. R., Bernedo, J. O. A., & Chauca, A. G. Z. (2021, June).	PERU	QUALITATIVE	SCOPUS
	Self-Evaluation of Professors Performance in the Nutrition and Dietetics Major in the Distance Education Modality	Trujillo, M. D. L. Á. S., & Flores, E. A. R. (2021).	PERU	QUALITATIVE	SCOPUS
	Perceptions of university teachers and students on the use of Blackboard Collaborate as a teaching tool during virtual learning due to the COVID-19 pandemic	Mendoza, A. V., Díaz, K. P., & Raffo, F. S. (2021, December).	PERU	QUALITATIVE	SCOPUS
	Dental students' perceptions of clinical teaching performance.	Castro-Rodríguez, Y., & Lara-Verástegui, R. (2021).	PERU	QUALITATIVE	SCOPUS
5	Disruptive innovation strategies in higher education through learning through entrepreneurship projects	Reyes, J. (2020, December).	PERU	QUANTITATIVE	SCOPUS

	International comparative pilot study of spatial skill development in engineering students through autonomous augmented reality-based training	Gomez-Tone, H. C., Martin-Gutierrez, J., Valencia Anci, L., & Mora Luis, C. E. (2020).	PERU	QUALITATIVE	SCOPUS
	Application of the soft systems methodology with a systemic approach to university management in engineering careers at the University of Lima North	Andrade-Arenas, L., William, C.-M., Jesus, V.-S. (2020).	PERU	QUALITATIVE	SCOPUS
	Analysis of YouTube as a tool for documentary research in higher education students.	Maraza-Quispe, B., Alejandro-Oviedo, O., Fernández-Gambarini, W., Cisneros-Chavez, B., & Choquehuanca-Quispe, W. (2020).	PERU	QUANTITATIVE/QUALITATIVE	SCOPUS
	Sustainable development planning: Master's based on a project-based learning approach.	Cazorla-Montero, A., de los Rios-Carmenado, I., & Pasten, J. I. (2019).	PERU	QUALITATIVE	SCOPUS
	University social responsibility in Ibero-America: Analysis of the legislation of Brazil, Spain and Peru.	Martí-Noguera, J. J., Calderón, A. I., & Fernández-Godenzi, A. (2018).	PERU	QUALITATIVE	SCOPUS

	Elevated incidence rates of diabetes in Peru: Report from PERUDIAB, a national urban population-based longitudinal study.	Seclen, S. N., Rosas, M. E., Arias, A. J., & Medina, C. A. (2017).	PERU	QUALITATIVE	SCOPUS
	An open coworking space to allow engineering students to develop innovative competences: UTEC GARAGE	Murray, V., Bejarano, A., & Matsuno, C. (2016, December).	PERU	QUALITATIVE	SCOPUS
	U.S. Children "Learning Online" during COVID-19 without the Internet or a Computer: Visualizing the Gradient by Race/Ethnicity and Parental Educational Attainment.	Aguilar, WO; Chavez, WO; Cruzaty, LEV; Vasquez, AEG; Mendoza, SG (2021)	PERU	QUALITATIVE	WOS
	Student's Satisfaction of the Quality of Online Learning in Higher Education: An Empirical Study.	Jiménez-Bucarey, C., Acevedo-Duque, Á., Müller-Pérez, S., Aguilar-Gallardo, L., Mora-Moscoso, M., & Vargas, E. C. (2021).	PERU	QUALITATIVE	WOS
	Analysis of the professional profile in the employability of Nursing students of a Public Higher Technological Institute.	Velasquez, EP; Albornoz, VC; Garay, JPP; Vara, FEN; Vila, GRB; Calle, JCC (2020)	PERU	QUALITATIVE/QUANTITATIVE	WOS

International Comparative Pilot Study of Spatial Skill Development in Engineering Students through Autonomous Augmented Reality-Based Training	Gomez-Tone, H. C., Martin-Gutierrez, J., Valencia Anci, L., & Mora Luis, C. E. (2020).	PERU	QUALITATIVE	WOS

Table 1. List of articles analyzed
Source: Own elaboration

4.1 Co-occurrence of words

Figure 2 shows the relationship between the keywords used to search the study material for the elaboration of the systematic analysis proposed for the present research.

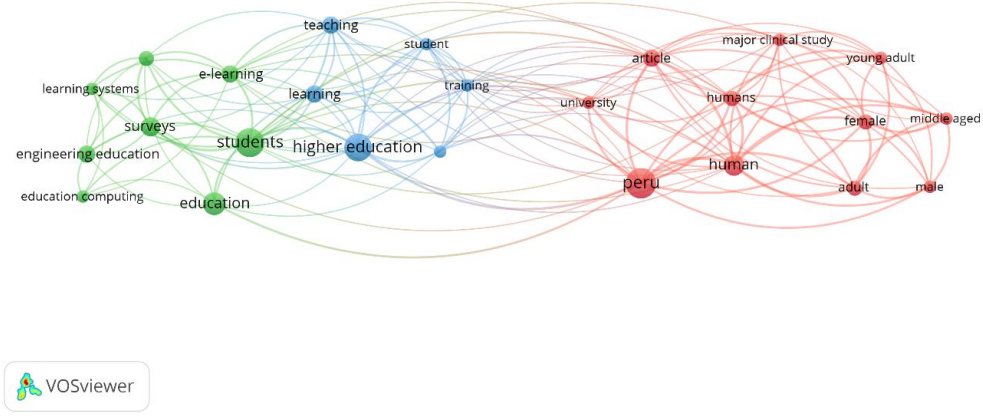

Figure 2. Co-occurrence of keywords.
Source: Own elaboration

The variable Higher Education was the most frequently used within the research identified in Scopus and Wos, directly related to studies focused on Learning, Training, Students and Teaching Techniques. Education based on a technical-productive methodology in Peru has focused on using digital strategies as fundamental support in the simulation of activities associated with the area of knowledge in which students are being trained. In this way, Learning Systems, and e-learning, are part of the variables used in the execution of research projects that support higher education based on professional practice as

the main strategy in generating new knowledge. It is also highlighted that Engineering Education has been the main exponent of this type of education in Peru, given the nature of the theories applied to the study methodologies, since it is shown how taking students to the field of action of the different careers related to this area, constitutes a fundamental contribution in the appropriation of the strategies designed to strengthen the teaching-learning processes.

4.2 Discussion

The purpose of this article was to analyze, from a systematic perspective, the contribution of the authors through their publications to the study of new perspectives for Higher Education and Technical-Productive Policy in Peru carried out in high-impact journals indexed in Scopus and Wos databases during the period 2017-2021, In this way, it is possible to affirm that the publications indicated in the body of this document, have carried out research at different levels whose findings contribute to the generation of new knowledge referring to the variables proposed for the present study, this is how significant contributions are identified as contemplated in the article entitled "Sustainable Development Planning: Master's degree based on a project-based learning approach", whose objective was to analyze a project-based learning strategy for training in Sustainable Development Planning in postgraduate programs in Spain (Polytechnic University of Madrid, UPM). The authors intended to replicate this model, adapting it to the needs of engineering students in Peru identified through mixed research methods. The program's implementation was proposed using technical, behavioral and contextual project management skills. The study confirms the importance of taking students to the real sector as a strategy to reaffirm the knowledge acquired in the classroom, so it is expected that its implementation will be done progressively, taking into account the flexibility of all stakeholders around the teaching-learning processes. Supporting the above idea, a great interest in the implementation of the inclusion of practice in academic training in Peruvian higher education is perceived in articles such as "A proposal for a Machine Learning model to improve the learning process and reduce dropout in technical training institutes," whose objective was to predict the academic performance of the students (Apaza et al., 2021), whose objective was to predict the academic performance of students at the Instituto de Educación Superior Tecnológico Público "Manuel Núñez Butrón" (IESTP MNB) located in the city of Juliaca in the Department of Puno, Peru. The study used data from first-semester students according to their performance to evaluate weak aspects in which to strengthen the strategies to prevent them from dropping out of the training programs at the technical level, within which the authors reaffirm that one of the points that generate greater interest are the practices of theory in the real sector. The authors mention textually:

> "The prediction will help us to project strategies that, together with the institution, teachers, students and parents can improve their activities in the teaching-learning process" (Apaza et al., 2021).

The above would be possible through implementing Machine Learning, specifically classification techniques to design a predictive model to determine students' academic performance and reduce their desertion, as well as to determine the best predictive algorithm. Through such prediction, it will be possible to strengthen aspects to improve and enhance those that generate good performance in students, as has been demonstrated through technical-productive policies in academic training at the higher education level. Another of the strategies that stand out in this search is contemplated in the article entitled "International Comparative Pilot Study of the Development of Spatial Skills in Engineering Students through Autonomous Training Based on Augmented Reality," the objective of which was to analyze the levels of spatial skills in engineering students through the use of augmented reality (Gómez-Tone et al., 2020), whose objective was to analyze the levels of spatial skills in first year engineering students in two universities, one in Spain and the other in Peru. The study aims to establish

the degree of symmetry between these study groups in terms of their spatial skills. The study showed that the training achieved positive results in the professional training of the engineering students since both experimental groups achieved significant gains in their spatial skill level. Furthermore, no difference was detected in either experimental group for the gender variable.

5. Conclusions

This review article concludes by highlighting the importance of knowing the updated state of the literature published in databases such as Scopus or WoS concerning the study of the analysis of Higher Education and Technical-Productive policies within the professional training of Peruvian students. This allows the identification of aspects to be improved within the strategies implemented in higher education institutions that focus their training processes on the practice of technical and productive strategies, encouraging students to generate new knowledge through experience in the real sector and the application of such knowledge to the problems presented in daily life. However, some of the authors cited in this document agree on the lack of training and continuing education of the teaching staff of the institutions, which does not allow the design of the same strategies to be of great benefit to the students. Therefore, it is suggested to encourage research around these needs identified through the analysis of the real situation, which would generate the search for new and lesser ways to apply methodologies based on productivity and technical education by higher education institutions, ensuring a good performance of future professionals in the real sector.

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