





Bibliometric analysis of scientific production on gamification in History teaching

Análise bibliométrica da produção científica sobre a gamificação no ensino de História

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ABSTRACT

Gamification has become increasingly popular as a pedagogical strategy in several areas of knowledge. This approach consists of applying elements of games in learning contexts, with the aim of engaging and motivating students to actively participate in the educational process. The objective of this study was to perform a bibliometric analysis of scientific publications, in the Scopus database, on gamification in the teaching of History, identifying the evolution of scientific productions on the proposed theme in the last ten years. The present work followed a methodology of bibliometric study, which consists of the mathematical and statistical analysis of literary works in a given field of knowledge, seeking to identify the academic communities, authors and what leads to research by certain themes. The research is classified as quantitative exploratory, using as a criterion keywords focused on the theme Gamification in History Teaching. A total of 24 publications were found in the Scopus database, covering the period from 2013 to 2022. After the analysis, there was a significant increase in the number of publications on the subject in recent years. Spain is the country that contributed the most publications on the subject, Brazil had a low number of publications. It is necessary that more research related to gamification in the teaching of History be carried out, in order to understand how games can influence the teaching of History.

RESUMO

A gamificação tem se tornado cada vez mais popular como uma estratégia pedagógica em diversas áreas do conhecimento. Essa abordagem consiste em aplicar elementos de jogos em contextos de aprendizagem, com o objetivo de engajar e motivar os alunos a participarem ativamente do processo educacional. Este estudo teve como objetivo realizar uma análise bibliométrica de publicações científicas, no banco de dados Scopus, sobre gamificação no ensino de História, identificando a evolução das produções científicas sobre o tema proposto nos últimos dez anos. O presente trabalho seguiu uma metodologia de estudo bibliométrico, que consiste na análise matemática e estatística de obras literárias em determinado campo de conhecimento, buscando identificar as comunidades acadêmicas, autores e o que leva à pesquisa por determinados temas. A pesquisa é classificada como exploratória quantitativa, utilizando como critério palavras-chave voltadas ao tema Gamificação no Ensino de História. Foram encontradas 24 publicações na base Scopus, abrangendo o período de 2013 a 2022. Após as análises, constatou-se aumento significativo no número de publicações sobre o tema nos últimos anos. A Espanha é o país que mais contribuiu com publicações a respeito da temática, o Brasil apresentou um número baixo de publicações. É necessário que mais pesquisas relacionadas à gamificação no ensino de História sejam realizadas, para que se possa compreender como os jogos podem influenciar no ensino de História.

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Introduction

Gamification as a pedagogical strategy has become popular in recent decades, mainly due to the growing influence of electronic games in contemporary culture. Using game elements in non-playful contexts, such as education, can be an effective way to engage and motivate students, providing a more meaningful and enjoyable learning experience (Orladi, 2018).

Gamification is based on taking a game-like approach, using the systems and mechanics found in games in a context that is not necessarily a game. Gamification aims to work as a motivational stimulus, applying the mechanisms and fundamentals of a game to create an educational activity with clear objectives and encourage effort to achieve a reward. However, gamification is more associated with the idea of process, fostering learning as something valuable in itself, and not just as a way to get a reward (Kapp, 2012; Fardo, 2013a,b; Fadel *et al.*, 2014).

The study on gamification in the teaching of History is of great importance for the area of education, since it is a pedagogical approach that has shown positive results in the motivation and engagement of students. The proposal to use gamification as a practice for teaching and learning History involves experimentation, considering the pleasure and meaning that this approach can offer to the student, in order to stimulate curiosity, interest, and the desire to learn (Paz, 2018). As highlighted by the National Common Curriculum Base (*Base Nacional Comum Curricular - BNCC*), the teacher has the possibility to choose and apply several methodologies and varied didactic-pedagogical strategies to promote learning (Brasil, 2017).

By incorporating elements of gaming such as challenges, rewards, and competitions, gamification can contribute to the development of cognitive and social-emotional skills such as critical thinking, problem-solving, teamwork, and digital skills. Additionally, it can help overcome learning barriers, such as lack of motivation, lack of interest, or difficulties understanding the content (Alves *et al.* 2014; Japiassu & Rached, 2020).

For these reasons, gamification has been increasingly adopted as a pedagogical strategy at different levels of education, from basic education to higher education. Thus, this active methodology can be an effective way to make the teaching of History more attractive and relevant to students, contributing to the formation of a more critical and reflective historical awareness, bringing significant benefits to the area of education and to the development of students (Deterding *et al.*, 2011).

It is necessary to understand how gamification is present in the teaching of History, so that the way of applying this active methodology can be improved. Thus, the objective of this work was to analyze the scientific production on Gamification in the Teaching of History, through a bibliometric survey of articles published in journals in the Scopus database, to understand the current research scenario and what are the perspectives.

Material and methods

In this section, it will be demonstrated how the research was carried out, the contributions of the bibliometric research, how the data collection and selection was carried out, the criteria used and the form of analysis.

Search Methodology

This study was conducted following the bibliometric approach, which uses mathematical and statistical analyses to examine literary works in a given field of knowledge (Pritchard, 1969), a methodology adapted from Oliveira-Junior *et al.* (2022).

In bibliometric analysis, it is sought to analyze scientific or technical activities through quantitative studies of publications, being a flexible method to evaluate the quantity of information sources (Silva & Hayashi, 2011).

According to Oliveira *et al.* (2013), bibliometric research plays a fundamental role in the dissemination of scientific production, and its purpose is achieved through the application of a technique that evaluates the influence of researchers and periodicals, enabling the identification of profiles, trends and thematic areas. Moraes (2013) shares a similar view, stating that bibliometric research is an analysis of scientific productions, which provides support for the creation of new works.

Thus, Scopus was selected as the database of choice, which is recognized as one of the largest repositories of articles and citations in the world (Zhu & Liu, 2020).

Data collection was carried out through the advanced search of Scopus, using as search criteria keywords focused on the theme Gamification in History Teaching, where all keywords were searched in the English language, using the search strings connected by the Boolean Operators AND and OR. The research was done using the following keyword combinations: gamification AND history education OR history teaching (Chart 1).

Chart 1.

Search Methodology

Database:	Scopus
Advanced search:	Topic: Title, abstract, and keywords. Filters: *Document type: Articles *Year of publication: 2010 a 2022
Search strings used:	Gamification AND history education OR teaching history

Note: Prepared by the authors (2023).

Inclusion and exclusion criteria

The references corresponding to the title, abstract, and keywords of the articles were downloaded in txt format and then tabulated in Excel® spreadsheets, version 2019. The following inclusion criteria were applied: I - Studies focused on Gamification in the Teaching of History; II - Studies published in the form of an article; III - Articles published between 2010 and 2022. The other documents, which did not meet these criteria, were excluded.

Data analysis

The following information was extracted from these articles: I - Frequency of publications over time; II - Main theoretical and methodological approaches used by the researchers; III - Main themes addressed by the studies and their respective areas of knowledge; IV - Geographical distribution of research on the subject; V - Main journals and scientific events that publish works on gamification in the teaching of History.

The data collected were tabulated and the graphs and tables were created from the Excel® software itself and a keyword cloud of the articles was created with the online Word Art software, where each word is scaled according to its number of occurrences.

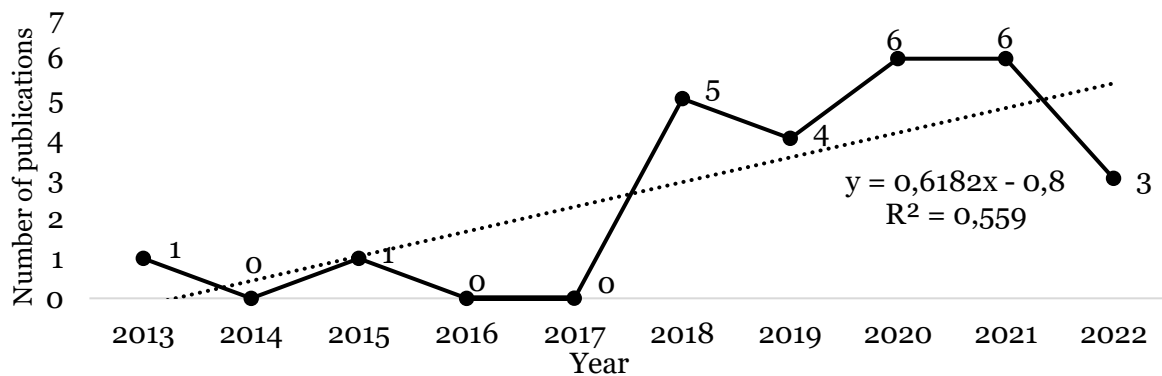
Results

A total of 140 articles were found in the Scopus database. After applying the eligibility criteria, documents published in the form of an article on gamification in the teaching of History between the years 2013 and 2022, 26 articles remained, which were used for the analyses.

Time trend of publications

In 2014, 2016 and 2017 there were no publications. In 2018 there was a jump in the number of publications, with 5 studies, a little more than twice the number of publications made in all previous years. The years 2020 and 2021 had the most publications, with 6 in each year, and which together reach almost 50% of the total publications (figure 1).

Figure 1.
Number of publications per year.

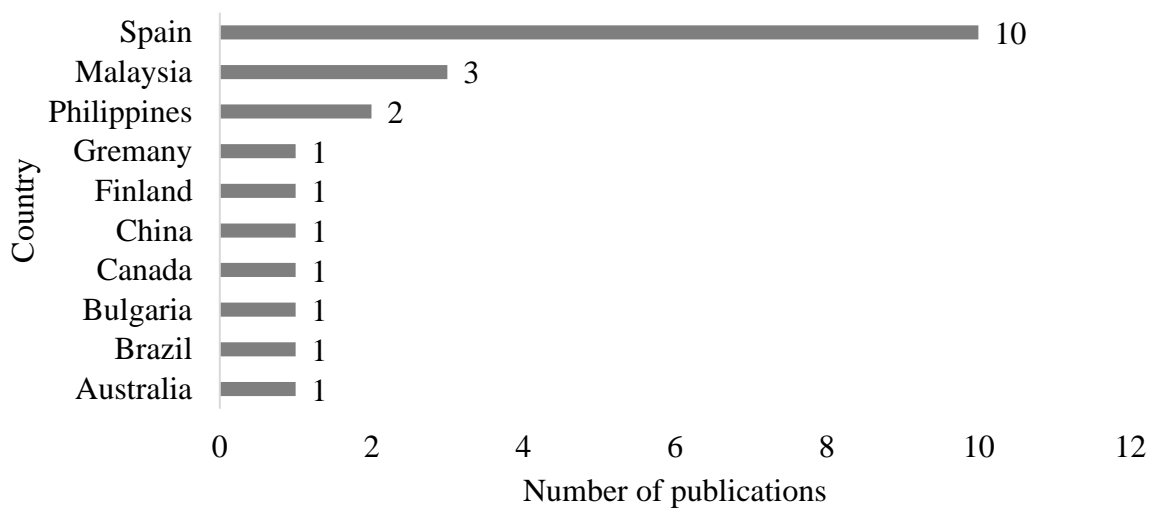


Note: Prepared by the authors (2023).

Countries and institutions that have published the most

The three countries that stand out in relation to the number of publications are: Spain, Malaysia and the Philippines, with 10, 3 and 2 articles published, respectively. These three countries together published more than 50% of the articles, with Spain having the highest prominence, with 10 publications. The other countries, which are in the ranking of publications, published only one article in the years studied, among them is Brazil (figure 2).

Figure 2.
Countries that have published the most.

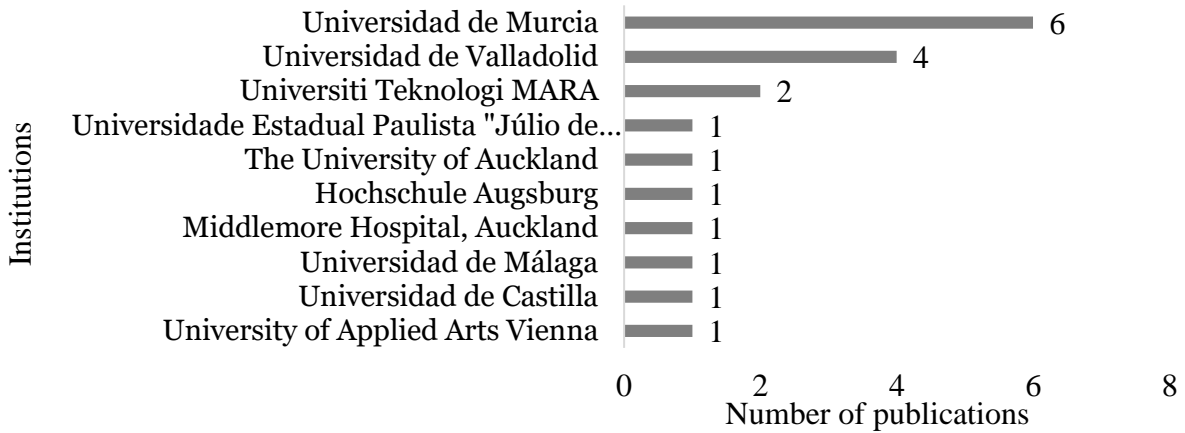


Note: Prepared by the authors (2023).

Among the institutions that published the most, the institutions in Spain, as well as in the number of publications, stand out: *Universidad de Murcia* and *Universidad de Valladolid* as the institutions that published the most (Figure 3). The only publication linked to Brazil was made by authors of the *Universidade Estadual Paulista "Júlio de Mesquita Filho"* (UNESP).

Figure 3.

Institutions in which they have published the most.



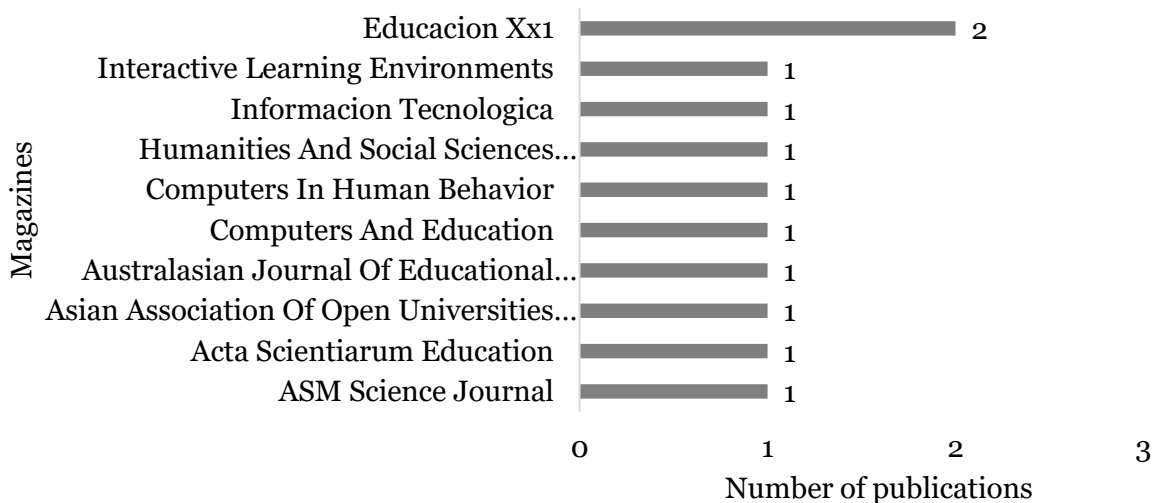
Note: Prepared by the authors (2023).

Magazines that published the most and thematic areas of studies

Regarding the magazines that published the most, only the magazine Educacion Xx1 published 2 articles, the other publications were made in different magazines, indicating a decentralization in relation to the choice to publish (figure 4).

Figure 4.

Magazines that had the most publications.

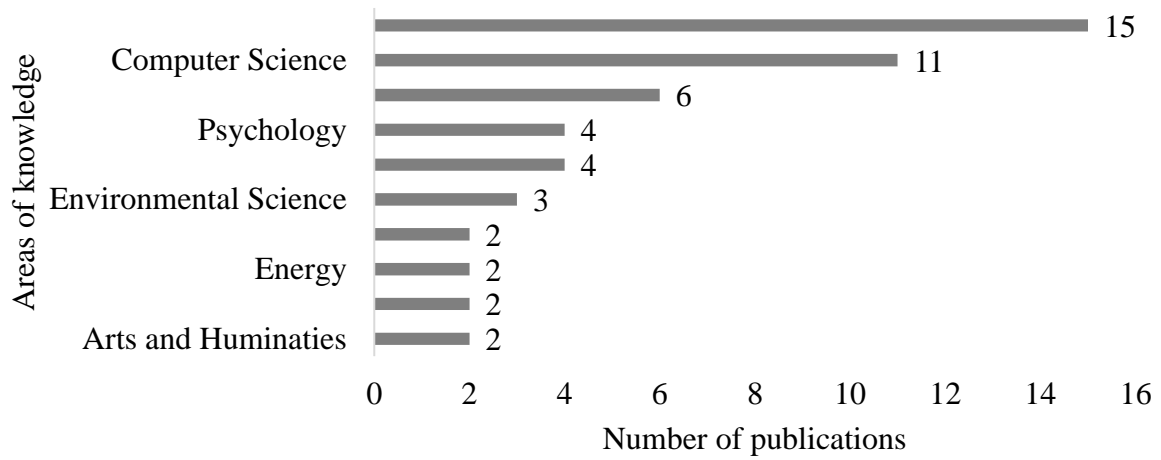


Note: Prepared by the authors (2023).

Regarding the thematic areas in which the articles are included, the emphasis goes to the areas of Social Sciences, Computer Science and Engineering, being the three areas that published the most, taking into account that the articles could be included in more than one thematic area, such as Social Sciences and Computer Sciences, for example (figure 5).

Figure 5.

Areas of knowledge of the articles.



Note: Prepared by the authors (2023).

Authors who have published the most and articles that have been cited the most

The three authors who published the most on the subject were: Rodríguez-Medina, J.; Gómez-Carrasco, C. J. and Miralles-Martínez, P., respectively. All authors are from Spain, the first belonging to the Universidad de Valladolid and the other two from the Universidad de Murcia. The publication made in Brazil is by the authors Andrea Lúcia Dorini de Oliveira Carvalho Rossi and Nelson de Paiva Bondioli, both linked to the São Paulo State University “Júlio de Mesquita Filho” (figure 6).

Figure 6.

Authors who have published the most.



Note: Prepared by the authors (2023).

(2005), mobile education has the possibility of happening in any context or place of teaching, regardless of the format of mobile technology, the students involved and the educational approaches used.

The data related to countries and institutions confirm Spain's excellence in the search for improvements in its education system, in addition to showing that Brazil is below in this race to apply technology in teaching, corroborating the study by Brandão (2018), who points out the Spanish educational system as far ahead of the Brazilian educational system. Consequently, the authors who have published the most on the subject are also Spanish, in addition to the most cited works being by these authors. On the other hand, López-Belmonte *et al.* (2023) evaluating the metaverse in education, found Brazil as the country that published the most, followed by Spain, which in the present study was the prominent country.

There was no very delimited pattern in relation to the magazines in which the articles were published, this pattern was more accentuated in relation to the areas of study. The areas in which the works were published showed that there is an interaction between the areas of knowledge, that is, there is an intersection between Social Sciences, Computer Science and Engineering to apply gamification in the teaching of History. This interaction between areas and knowledge confirms the importance of interdisciplinarity in teaching, which according to Braga (2018) is very important for quality education.

Final considerations

According to the results, we can conclude that Spain is the country that has studied the most on the subject, standing out in relation to the number of published works. Brazil, as well as the other countries, did not have a considerable number of publications, indicating that no studies have been carried out on this theme.

Although few studies have been published in the time period studied, the trend is that in the coming years the number of publications related to gamification in the teaching of History will grow, as well as the use of technologies has grown.

The data found indicate a need to carry out studies aimed at the application of gamification in the teaching of History, as well as other disciplines of the National Common Curricular Base (*Base Nacional Comum Curricular*).

We suggest that more studies like this be carried out with other disciplines, in order to have a better understanding of how gamification is being implemented in education, if this scarcity of studies related to gamification is particular to the teaching of History or if it is also present in other disciplines.

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