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Assessing Online Learning Platforms' Impact on Enhancing Academic Performance in Higher Education

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Abstract

A systematic review was carried out on the production and publication of research papers related to the study of Learning, Academic Performance and Higher Education Platforms, during the period between 2017 and 2022 by Latin American institutions under the PRISMA (Preferred Reporting Items for Systematic reviews and 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 study and their scope in the study of the proposed variables, achieving the identification of 51 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 LEARNING PLATFORMS, ACADEMIC PERFORMANCE, HIGHER EDUCATION, reaching a total of 18 documents, excluding duplicates and those that did not meet the analysis criteria. The identified scientific publications were analyzed in order to know the main characteristics of digital strategies and the effectiveness of online learning platforms in the evaluation of academic performance in higher education from the Latin American perspective.

Keywords: Learning Platforms, Academic Performance, Higher Education.

1. Introduction

In such a dynamic globalization led by the hand of the digital age, the education sector is not exempt from presenting changes, this transformation related to new technologies has resulted in the incorporation of online platforms, this a powerful educational tool characterized by providing greater performance and progress in the academic load. As we move into the 21st century, we can redefine how the traditional paradigms implemented in education have gradually given way to incorporating a much more dynamic and interconnected field of study, where the fusion of technology and education is reshaping the way students learn, interact, and excel. Based on this context, we can affirm that the benefits that online platforms bring with them in improving the academic performance of higher education is increasingly evident, since this structural change in education transcends the geographical barriers caused by traditional learning models and provides empowerment to students from various parts of the world.

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Being able to incorporate online platforms into their academic workload has not only revolutionized the way educational content is delivered, but also generates new self-learning and teaching experiences. These state-of-the-art systems not only generate an innumerable amount of resources, but also provide tools that help the adaptability derived from different learning styles that adapt to the personal preferences of each student. Integrating multimedia, interactive simulations, and adaptive learning technologies, online platforms engage students in ways that traditional lectures and textbooks often struggle to achieve

One of the key benefits of executing these educational practices online is that it provides academic flexibility, as it gives students the freedom to manage their time and their way of learning at their own pace based on their self-learning skills. The features that these online platforms bring with them allow students to access free of charge and hand in hand educational materials at any time, these unique features break down the limiting barriers of information since they allow them to acquire these materials at any time, leaving behind the fixed information schedules prevalent in traditional classrooms. The flexibility granted by these online platforms is particularly beneficial for non-traditional students, this is evidenced in those professionals who work, since it offers them to continue with higher education without compromising their work and not dropping out of their studies.

Education is a hallmark of online platforms as they bridge the gap between geographical barriers and academic opportunities. Students around the world can access top-notch courses and interact with educators, creating a globalized learning community. This connection algorithm not only enriches the learning experience, but also fosters collaboration, preparing students for a globalized workforce. The volatility of online platforms is further accentuated by their ability to cater to different learning preferences. Visual learners can benefit from video conferencing and interactive simulations, while auditory learners can participate in podcasts and online discussions.

As we delve into the myriad benefits of online platforms in higher education, it becomes apparent that they serve as more than just repositories of information. They are ecosystems of change that promote active learning. This transformation goes beyond the conventional classroom model, challenging traditional pedagogical approaches and encouraging institutions to adapt to the changing needs of students in training

2. General Objective

To analyze, from a bibliometric and bibliographic perspective, the production of research papers on the variables Learning Platforms, Academic Performance and Higher Education published in high-impact journals indexed in the Scopus and Wos databases during the period 2017-2022.

3. Methodology

The present research is qualitative, according to Hernández, et al., qualitative approaches correspond to the investigations that carry out the procedure of obtaining information to review and interpret the results obtained in these studies; To do this, it searched for information in the Scopus and Wos databases using the words Learning Platforms, Academic Performance and Higher Education. (2015)

3.1 Research Design

The research design proposed for the present research was the Systematic Review that involves a set of guidelines to carry out the analysis of the collected data, which are framed in a process that began with the coding to the visualization of theories. On the other hand, it is stated that the text corresponds to a descriptive narrative since 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, theories on knowledge management were analyzed and interpreted. (Strauss & Corbin, 2016) (Hernandez, Baptista, & Fernandez, 2015)

The results of this search are processed as shown in Figure 1, through which the PRISMA technique for the identification of documentary analysis material is expressed. It was taken into account that the publication was published during the period between 2018 and 2022 without distinction of country of origin of the publication or area of knowledge, as well as any type of publication, namely: Journal Articles, Reviews, Book Chapters, Book, among others.

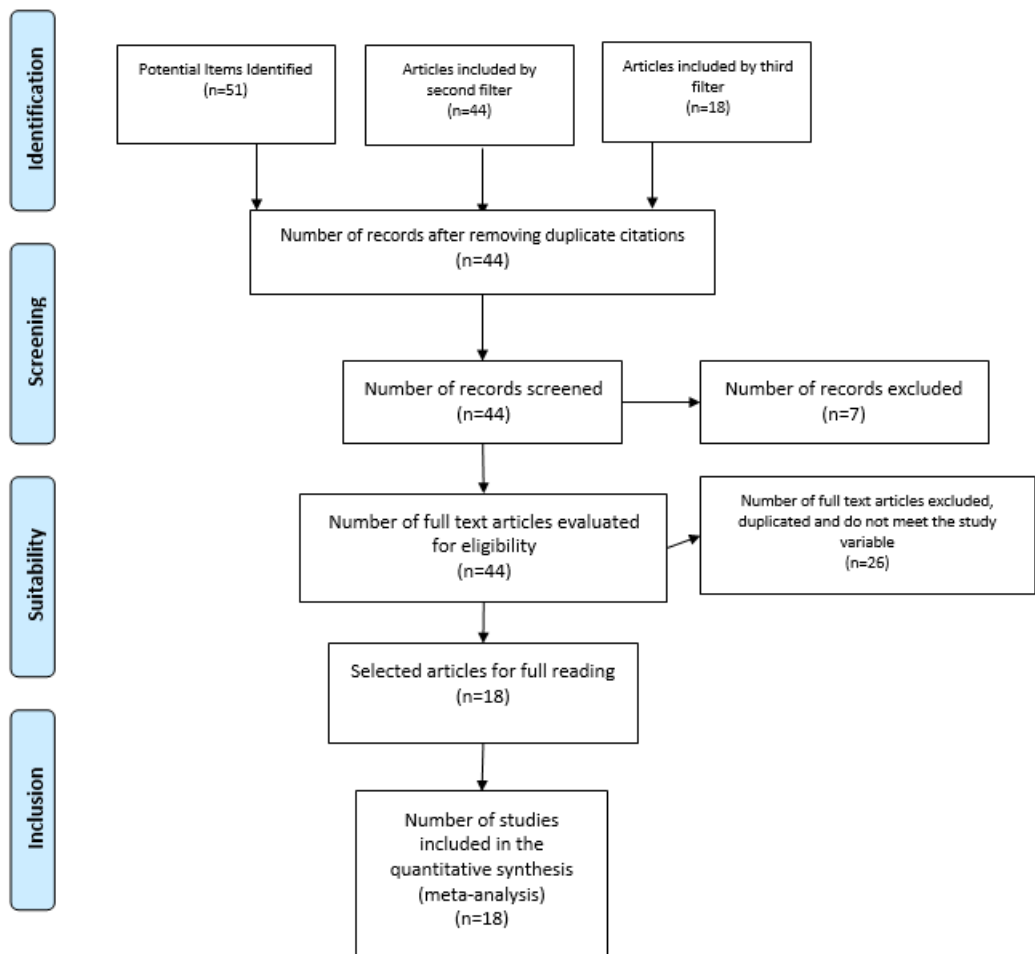


Figure 1. Flowchart of a Systematic Review Carried Out under the PRISMA Technique (Moher, Liberati, Tetzlaff, Altman, & Group, 2009)

Source: Authors' Own Creation; 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 of the referenced works.

Table 1. List of Articles Analysed.

No	RESEARCH TITLE	AUTHOR/YEAR	COUNTRY	TYPE OF STUDY	INDEXING
1	<i>Personalised learning model for academic leveling and improvement in higher education</i>	Cárdenas, L. S. H., Castaño, L., Guzmán, C. C., & Álvarez, J. P. N. (2022).	MEXICO	QUALITATIVE	SCOPUS
2	<i>Traditional Face-to-Face Educational Modality vs. Remote Face-to-Face: Its Impact on Academic Performance in the Context of the Covid 19 Pandemic</i>	Hernández-Sánchez, I., Romero Caballero, S., Acuña Rodríguez, M., Rocha Herrera, G., Acuña Rodríguez, J., & Ramírez, J. (2022, June).	COLOMBIA	QUALITATIVE	SCOPUS
3	<i>Gamification in computer programming: Effects on learning, engagement, self-efficacy and intrinsic motivation</i>	Ortiz Rojas, M. E., Chiluiza, K., & Valcke, M. (2017).	BELGIUM, ECUADOR	QUALITATIVE	SCOPUS
4	<i>Teaching Digital Competence in Higher Education. A Comprehensive Scientific Mapping Analysis with Rstudio</i>	Palacios, Y.D.B.;Ávila, Z.E.G.;Defilippi, M.T.A., Ube, S.E.M.(2022)	ECUADOR	QUALITATIVE	SCOPUS
5	<i>Use of Moodle virtual platform for the development of self-regulated learning in university students</i>	Martínez-Sarmiento, L. F., & Gaeta González, M. L. (2019).	COLOMBIA	QUANTTTATIVE	SCOPUS

No	RESEARCH TITLE	AUTHOR/YEAR	COUNTRY	TYPE OF STUDY	INDEXING
6	<i>Measuring the effectiveness of online problem solving for improving academic performance in a probability course</i>	Gonzalez, J. A., Giuliano, M., & Pérez, S. N. (2022).	ARGENTINA, SPAIN	QUALITATIVE	SCOPUS
7	<i>Educational innovation with ict in latin american universities: Multi-country study</i>	Deroncele-Acosta, Á., Medina-Zuta, P., Goñi-Cruz, F. F., Román-Cao, E., Montes-Castillo, M. M., & Gallegos-Santiago, E. (2021).	PERU, ECUADOR, MEXICO	QUALITATIVE	SCOPUS
8	<i>Impact of an LMS Platform on the Academic Performance of Postgraduate Students: A Study from Data Analytics</i>	de Jesús Araiza, M., Garcia, M. (2021)	MEXICO	QUANTITATIVE/QUALITATIVE	SCOPUS
9	<i>Undergraduate's Perspective on Being an Effective Online Student During Lockdown due to COVID-19 Pandemic: An Educational Data Mining Study</i>	Mondragon-Estrada, E., & Camacho-Zuñiga, C. (2021, December).	MEXICO	QUALITATIVE	SCOPUS
10	<i>The Transformation to an Online Course in Higher Education Results in Better Student Academic Performance</i>	Freire, T., & Rodríguez, C. (2022).	URUGUAY	QUALITATIVE	WOS
11	<i>The use of online learning environments in higher education as a response to the confinement caused by COVID-19</i>	Martinez, F., Hyacinth, E., Montiel, H. (2021)	COLOMBIA	QUALITATIVE	WOS

No	RESEARCH TITLE	AUTHOR/YEAR	COUNTRY	TYPE OF STUDY	INDEXING
12	<i>Flipped classroom with digital technologies and metacognitive tool to potentialize higher education classes</i>	de Almeida, CMM; Scheunemann, CMB and Lopes, PTC (2022)	BRAZIL	QUALITATIVE	WOS
13	<i>YouTube Videos in the Virtual Flipped Classroom Model Using Brain Signals and Facial Expressions</i>	Sangermán Jiménez, M. A., Ponce, P., & Vázquez-Cano, E. (2021)	MEXICO, SPAIN	QUANTITATIVE	WOS
14	<i>The effectiveness of computer-based simulations for numerical methods in engineering</i>	Tudón-Martínez, J. C., Hernández-Alcántara, D., Rodríguez-Villalobos, M., Aquínes-Gutiérrez, O., Vivas-López, C. A., & Morales-Menéndez, R. (2020).	MEXICO	QUANTITATIVE	WOS
15	<i>Multivariate Real-Time Predictive Model for predicting the Student Performance in Virtual Graduate Programs by using the Artificial Intelligence</i>	Rincón, J and Vila, M (2021)	COLOMBIA	QUANTITATIVE	WOS
16	<i>Systematic literature review on software architecture of educational websites</i>	Campoverde-Molina, M., Luján-Mora, S., & Valverde, L. (2021).	ECUADOR, SPAIN	QUALITATIVE	WOS

No	RESEARCH TITLE	AUTHOR/YEAR	COUNTRY	TYPE OF STUDY	INDEXING
17	<i>Impact of digital technologies upon teaching and learning in higher education in Latin America: an outlook on the reach, barriers, and bottlenecks</i>	Okoye, K., Hussein, H., Arrona-Palacios, A., Quintero, H. N., Ortega, L. O. P., Sanchez, A. L., ... & Hosseini, S. (2023).	MEXICO, COLOMBIA, UNITED STATES	QUANTITATIVE	WOS
18	<i>Learning with ICT to teach with ICT in the Dominican Republic. The Digital Republic Education program</i>	Garcia, CM; Burgos, DR; (...); Nero, JFJ (2019)	SPAIN, DOMINICAN REPUBLIC	QUANTITATIVE	WOS

Source: Authors' Own Creation.

4.1 Co-occurrence of Words

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

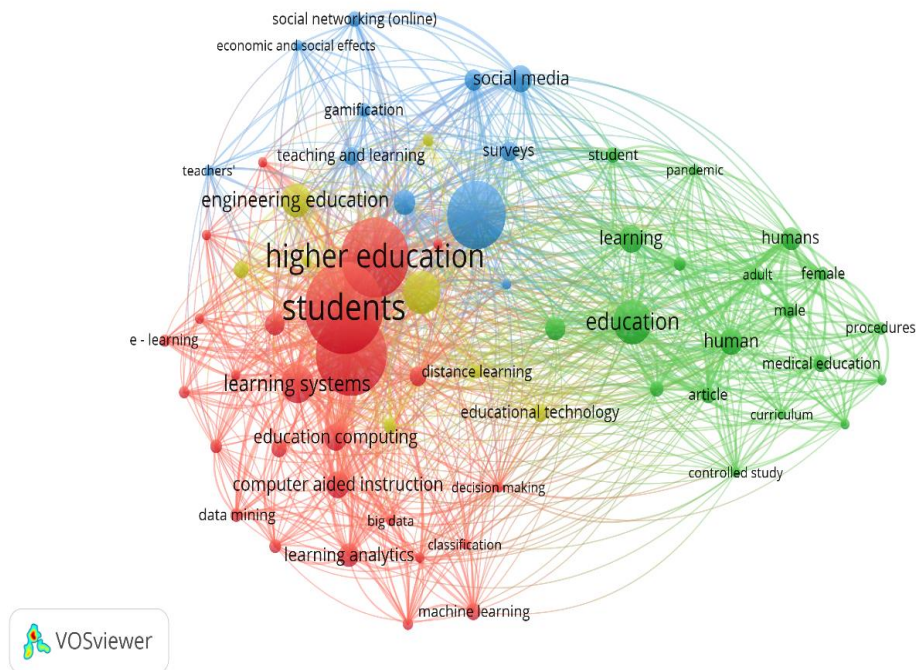


Figure 2. Co-Occurrence of Keywords.

Source: Authors' Own Creation.

Figure 2 shows the most frequently used keywords and their correlation with research on topics associated with the problems of Learning Platforms, Academic Performance and Higher Education. In this way, it is possible to affirm that Higher Education constitutes the central axis of the research identified for the analysis developed in this article. directly related to research in Students, Smart Platforms, Teachers, E-Learning, Learning Systems, Personalized Learning, Computational Education, among others, while online platforms have proven to be effective in improving academic performance in higher education, their success depends on careful implementation and continuous improvement. The combination of technological advances and pedagogical innovation promises a more accessible, flexible, and engaging educational landscape, where students can thrive and excel in their academic pursuits. As technology continues to evolve, it is imperative that educators, institutions, and policymakers collaboratively shape the future of higher education, ensuring that online platforms remain a force for positive change.

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 Platforms for Learning, Academic Performance and Higher Education, carried out in high-impact journals indexed in Scopus and Wos databases during the period 2017-2022 by authors affiliated with Latin American institutions. 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 regarding the variables proposed for this study, this is how great contributions are identified as contemplated in the article entitled "Personalized learning model for leveling and academic improvement in higher education" The objective The innovative development of this study was to develop a personalized learning model to match students' entry-level knowledge when they entered the Faculty of Medicine and Health Sciences at Tecnológico de Monterrey in Mexico in 2019. This was necessitated by a difference in the depth and focus of preparation. content. The methodology focused on adapting the learning process to the specific knowledge requirements of students in cell biology and chemistry courses to enrich knowledge and improve academic performance. We implement a diagnostic test at the beginning of the course to determine the level of mastery of students in these subjects. The research design was non-experimental, observing the phenomenon as it occurs in the natural context, using an interval-type scale questionnaire (quantitative). The analysis of the results of the learning model showed an increase in student knowledge and satisfaction and demonstrated the usefulness of the model for the understanding of educational content. Therefore, it is absolutely necessary to know first-hand the real needs of them in order to line strategies that pursue success within their training. Supporting the above idea is the contribution made by the development of the article entitled "The effectiveness of computer simulations for numerical methods in engineering." The purpose of this study is to design and implement self-regulated LA activities developed in Virtual Learning environments and supported by computer simulations for the instruction of numerical methods. By using a real-life engineering problem, in this case, the analysis of a vehicle suspension system, the simulation-based activity provided an environment for students to analyze the effect of parameters of numerical methods used to solve a set of Ordinary Differential Equations (ODEs). The students compared the solution obtained with numerical methods of different order and different levels of accuracy, both qualitatively and quantitatively. A control group and an experimental group were used to compare and evaluate the impact of the proposed learning strategy on numerical methods instruction. Students who participated in these

activities showed deeper understanding and earned higher grades. By using technological tools for guided activities, students acquired and practiced various technical concepts, compared different solutions, and analyzed how numerical methods could be used to solve complex engineering problems. In addition, students showed greater engagement, satisfaction, and knowledge retention. However, like any methodology, it is not exempt from presenting problems through its use, as shown in the article entitled "Impact of digital technologies on teaching and learning in higher education in Latin America: a look at their scope, barriers and bottlenecks" This study reveals the extent to which digital technologies have been used to advance the teaching and learning process in Latin America. HEIs, and the barriers and obstacles that explain why they may not have been effectively implemented in all HEIs. The study used nine selected Latin American (LATAM) countries based on the primary focus of educators, commercial and financial investors; To show the level of impact/implications of information technologies on teaching and learning processes. We applied a two-step (mixed) methodology (through a quantitative and qualitative lens) for the research, using data collected from the survey we administered to HEI professors in the different LATAM countries. At the same time, we implemented a Text Mining technique (sentiment and emotional valence analysis) to analyze opinions (textual data) given by participants to help determine challenges and obstacles in the use of digital technologies for teaching and learning in the region. Quantitatively, we applied a Kruskal-Wallis H-test to analyze the multiple-choice and classified items collected in the questionnaire in order to identify salient factors that consummately influence scope, barriers, and bottlenecks, and where differences may lie between different LATAM countries.(Lizette Susana Hernandez Cardenas, 2022)(Juan C. Tudon-Martinez, 2020)(Kingsley Okoye, 2023)

5. Conclusions

This review article concludes, highlighting the importance of knowing the updated status of the bibliography published in databases such as Scopus or Wos, referring to the study of the Learning Platforms, Academic Performance and Higher Education during the period between 2017 and 2022, It can be concluded that one of the advances brought about by the digital era is to promote a change in several sectors of the economy, With this, the education sector is sought as the main source of knowledge to promote the use of online platforms, which has been designed as a powerful tool to improve academic performance in higher education institutions. The dynamism that these pedagogical tools represents, in turn, represents for students total accessibility to educational materials and flexibility, which has favored leaving behind the methodologies applied in the classrooms and taking a step of innovation to the sector of virtuality and connectivity. The accessibility of educational content has democratized learning, breaking down geographical barriers and providing opportunities to people from diverse backgrounds. This addition has expanded access to education, allowing students to pursue courses and programs that were previously out of reach. Second, the multimedia-rich nature of online platforms fosters engaging learning environments. Students can access a wealth of resources while accommodating different learning styles. Consequently, the ability to review and revise materials at your own pace contributes to a deeper understanding of the topic. Online platforms facilitate real-time communication and collaboration between students and teachers. The alternatives offered by these platforms are the interaction of online forums, virtual improvement classrooms and joint projects between students and teachers, these benefits allow students to tell new learning experiences being much more multifaceted and participatory. It is crucial to recognize the challenges and limitations associated with online

education. Issues such as the digital divide, concerns about the quality of online content, and the possibility of reduced social interaction require careful consideration. Institutions must actively address these challenges to ensure that the benefits of online platforms are accessible to all and that the educational experience remains holistic.

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