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Innovations in University Education: Impact on The Development of Professional and Academic Competencies

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Abstract

A documentary review was carried out on the production and publication of research papers related to the study of the variable University Education, Professional Competencies and Innovation. The purpose of the bibliometric analysis proposed in this document was to know the main characteristics of the volume of publications registered in the Scopus database during the period 2018-2023 by Latin American institutions, achieving the identification of 121 publications. The information provided by this platform was organized through graphs and figures, categorizing the information by Year of Publication, Country of Origin, Area of Knowledge and Type of Publication. Once these characteristics have been described, the position of different authors on the proposed topic is referenced through a qualitative analysis. Among the main findings made through this research, it is found that Mexico, with 51 publications, was the Latin American country with the highest scientific production registered in the name of authors affiliated with institutions of that nation. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material related to the study of University Education, Professional Competencies and Innovation was Social Sciences with 87 published documents, and the most used Publication Type during the period indicated above were Journal Articles with 56% of the total scientific production.

Keywords: *University Education, Professional Competencies, Academic Competencies, Innovation*

INTRODUCTION

Pedagogy and didactics in universities is a topic of interest that has been prioritized in recent decades, due to the problems and challenges that education has faced in times of change. The impact of new technologies, the application of competency-based learning models, personalized learning systems and the exchange of information through new digital systems, are demanding an urgent change in educational practices, which seeks to privilege the development of the factor of educational innovation, new pedagogical and didactic methods, these are done with the purpose of achieving and consolidating university quality.

According to one of the main factors in higher education is to ensure educational relevance and the development of academic competencies, to achieve this, one of the important elements that contributes to these significantly are teachers; That is why it is necessary to contribute to professional development, improve the quality of education, keep the pedagogical staff updated, motivated and committed, this with the aim of being able to contribute to training and to be able to fully respond to the demands of the academic environment and improve academic performance. (Rimari, 2017)

On the other hand, innovation has become a fundamental tool in strategic online decision-making in higher education. Since innovation in the framework of Information and Communication Technologies (ICT), in addition to the development of individual knowledge, it formulates new learning ways in which the skills of university students are enhanced directly with the purpose of expanding their knowledge and improving their critical-reflective capacities.(Belloch, 2012)(Meneses-Benítez, 2007)

However, in order for professionals to acquire the necessary skills to take advantage of the advantages offered by innovation and ICT, it is necessary for higher education institutions to develop strategies that allow the integration of more solid pedagogical processes and new learning processes, in which they allow both teachers

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and students to measure the scope of ICT in academia and the importance of innovation in integral development. In addition, the implementation of self-assessment processes significantly improves learning, since this process would allow them to develop more meaningful teaching processes which they can apply in their daily lives and academic training.

Based on this premise, it is important that universities opt for strategies that seek to integrate ICT and innovation into teaching processes in an optimal and efficient way. These strategies can have a positive impact to the extent that the culture of innovation is increased, ICT management is promoted, and students' academic performance and professional skills are improved. For this reason, this article seeks to describe the main characteristics of the compendium of publications indexed in the Scopus database related to the variables University Education, Professional Competencies and Innovation, as well. Such as the description of the position of certain authors affiliated with institutions, during the period between 2018-2023.

General Objective

To analyze, from a bibliometric and bibliographic perspective, the preparation and publication of research papers in high-impact journals indexed in the Scopus database on the variables University Education, Professional Competencies and Innovation during the period 2018-2023.

METHODOLOGY

This article is carried out through research with a mixed orientation that combines the quantitative and qualitative method.

On the one hand, a quantitative analysis of the information selected in Scopus is carried out under a bibliometric approach of the scientific production corresponding to the study of University Education, Professional Competencies and Innovation. On the other hand, examples of some research work published in the area of study mentioned above are analyzed from a qualitative perspective. based on a bibliographic approach that allows us to describe the position of different authors on the proposed topic. It is important to note that the entire search was carried out through Scopus, managing to establish the parameters referenced in *Figure 1*.

Methodological design

Figure 1. Methodological design

Source: Authors' own creation

Phase 1: Data collection

Data collection was carried out from the Search tool on the Scopus website, where 121 publications were obtained from the following filters:

TITLE-ABS-KEY (university AND education, AND professional AND skills, AND innovation) AND PUBYEAR > 2017 AND PUBYEAR < 2024 AND (LIMIT-TO (AFFILCOUNTRY , "Mexico") OR LIMIT-TO (AFFILCOUNTRY , "Brazil") OR LIMIT-TO (AFFILCOUNTRY , "Peru") OR LIMIT-TO (AFFILCOUNTRY , "Colombia") OR LIMIT-TO (AFFILCOUNTRY , "Ecuador") OR LIMIT-TO (

AFFILCOUNTRY , "Chile") OR LIMIT-TO (AFFILCOUNTRY , "Panama") OR LIMIT-TO (AFFILCOUNTRY , "Honduras") OR LIMIT-TO (AFFILCOUNTRY , "Cuba") OR LIMIT-TO (AFFILCOUNTRY , "Costa Rica") OR LIMIT-TO (AFFILCOUNTRY , "Bolivia"))

- Published documents whose study variables are related to the study of the variables University Education, Professional Competencies and Innovation
- Limited to the years 2018-2023.
- No distinction of country of origin.
- Without distinction of area of knowledge.
- No distinction of type of publication.

Phase 2: Construction of analytical material

The information collected in Scopus during the previous phase is organized and then classified by graphs, figures and tables as follows:

- Co-occurrence of words.
- Year of publication.
- Country of origin of the publication.
- Area of knowledge.
- Type of publication.

Phase 3: Drafting of conclusions and outcome document

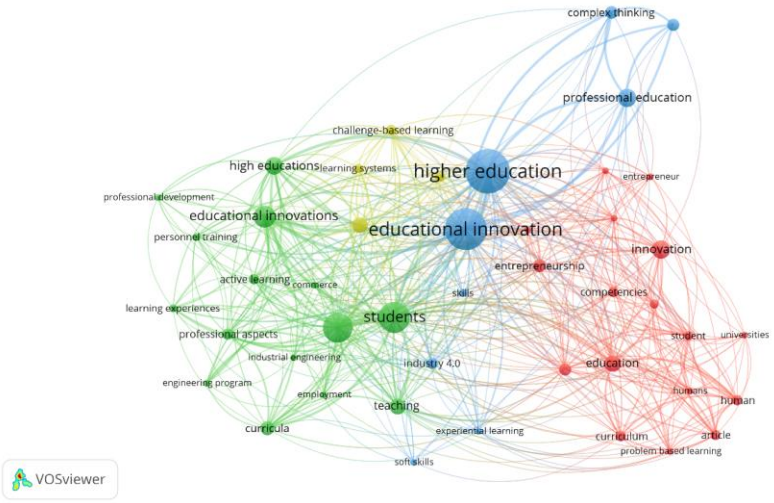
In this phase, the results of the previous results are analyzed, resulting in the determination of conclusions and, consequently, the obtaining of the final document.

RESULT AND FINDINGS

Co-occurrence of words

Figure 2. *Co-occurrence of words*

Figure 2 shows the co-occurrence of keywords found in the publications identified in the Scopus database.



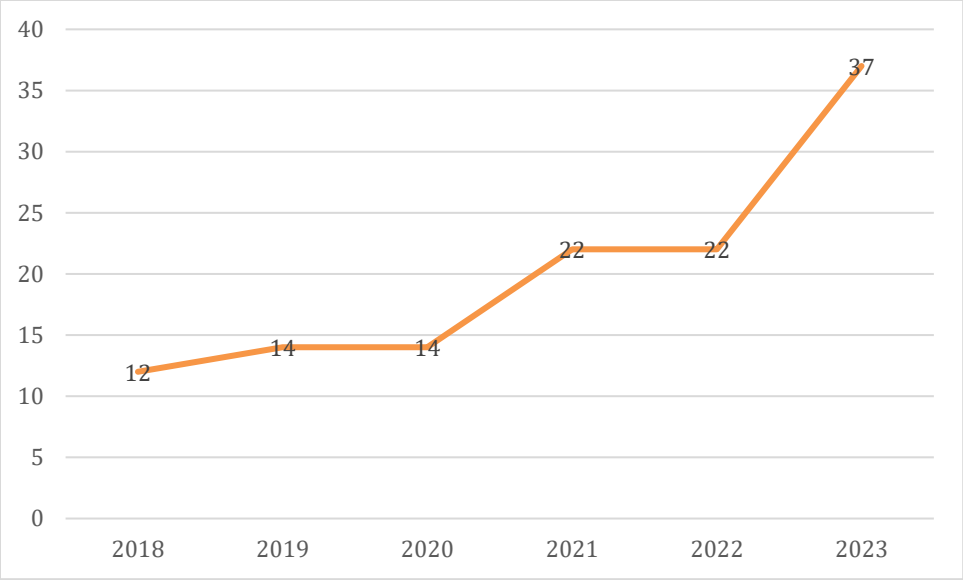
Source: Authors' own elaboration (2024); based on data exported from Scopus.

Higher Education was the most frequently used keyword within the studies identified through the execution of Phase 1 of the Methodological Design proposed for the development of this article. Educational Innovation is among the most frequently used variables, associated with variables such as Educational Professional, Innovation, Students, Competence, Learning Systems, Curriculum. Of the above, it is noteworthy, ICT in educational processes have managed to have a positive impact on learning processes, since this resource has allowed young people to develop intellectual skills such as reflection, reasoning and problem solving. According to these technological tools, the role of innovation in education and in the teaching and learning processes in a holistic way is considered one of the great achievements of modern society in order to improve the quality of acquiring knowledge and in this way enhances that these technologies facilitate the way in which access is made. knowledge in a more open, clean and spontaneous way. This resource demands that distance education choose to acquire these technologies, in addition to maximizing the benefit in the quality of its academic offer. (Rodríguez, 2012)

Distribution of scientific production by year of publication

Figure 3. *Distribution of scientific production by year of publication.*

Figure 3 shows how scientific production is distributed according to the year of publication.



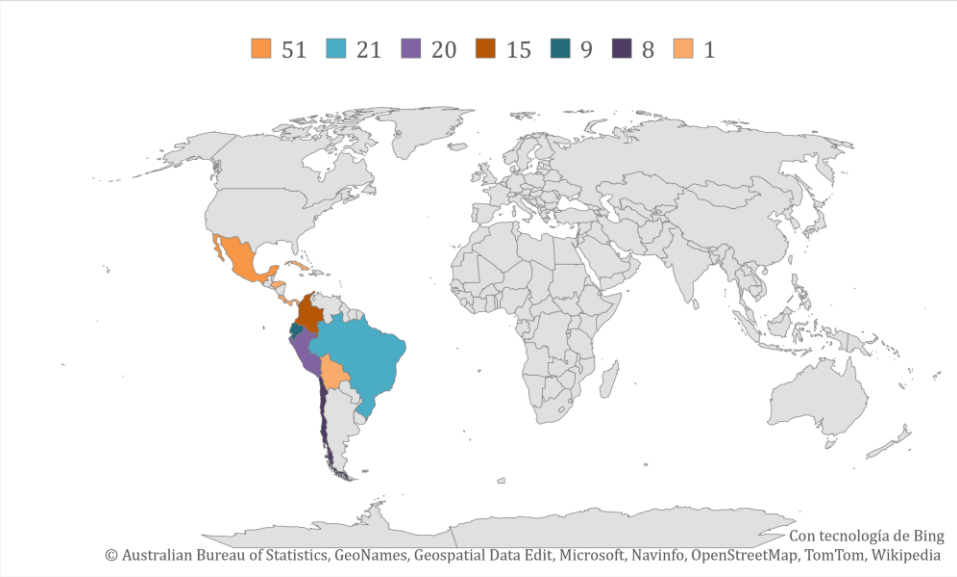
Source: Authors' own elaboration (2024); based on data exported from Scopus

Among the main characteristics evidenced through the distribution of scientific production by year of publication, an increase in the number of publications registered in Scopus during the years 2023 is noticeable, reaching a total of 37 documents published in journals indexed on this platform. This can be explained thanks to articles such as the one entitled "Art in Vocational Training in Primary Education: Evaluation and Curricular Challenges" The article is the product of a study with a mixed approach whose purpose was to analyze and understand the value of art in professional training in Education, based on the opinions of students. and the curricular challenges around art that innovations imply. The sample was composed of primary school students from a National University of Lima and in order to collect information on the appreciation of art in teacher training, a closed questionnaire was applied on attitudes towards artistic expression activities in professional training in education and for students. An open-ended questionnaire was administered. The results reflect a significant value assigned to art in teacher training and the need and importance of including art as a longitudinal area in the curriculum so that it contributes to the formation of artistic competencies and soft skills of future teachers at the Education level. Primary, those that are essential in the teaching of childhood.(Esquivel-Grados, 2023).

Distribution of scientific output by country of origin

Figure 4. *Distribution of scientific production by country of origin.*

Figure 4 shows how scientific production is distributed according to the country of origin of the institutions to which the authors are affiliated.



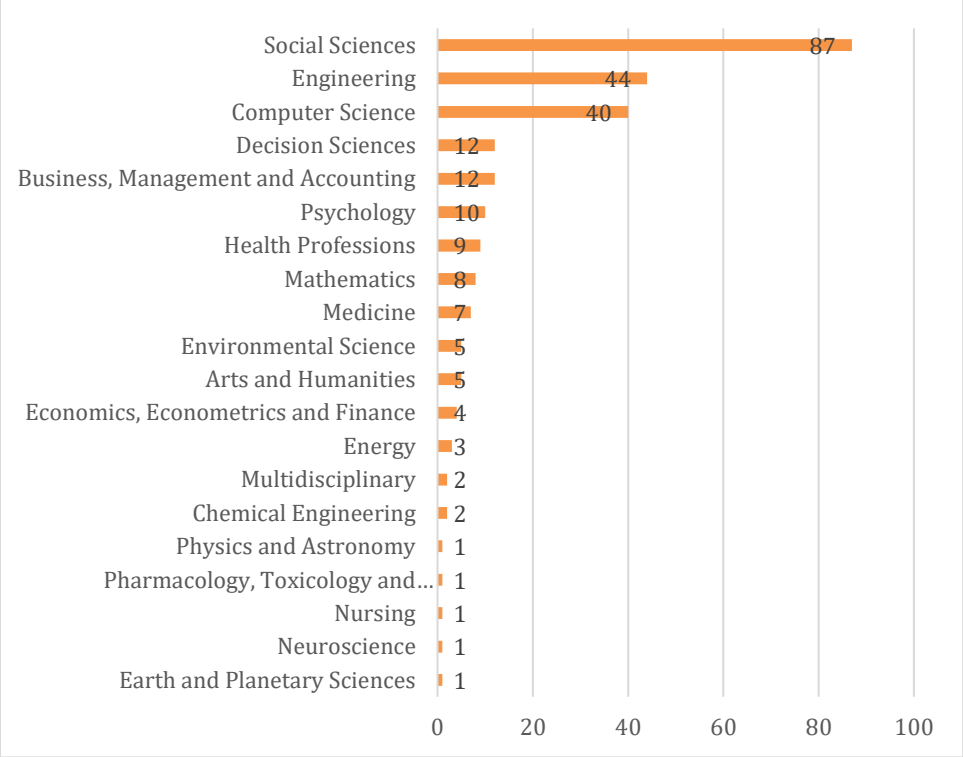
Source: Authors' own elaboration (2024); based on data provided by Scopus.

Within the distribution of scientific production by country of origin, the records from institutions were taken into account, establishing Mexico as the country of that community, with the highest number of publications indexed in Scopus during the period 2018-2023, with a total of 51 publications in total. In second place, Brazil with 21 scientific papers, and Peru occupying the third place presenting to the scientific community, with a total of 20 documents among which is the article entitled "Promotion of a university research culture through the methodology of Project-Based Learning (PBL) in ELT (English Language Teaching)" This research aimed to promote formative research skills in a group of fifty-one students from a UPTC campus, through the project-based learning (PBL) methodology in an English Language Teaching (ELT) course. Methodology: Given the qualitative nature of this analysis, we selected a case study method. We used surveys, focus group interviews, and teacher diaries as instruments to collect data. We also use grounded theory to analyze and conceptualize the information collected. Results: The PBL methodology significantly supported and improved students' research skills. Through the different activities, they also increased their interest and awareness of the need for research in their undergraduate programs. In addition, the students improved their speaking and writing skills in English, as reports and presentations were made in this language. Conclusions: The promotion of a culture of research, from the ELT, not only generates knowledge for development, internationalization and professional qualification, but also highlights the importance and role of higher education in society.(Mora-Menjura, 2023).

Distribution of scientific production by area of knowledge

Figure 5. *Distribution of scientific production by area of knowledge.*

Figure 5 shows the distribution of the elaboration of scientific publications based on the area of knowledge through which the different research methodologies are implemented.



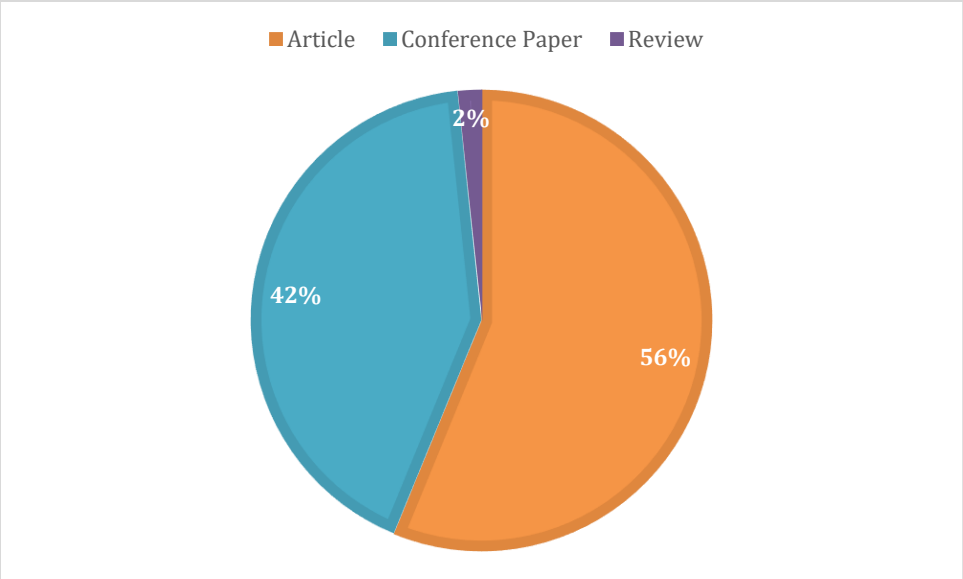
Source: Authors' own elaboration (2024); based on data provided by Scopus

Social Sciences was the area of knowledge with the highest number of publications registered in Scopus with a total of 87 documents that have based their methodologies University Education, Professional Skills and Innovation. In second place, Engineering with 44 articles and Computer Science in third place with 40. The above can be explained thanks to the contribution and study of different branches, the article with the greatest impact was registered by Social Sciences entitled "Transdisciplinary experiential learning in biomedical engineering education for the improvement of health systems." This work aims to create learning experiences relevant to biomedical engineering education to expand transdisciplinary knowledge and skills in students to improve and optimize hospital and healthcare care processes. Methods: Healthcare processes were translated into specific learning experiences using the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model. This model allowed us to systematically identify the context where learning experiences were expected to occur, the new concepts and skills that would be developed through these experiences, the stages of the student's learning journey, the resources needed to implement the learning experiences, and the assessment and assessment methods. The learning journey was structured around Kolb's experiential learning cycle, which considers four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Data on student learning and experience were collected through formative and summative assessments and a student feedback survey.(Montesinos, 2023).

Type of publication

Figure 6. *Type of publication.*

In the following graph, you will see the distribution of the bibliographic finding according to the type of publication made by each of the authors found in Scopus.



Source: Authors' own elaboration (2023); based on data provided by Scopus.

The type of publication most frequently used by the researchers referenced in the body of this document was the one entitled Journal Article with 56% of the total production identified for analysis, followed by Session Paper with 42%. Journals are part of this classification, representing 2% of the research papers published during the period 2022-2024, in journals indexed in Scopus. In the latter category, the one titled "Challenges and Opportunities of Generative AI for Higher Education Explained by ChatGPT" stands out This article presents a study that takes an ethnography approach to things to understand ChatGPT's perspective on the challenges and opportunities it represents for higher education. The research explores the potential benefits and limitations of ChatGPT, as well as mitigation strategies to address the identified challenges. The findings emphasize the urgent need for clear policies, guidelines, and frameworks to responsibly integrate ChatGPT into higher education. It also highlights the need for empirical research to understand users' experiences and perceptions. The findings provide insights that may guide future research efforts to understand the implications of ChatGPT and similar Artificial Intelligence (AI) systems in higher education. The study concludes by highlighting the importance of ethnography of things as an innovative approach to interacting with intelligent AI systems and calls for further research to explore best practices and strategies in utilizing generative AI for educational purposes.(Michel-Villarreal, 2023).

CONCLUSION

Through the bibliometric analysis carried out in this research work, it was established that Mexico was the country with the highest number of published records for the variables University Education, Professional Competencies and Innovation. With a total of 51 publications in the Scopus database. In the same way, it was established that the application of theories framed in the area of Social Sciences, innovation can become a complex but necessary process, this factor demands from universities a structural change in the way in which professional and academic competencies have been educated and how they have been executed. Therefore, it is necessary to carry out innovative processes in educational processes, both pedagogical and didactic, in addition to strengthening the skills of university teachers. Similarly, in order to improve the quality and relevance of higher education, it is essential to renew the thinking and procedures of traditional paradigms and to ensure

a learning paradigm in which students are sought to be the builders of their own knowledge, encourage autonomous learning and address the learning styles of each student. Likewise, it is essential to focus pedagogy on factors such as improving decision-making skills, academic projects and competencies; This is with the aim that students stimulate acting, thinking, and building knowledge. For this reason, it is necessary for universities to choose to adapt to the needs of the new times, in which they seek to keep in mind the factor of innovation as an indispensable resource. For this reason, it is necessary for universities to be in constant dynamism, it is sought that these institutions ensure the relevance and quality of education, which is why it is necessary to define those indicators that allow monitoring the quality of education. However, it cannot be left aside to offer society new academic options, the integration of ICT allows maximizing academic support by promoting student equity and therefore improving academic training in order to ensure innovation.

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