

B-LEARNING AND VIRTUAL EDUCATION STRATEGIES IN LATIN AMERICA

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Abstract

In order to develop this article, a documentary review of the elaboration and production of research works related to the study of B-Learning and Virtual Education Strategies in Latin America was carried out to know, through a bibliometric study, the main characteristics of 16 publications registered in the Scopus database. The results obtained from this database were organized in tables and figures, categorizing the information by variables such as Year of Publication, Country of Origin and Area of Knowledge, which allowed to identify, through qualitative analysis, the position of different authors regarding the proposed topic. The main findings of this research were that Colombia stood out for having the highest scientific production, leading the list with four publications. Likewise, the area of knowledge that made the greatest contribution to the construction of bibliographic material related to the study of variables was computer science, with seven published documents.

Keywords: B-Learning, Strategies, Virtual Education.

I. Introduction

Globalization and the constant change to which the educational sectors have been exposed have led to the need to develop and implement new alternatives that facilitate access to information for students, increasing their participation and reducing cases of school or university dropouts.

One of the greatest innovations has undoubtedly been the information and communication technologies, also known as ICT, which have allowed the transition from traditional teaching models to more inclusive ones where the student plays a more active role, obtaining better results.

It is essential to clarify that there have been several learning models designed and implemented, however, only a few have achieved the expected effects. Such is the case of B-Learning, which can be defined as follows:

Blended learning (1) and (9) is a method that combines face-to-face teaching with virtual teaching, uses technology and reflects the trend towards eclectic and more open thinking, which tries to overcome prejudices and seeks the best of the two types of teaching that until now were opposed to each other (Martí-Arias, 2009).

Among the characteristics of B-Learning are its “flexibility” in time management by students and “adjustability” (Benavides-Avellaneda, 2022) for its adaptability in any educational environment, generating excellent results in the training of individuals. However, this learning model, like any other, must resort to strategies that awaken the students’ interest and keep them connected throughout the process. For this reason, this article seeks to describe the main characteristics of the set of publications attached to the Scopus database that is directly related to the variables mentioned above, as well as the description of the position of certain authors affiliated with institutions around the world, during the period between 2017 and 2022 at the Latin American level.

2. General Objective

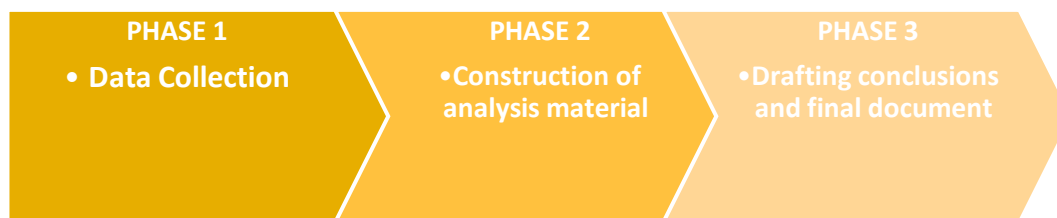


Figure 1. Methodological design

Source: Own elaboration

3.1.1 Phase 1: Data Collection

The data collection was executed from the Scopus web page search tool, where 36 publications were obtained from the choice of the following filters:

To analyze from a bibliometric and bibliographic perspective, the elaboration of research works on the variables B-Learning and Virtual Education Strategies at the Latin American level in Scopus.

3. Methodology

This article is conducted through a mixed research approach combining quantitative and qualitative methods.

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 B-Learning and Virtual Education Strategies in Latin America.

On the other hand, from a qualitative perspective, examples of some research works published in the area of the study mentioned above are analyzed from a bibliographic approach that allows describing the position of different authors on the proposed topic.

It is important to note that the entire search was conducted through Scopus, establishing the parameters referenced in *Figure 1*.

3.1 Methodological design

TITLE-ABS-KEY (b-learning, AND education AND strategies) AND (LIMIT-TO (AFFILCOUNTRY ,“Colombia”) OR LIMIT-TO (AFFILCOUNTRY ,“Mexico”) OR LIMIT-TO (AFFILCOUNTRY ,“Chile”) OR LIMIT-TO (

AFFILCOUNTRY ,“Ecuador”) OR LIMIT-TO (AFFILCOUNTRY ,“Peru”) OR LIMIT-TO (AFFILCOUNTRY , “Brazil”) OR LIMIT-TO (AFFILCOUNTRY ,“Venezuela”) OR LIMIT-TO (AFFILCOUNTRY ,“Cuba”)) AND (LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017))

Published papers whose study variables are related to B-Learning and Virtual Education Strategies.

- Limited to the period from 2017-2022.
- In Latin American countries.
- Without distinction of area of knowledge.
- Without distinction of type of publication.

3.1.2 Phase 2: Construction of analysis material

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

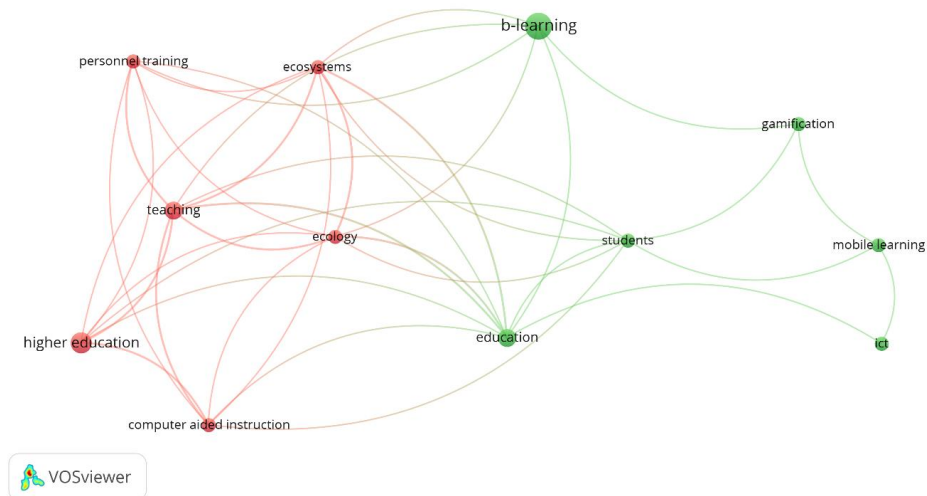


Figure 2. Cooccurrence of words

Source: Own elaboration (2022); based on data exported from Scopus.

As mentioned above, the data in Figure 2 were exported from Scopus, which shows the variables and their relationship with other terms such as personnel training, teaching, information and

- Word Co-occurrence.
- Year of publication
- Country of origin of the publication.
- Knowledge area.
- Type of Publication

3.1.3 Phase 3: Drafting conclusions and final document

In this phase, the study analyzed the results previously obtained, resulting in the determination of conclusions and, consequently, the final document.

4. Results

4.1 Co-occurrence of words

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

communication technologies, and gamification, which will be analyzed below.

Considering that B-Learning is a blended learning method, its application is possible in different educational processes involving higher education institutions or companies that require the training of their personnel. B-Learning relies on technological tools or strategies such as gamification or cell phones that allow permanent access to information while promoting student autonomy in time management.

Likewise, through the management of virtual information, there is a simultaneous reduction in

environmental pollution due to the non-printing of documents that make up the educational plan of each program's subjects or areas of study.

4.2 Distribution of scientific production by year of publication

Figure 3 shows the distribution of scientific production according to the year of publication.

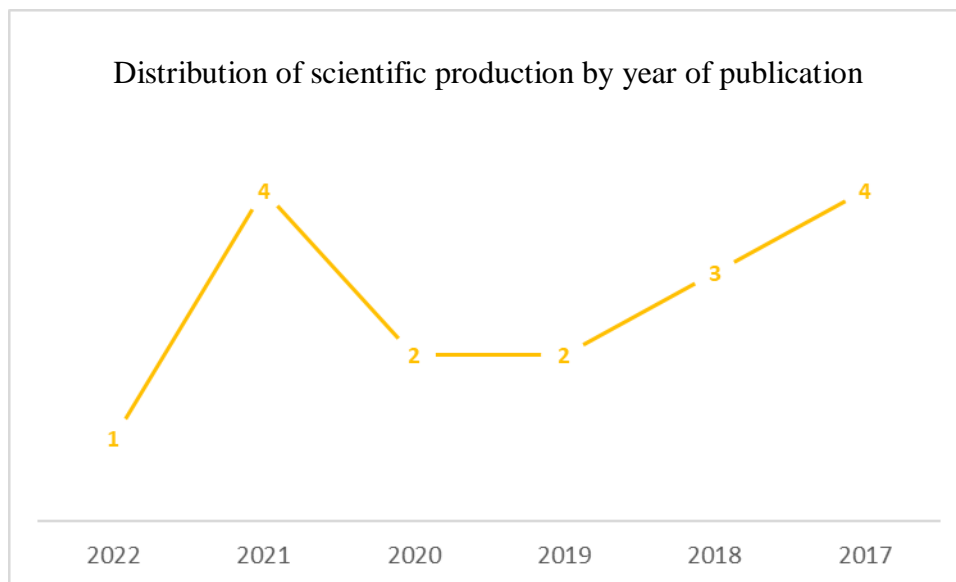


Figure 3 shows the scientific production concerning the variables B-Learning and Virtual Education Strategies, at the Latin American level, between the years 2017 and 2022, left due to the publication of 16 keywords containing the keywords. Likewise, it is observed that the following changes were experienced throughout the period. In 2017, one of the highest peaks in the graph with a total of 4 documents, a figure that gradually decreased during the following two years, remaining stable in the years 2019 and 2021 with 2 publications, respectively. Throughout 2021, the figure increases again to 4 publications, the same number as in 2017, dropping considerably in 2022, where only 1 document related to the subject was found.

Of the latter publications, the article entitled “The digital portfolio as a learning assessment strategy in higher education” stands out (Marinho et al., 2021), whose object of study was to “identify and characterize the meanings and effects that students and teachers attribute to the use of digital portfolios as an assessment and learning strategy” (Marinho et al., 2021) allowing to determine the important role that the portfolio played in the learning of the group of students analyzed.

4.3 Distribution of scientific production by country of origin.

Figure 4 shows the distribution of scientific production according to the nationality of the authors.

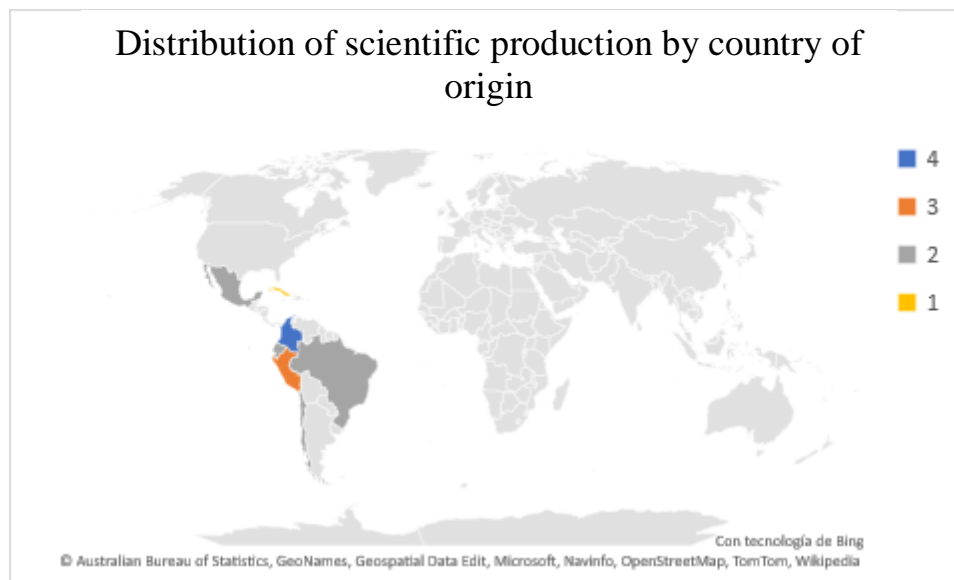


Figure 4. Distribution of scientific production by country of origin.

Source: Own elaboration (2022); based on data provided by Scopus.

In studying B-Learning and Virtual Education Strategies in Latin America, Colombia leads the list of published documents with 4 records in the Scopus database, followed by Peru and Brazil, with 3 and 2 texts, respectively. The article “Design and implementation of a b-learning course for teaching Discrete Mathematic” stands out (Bedregal-Alpaca & Tupacyupanqui-Jaén, 2022), which emphasizes the importance of acquiring mathematical knowledge for the study of careers related to Engineering, for which a “Moodle platform is implemented as an enriching element of the teaching-learning processes and has combined face-to-face and virtual education strategies” (Bedregal-Alpaca & Tupacyupanqui-Jaén, 2022). This showed that the success of a B-Learning model depends directly on the “adequate design of activities that promote the active

participation of the student and the development of autonomous learning strategies” (Bedregal-Alpaca & Tupacyupanqui-Jaén, 2022).

At this point, it is important to note that the elaboration of scientific publications, in many cases, is based on collaborations that may involve private and public institutions from one or several countries. Therefore, the same publication may be linked to one or more authors with different nationalities and thus to more than one country simultaneously, making part of each of the total number of articles or publications in the final sum. *Figure 5* shows the flow of collaborative work carried out by several countries in greater detail.



Figure 5. Co-citations between countries.

Source: Own elaboration (2022); based on data provided by Scopus.

Figure 5 shows the research grouping according to the collaboration between authors from other international institutions. There is outstanding participation between authors affiliated with institutions in Latin American countries such as Colombia, Brazil, Mexico, and Peru and foreign countries such as the United States and Spain.

4.4 Distribution of scientific production by area of knowledge

Figure 5 shows the distribution of the production of scientific publications according to the area of knowledge through which the different research methodologies are implemented.

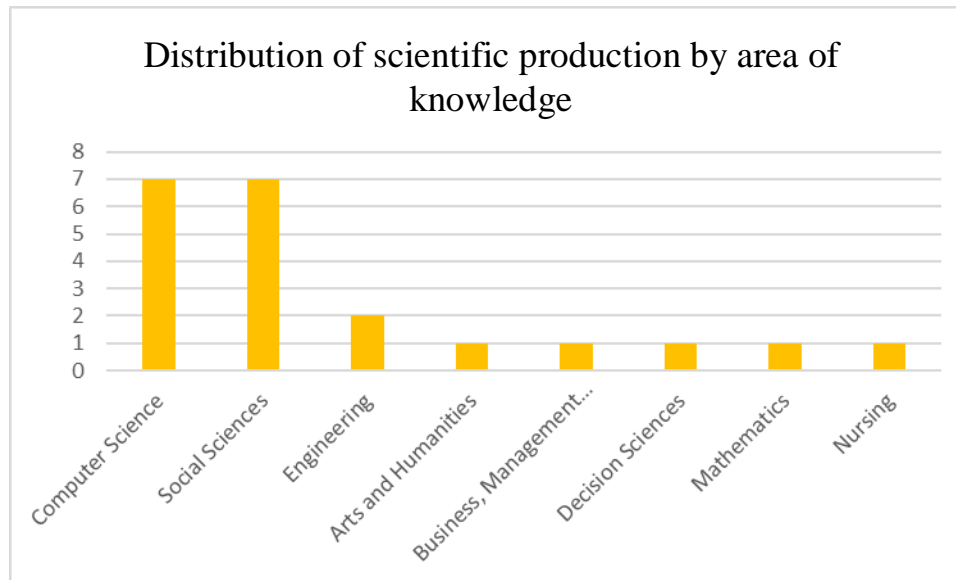


Figure 6. Distribution of scientific production by area of knowledge.

Source: Own elaboration (2022); based on data provided by Scopus.

As a result of the relationship between B-Learning and Virtual Education Strategies and the creation of software and web platforms, it is not surprising that computer science is the area with the highest number of documents elaborated and subsequently published in the Scopus database. However, other areas, such as social sciences and engineering, have also contributed to the study of these variables, publishing 7 and 2 papers, respectively.

As shown in *Figure 6*, the variables that are the object of this study are relevant in various areas of knowledge since they directly influence the

educational system and, therefore, the learning process of any person regardless of the type of institution and division of study to which he or she belongs.

4.5 Type of publication

The following graph in *Figure 7* shows the distribution of the bibliographic findings according to the type of publication made by each of the authors found in Scopus.

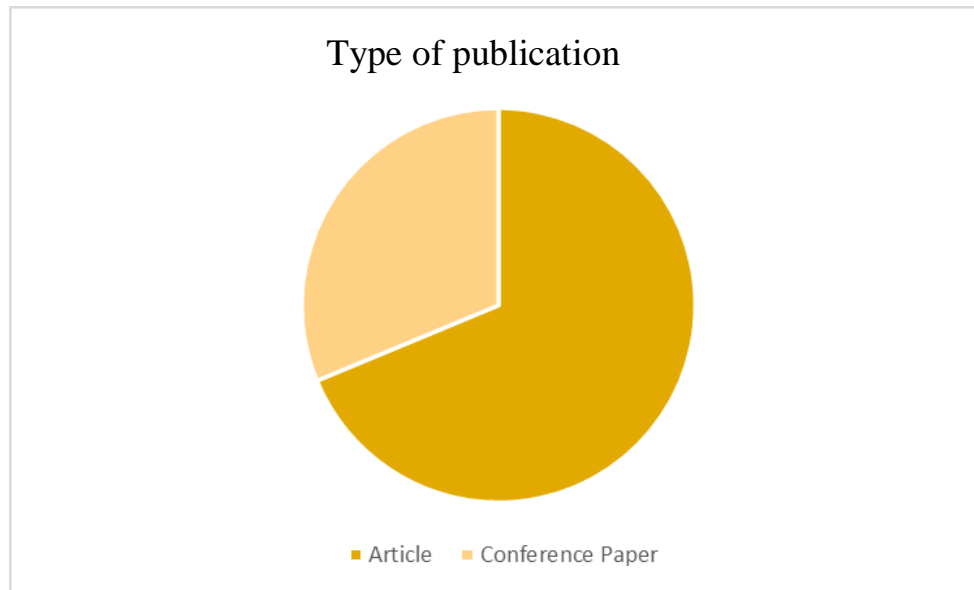


Figure 7. Type of publication.

Source: Own elaboration (2022); based on data provided by Scopus.

Figure 7 clearly shows that the predominant type of publication in the B-Learning and Virtual Education Strategies study was the journal article with a total of 11 documents. In second place were conference proceedings with 5 texts. One of the most relevant conference proceedings is entitled “Personalized Education using Computational Thinking and B-Learning Environment: Classroom Intervention” (Rojas-López & García-Peñalvo, 2017) which also refers to the implementation of a Moodle platform “to expose learning contents and to have an adequate context chosen by the students” (Rojas-López & García-Peñalvo, 2017) in order to provide an education in a personal way that would capture and maintain the student’s interest and thus decrease withdrawal and poor academic performance.

5. Conclusions

Finally, thanks to the bibliometric analysis carried out in this research work, it was possible to establish that Colombia was the country with the largest number of published records regarding the variables B-Learning and Virtual Education Strategies, with a total of 4 publications in the Scopus database during the period 2017-2022 in

Latin America. Likewise, it was determined that journal articles led the type of publication with 11 texts and that computer science was the area with the largest number of studies concerning the subject in the years mentioned above.

On the one hand, B-Learning is considered one of the best learning models today since it promotes student participation based on its two main characteristics: flexibility and adaptability. Hence, the implementation of strategies such as gamification and the use of virtual platforms or portfolios is carried out recurrently in different educational media having great acceptance by students and therefore maximizing their academic results. The almost immediate feedback is one of the aspects to be highlighted in this modality since it allows participants to clear up doubts as they carry out the virtual activities.

Despite all the positive aspects, the study variables still face great challenges in Latin America. The first of these is the inability of states to guarantee access to ICTs for all communities, making it impossible to achieve the full participation of students, especially those in rural areas. The second is the lack of knowledge on the part of many teachers in using technological tools, which

hinders the development of the study plan, causing a distance between the student and the teacher. Therefore, it is essential to provide frequent training to the team of teachers so that they acquire basic knowledge and create technology departments that carry out the creation and development of simple software in all parts of the educational process.

References

- [1] Bedregal-Alpaca, N., & Tupacyupanqui-Jaén, D. (2022). Design and implementation of a b-learning course for the teaching of Discrete Mathematics. *RISTI - Revista Iberica de Sistemas e Tecnologias de Informacao*, 563-579.
- [2] Benavides-Avellaneda, J. (2022). B-learning: oportunidades de aprendizaje en el nuevo contexto. *Ciencia Latina*, 321-334.
- [3] Boude, O. R. (2019). How teachers integrate mobile devices in the classroom. *Espacios*.
- [4] Castiblanco, S., & Osorio, J. (2019). Efectividad del b-learning sobre rendimiento académico y retención en estudiantes en educación a distancia. *Entramado*, 212-223.
- [5] Crispin, F. V., Ortiz, C. A., & Flores, R. E. (2021). B-learning and transformation of university critical thinking in Perú. *Revista de Filosofia (Venezuela)*, 278-291.
- [6] Daniel, V., & Vera, G. (2017). Intelligent tutorial system for learning of basic and operational math. *Journal of Science Education*, 84-90.
- [7] Gonzáles-Morales, L. (2017). Metodología para el diseño instruccional en la modalidad b-learning desde la Comunicación. *Razón y Palabra*, 32-50.
- [8] Ibarra, G. A., & Vicente, J. S. (2021). Gamification as a strategy for strengthening competencies in postgraduate students. *RISTI - Revista Iberica de Sistemas e Tecnologias de Informacao*, 21-37.
- [9] Marinho, P., Fernandes, P., & Pimentel, F. (2021). The digital portfolio as an assessment strategy for learning in higher education. *Distance Education*, 253-267.
- [10] Martí-Arias, J. A. (2009). Aprendizaje mezclado (B-Learning) Modalidad de formación de profesionales. *Revista Universidad EAFIT*, 70-77.
- [11] Monclúz, I., Núñez-Barriopedro, J., & Ravina-Ripoll, R. (2019). El impacto de la utilización de la modalidad B-learning en la educación superior. *Alteridad*, 26-39.
- [12] Rojas-López, A., & García-Peñalvo, F. J. (2017). Personalized education using computational thinking and b-learning environment: Classroom intervention. *ACM International Conference Proceeding Series*. Cadiz.