

Using Gamification in Accounting Education: A Systematic Literature Review (2017 – 2023)

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Abstract

Gamification is a tool often used to improve the teaching-learning process. Given the importance of the topic in academic filed, this article presents a systematic review of the articles that are published in accounting education journals on this topic. The main objective of this article is, to examine previous work in the field of gamification. An analysis of the literature covering 17 articles available in the Web of Science and Scopus databases "Between 2017 to 2023" were conducted, to determine and shape the main themes and concepts proposed in these articles on gamification. The analysis is performed by answering the research question, "**What is the effect of using gamification on accounting education, and what is the possibility of its use in teaching-learning process?**". The main result of this study shows that, there is a positive effect of using gamification in accounting education is predominant in the results of most studies. While it is not possible to ignore some of the negative effects of this topic. In additional, concern must be taken to ensure the availability of all requirements for the use of this approach in accounting education to universities, lecturers and students in order for its use to be meaningful and feasible. Furthermore, a lot of work is still required in making gamification possible in accounting education due to the various limitations mentioned in the previous studies.

Keywords: Gamification, Accounting Education, Systematic Review

Introduction

During the last few decades, rapid advancement in information and communication technology has positively affected daily human life and has shown a lot of improvements in diverse fields such as the economy, medicine, and particularly in the field of education. As a result, universities have utilized advanced technologies such as educational web-based environments, mobile applications, personal computers, and mobile devices as learning tools to facilitate the instructional process and improve learning outcomes. In particular, mobile devices such as smartphones and tablets are breaking down the barriers of space and time, also, surpassing the use of personal computers since this capability enables them to be used in everyday life (Chang & Hwang, 2019). Thus, the high increase in smartphone use has motivated for the development of mobile applications which mainly target the entertainment aspect since young people spend huge time using the smartphone for playing electronic games. Therefore, researchers and educators tend to exploit this aspect in increasing the level of engagement and enjoyment of the learning process for the students (C. M. Chen & Kuo, 2019).

Indeed, a massive amount of the literature on this topic has defined the term gamification to describe the use of game elements and game-design techniques in non-game contexts for the purpose of enhancing students' engagement in the learning process and in solving problems (Sailer et al., 2017; Buckley & Doyle, 2016; Stott & Neustaedter, 2013; Toda et al., 2019; Park et al., 2019; Dichev & Dicheva, 2017; Huang et al., 2019; Yildirim, 2017; Cabada et al., 2018). Additionally, gamification is considered a modern technique in science education that involves the student's participation as a gamer in a playful structure (Sánchez-Martín et al., 2017; Rosli et al., 2018). Gamification approach is a method define to systematically aims to help users that the use of game elements in a specific non-game context. Hence, the utilization of this approach has increased over the past few years due to the positive results that were achieved, especially in the field of education regarding to its usefulness and enjoyment (Toda et al., 2019). Gamification is defined as the use of game design elements in non-game contexts. It began to be used roughly in 2010 in many fields such as health, engineering, mathematics, biology and computer science (Silva et al., 2019). In the field of education, gamification can be used to achieve the aims of the educational process (Gittings et al., 2020).

Students nowadays, expect to obtain better results in their studies, including in the study of accounting, If they use gamification instead of using traditional learning methods that do not enhance their participation and understanding (Bhavani et al., 2020). Gamification is a plausible method since the younger generations tend spend their spare time in playing computer games, and would have gained the skills to master such games. These group of students even become digital natives because they in the era of digital technology. In contrast to other fields, it can be said that there is an urgent need to study the application of gamification in accounting due to the lack of studies on this particular area. Accounting is one of the distinctive areas that can be taught using gamification, which is considered an effective addition technique in motivating and encouraging students, and in increasing their performance, by examining educational games that are used in some accounting educational courses. However, the results of some other studies have been inconsistent with this opinion and has thus emphasized the need for more study on this topic due to the dearth of previous studies and the lack of strong conclusions (Silva et al., 2019).

Systematic Literature Review Methodology

A systematic review methodology was used to identify how gamification has been used in accounting education (Subhash & Cudney, 2018), to answer the main research question, which is represented in: “What is the effect of using gamification on accounting education, and what is the possibility of its use in teaching-learning process?”

The articles included in the systematic literature review describe the frameworks, concepts, and applications that have been studied about the use of gamification in accounting education.

Keywords

This systematic review began by evaluating databases relevant to the research area, with the preliminary search of keywords “Gamification” “AND” “Accounting Education” in the “Title AND Abstract AND Keywords”.

The final keywords for this search can be summarized as shown in the following figure:

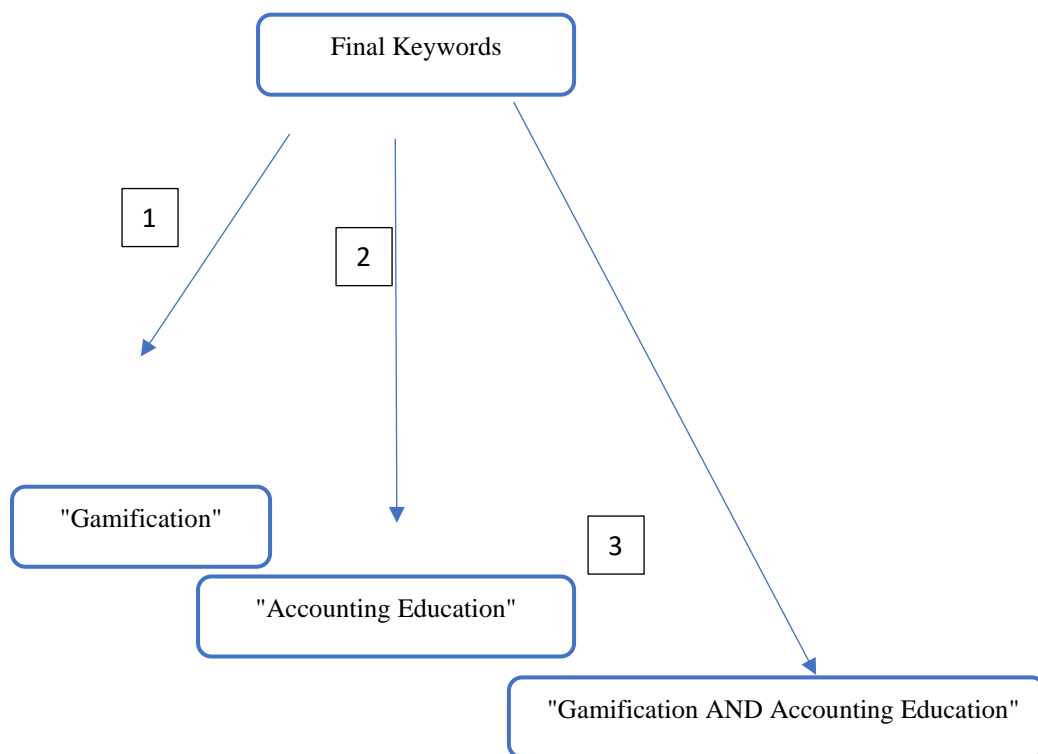


Figure 1. The Final Keywords for search engine

Systematic Literature Review Methodology Steps

The methodology of this systematic literature review can be summarized as the following steps which are shown in the following figure:

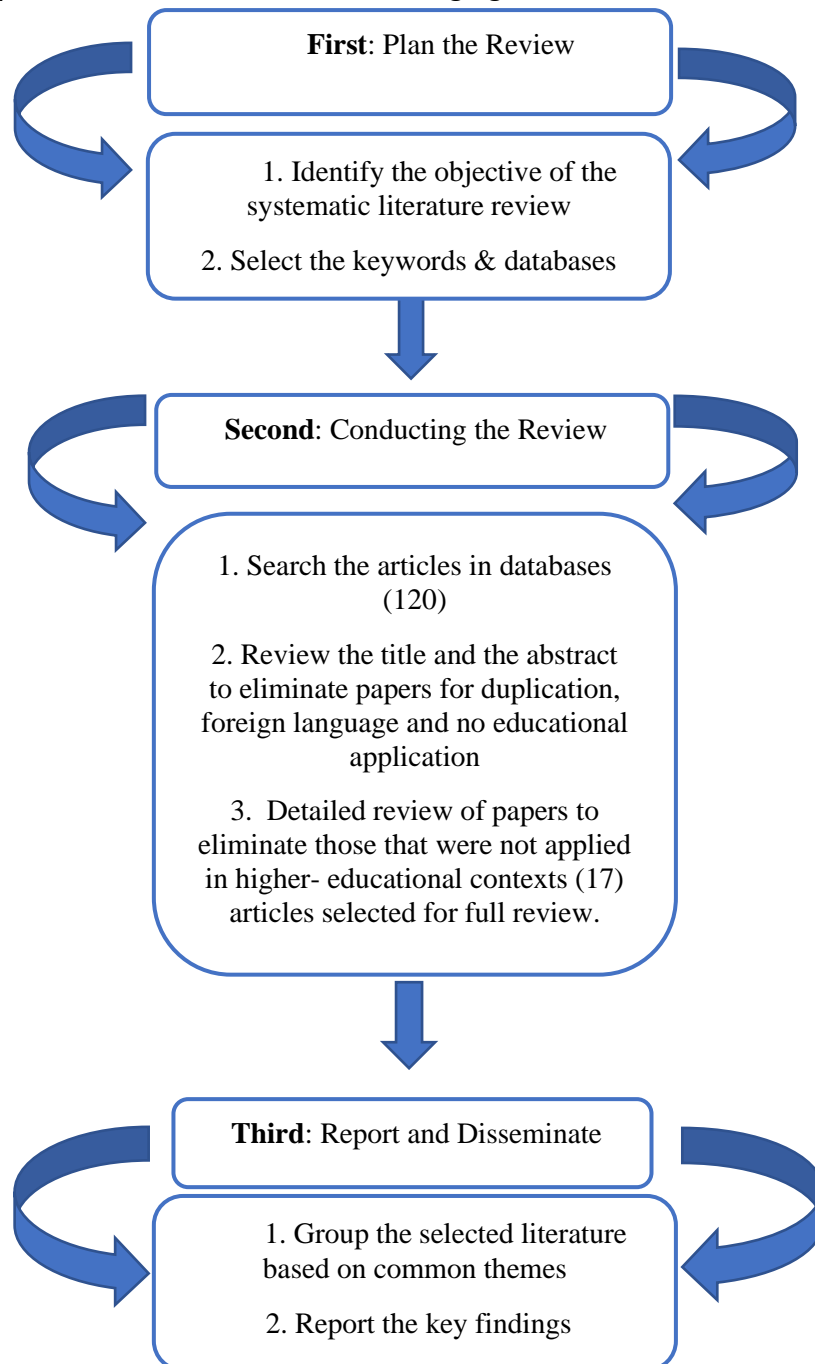


Figure 2. Systematic Review Methodology Steps

Inclusion / Exclusion Criteria

In this systematic literature review, the inclusion of articles was made based on their adherence to all of the following inclusion criteria

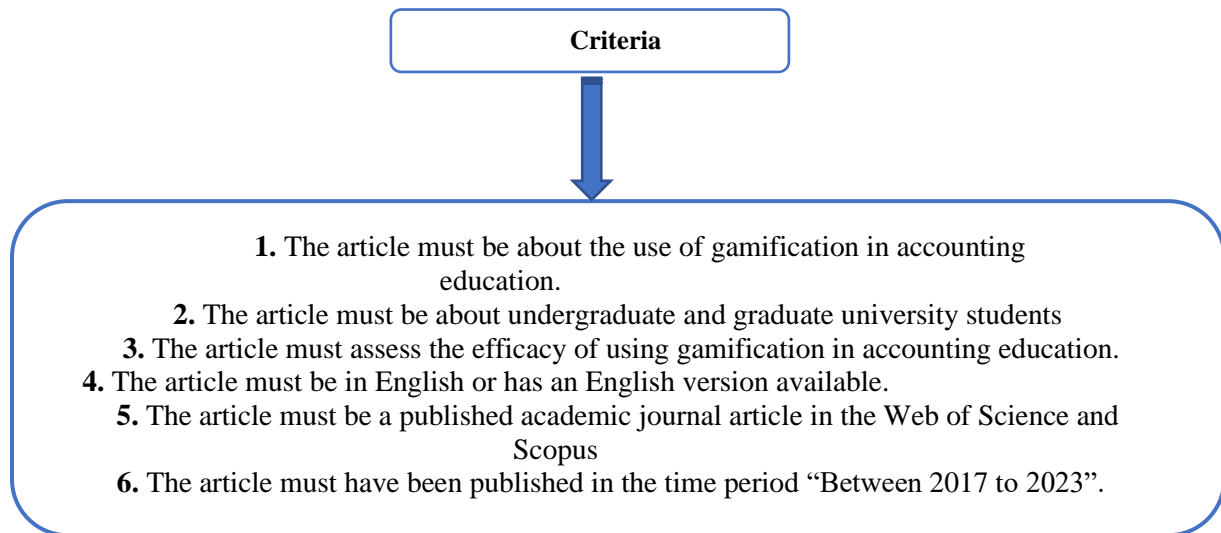


Figure 3. Inclusion Criteria

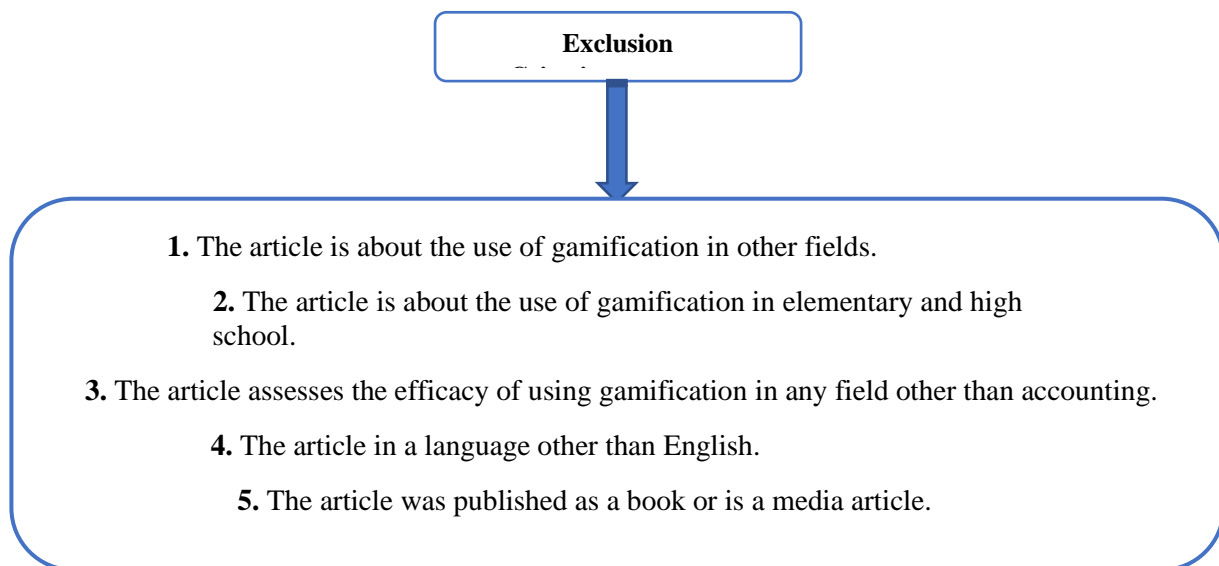


Figure 4. Exclusion Criteria

Review Design

Database Selection

The selection of database involves three steps. First, academic journals in the accounting education field are identified. Based on the latest periodic Accounting Education Literature Review. The following journals are identified in this systematic literature review. Second, these journals are examined to determine which database each journal belongs to in WOS AND / OR Scopus. Finally, this leads to the discovery of a combination of databases, which would adequately encompass the identified accounting education journals. The final combination of databases selected for this systematic literature review are WOS and Scopus.

Names of Journals Included in This Study

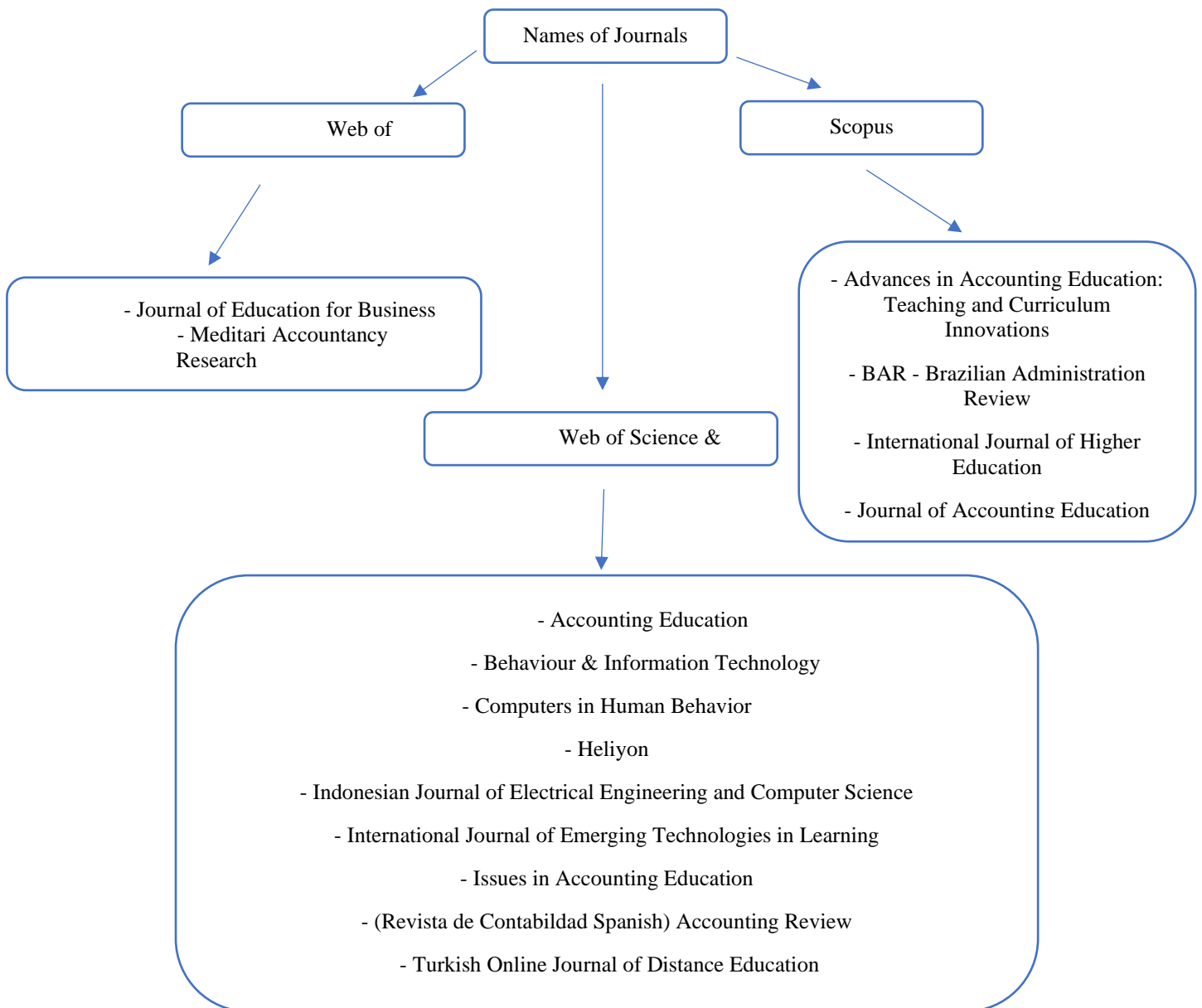


Figure 5. Names of Journals Included in This Study

Discussion

By examining the previous studies, the examination of previous studies has resulted in points listed in the table below

Table 1

Summary of literature on Using Gamification in Accounting Education

No	Title	Keywords	Year	Study Focus	Methodology	Key Findings	The Region	Reference
1	The Efficacy of Using Monopoly to Improve Undergraduate Students' Understanding of the Accounting Cycle	Accounting cycle; Monopoly; Introductory financial accounting; active learning; business games	2017	The effects of using Monopoly on student achievement	Qualitative Method	Playing Monopoly has a positive effect on students' achievement	Australia	(Authors, 2017)
2	Is it worth it to consider videogames in accounting education? A comparison of a simulation and a videogame in attributes, motivation and learning outcomes	Student learning, Student motivation, Learning outcomes, Learning and teaching Masters degrees	2017	To assess the effectiveness of video games in comparison to simulations in a higher education environment	Quantitative Method	Blending simulations and video games in a single course positively effects on students' achievement	Spain	(Carenys et al., 2017)
3	Game-Based Accounting Learning: The Impact of Games in Learning Introductory Accounting	Accounting Classroom, Accounting, Games, Introductory Accounting, Motivation	2017	The impact of learning introductory accounting course using of games as a supplement to the traditional teaching methods	Qualitative Method	Games is one of the motivational factors to maintain student's interest	United Arab Emirates	(Shah, 2017)
4	Acquisition of competencies with serious games in the accounting field: an empirical analysis	Serious games Simulation Digital generation Innovation Active learning Higher education Competencies	2018	To describe teaching experience based on the use of a serious game in a management control course in higher education, and to assess the level of competencies based on	Qualitative Method	Serious games has a significant contribution in the students' acquisition of competencies and to foster collaborative work	Australia	(María Sol Calabor et al., 2018)

				students' perception				
5	Understanding Technology Acceptance Features in Learning through a Serious Game	Learning Technology; Technology Acceptance Model; Serious Games	2018	Analyzing the determinant factors related to the use of DEBORAH Game in teaching accounting	Quantitative Method	There is an interaction of between the students with and their colleagues by using games	Brazil, USA & South Korea	(Rodrigo F. Malaquias et al., 2018)
6	The Use of A Serious Game and Academic Performance of Undergraduate Accounting Students: An Empirical Analysis	Accounting, education, Serious games	2018	Analyzing potential benefits of a serious game on the academic performance of undergraduate accounting students	Qualitative Method	The use of serious games yielded higher indexes of academic performance	Brazil	(Rodrigo Fernandes Malaquias et al., 2018)
7	Bringing active learning into the accounting classroom	Accounting education, Active learning, Learning motivation, Course interest survey	2018	Investigating the effect of an accounting education pedagogy that incorporates active learning approaches	Quantitative Method	Improving student's motivation in accounting education and the likelihood in choosing accounting as their academic major and improving their confidence	Australia	(Sugahara & Dellaportas, 2018)
8	Just opt in: How choosing to engage with technology impacts business students' academic performance	Engagement, Gamification Technology, Business Education, Student, Success	2019	Examining and comparing the effect of gamification, in the form of a mobile application (app) 'Quitich', on the behavioral engagement and academic performance of business students in two first-year courses in accounting and management	Qualitative Method	The use of the gamified mobile app, Quitich and Blackboard LMS were associated with improved performance and overall student achievement	New Zealand	(Beatson et al., 2019)
9	The future of 'serious games' in accounting	Delphi method Serious games Innovation in	2019	Examining accounting academics' perceptions of the usefulness and the potential	Mixed Method	Using serious games would help undergraduate students to simulate "real world" and to	Spain	(Mari Sol Calabor et al., 2019)

	education: A Delphi study	accounting education		barriers to implementing serious games in the classroom		obtain successful teaching–learning experience		
10	Play it again: how game-based learning improves flow in Accounting and Marketing education	Gamification ;game-based learning; game flow elements; flow	2019	Determining the effects of Accounting games and Marketing games, on the performance of Portuguese undergraduate accounting students	Quantitative Method	Games can be an effective way for students to learn	Portugal	(Silva et al., 2019)
11	The effect of game-based learning as the experiential learning tool for business and accounting training: A study of Management Game	Active learning; experiential learning; Game-based learning; GBL	2019	Examining the determinants of effective implementation of game-based learning (GBL)	Qualitative Method	Using GBL has a positive effect on learners to effectively acquire knowledge and skills	Japan	(Sugahara & Lau, 2019)
12	Using Quizizz to Integrate Fun Multiplayer Activity in the Accounting Classroom	Educational app, Quizizz, gamification, accounting classroom, engagement	2019	Investigating the effectiveness of Quizizz on enhancing students’ learning experiences in the accounting classroom	Quantitative Method	Quizizz has a positive impact on students’ engagement and learning outcomes in the accounting classroom	USA	(Zhao, 2019)
13	Can the Game-Based Learning Come? Virtual Classroom in Higher Education of 21st Century Game Approach	E-learning, experiential learning, gamification, gamification strategy, learning-management , gamified teaching-learning environment , gamified classroom, Learning Management Systems (LMSs), Moodle platform, pedagogical methods	2020	Integrating digital games into the learning-teaching process through games through e-learning of accounting skills	Qualitative Method	Correcting the design of teaching and learning process aids in the success of game-based learning	Hungary	(Lengyel, 2020)

14	Games based learning in accounting education – which dimensions are the most relevant?	Game-based learning; motivation; flow; attitudes; perceived learning; accounting education; higher education	2021	Investigation the contribution of literature about GBL in accounting education and analyzing the influence of motivation, flow and Attitude on accounting students' perceived learning	Qualitative Method	There is a robust relationship between the proposed framework dimensions. In this sense, after students had used games in accounting curricular units, it was observed that motivation and attitudes influenced perceived learning, unlike flow, which had no statistical influence	Portugal	(Silva et al., 2021)
15	Developing mobile game application for introduction to financial accounting	Educational game Financial accounting Game base learning Gamification Mobile application	2022	Developing a mobile game application that adopts a gamification approach in which the students can develop their interests to learn the financial accounting course	Qualitative Method	The gamification features in this mobile application offer educators a more fun and interesting teaching and learning paradigm as compared to the non-technological learning paradigm	Malaysia	(Ariff et al., 2022)
16	Putra Salamanis board game: the game of bookkeeping for fundamental financial accounting learning	Accounting education; bookkeeping ;game-based learning; board game; framework-based teaching	2022	Highlight the need for a gamification approach in supporting the teaching and learning process of fundamental financial accounting at Universiti Putra Malaysia	Qualitative Method	The game has the potential to assist first-year accounting students in understanding the critical elements in the conceptual framework of accounting	Malaysia	(Selamat & Ngalim, 2022)
	The study on designed gamified mobile learning model to assess	Accounting education Game-based learning		Designing a curriculum through the effective teaching module (BOPPPS) to assist students	Qualitative Method	The research developed an accounting mobile game to assist students to understand accounting knowledge	Taiwan	(Kao et al., 2023)

17	students' learning outcome of accounting education	Mobile learning success Model BOPPPS	IS	2023	to understand accounting knowledge and developing an accounting mobile game and combining it with a mobile learning system (TronClass)	easily. This accounting mobile game provides students with useful, reliable, and convenient accounting learning information		
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Discussion on Results of Articles Screening Process

Focus of Articles

The review of literature performed in this study indicated that the majority of these studies focused on the effects of the use of gamification on students' performance, academic achievement, and their perception on the teaching and learning experience in using the gamification approach. However, only four studies have addressed the limitations and shortcomings of this approach in education.

Majority of the articles reached a conclusion that: There is a positive effect in using gamification in teaching and learning accounting. This positive effect is evident in the following table.

On the other hand, some of the studies listed here have discussed and shed light on some of the obstacles that prevent the use of manipulation in teaching accounting, the most prominent of which are: lack of resources, lack of information about the games best suited to each course, time required in the classroom to play games, the lack of the lecturers' knowledge of some games, focusing of students on fun rather than learning and the risk of becoming that the game will be an end in itself, lack of support from the administrators, costs of games versus the benefits of learning, changes of course materials and technical problems, such as: complex programs and lack of technical support (Mari Sol Calabor et al., 2019), (Rodrigo F. Malaquias et al., 2018), (Sugahara & Lau, 2019).

Table 2
Results of Articles Screening Process

No	The Item of Effect	The Article
1	Enhancing the learning experience	(Carenys et al., 2017)
2	Motivating students and stimulating the effectiveness of the learning process	(Lengyel, 2020); (Silva et al., 2021)
3	Increasing students' engagement	(Shah, 2017)
4	Increasing students' enjoyment and interest	

		(María Sol Calabor et al., 2018); (Silva et al., 2019); (Ariff et al., 2022)
5	Improving students' academic performance and overall achievement	(Authors, 2017); (Rodrigo Fernandes Malaquias et al., 2018); (Beatson et al., 2019); (Selamat & Ngalim, 2022); (Kao et al., 2023)
6	Improving student's confidence to choose accounting as their academic major	(Rodrigo Fernandes Malaquias et al., 2018); (Sugahara & Dellaportas, 2018)
7	Acquiring knowledge and skills	(Sugahara & Dellaportas, 2018); (Sugahara & Lau, 2019)
8	Acquisition of competencies and additional fostering of collaborative work	(Beatson et al., 2019); (María Sol Calabor et al., 2018)
9	Impacting positively on students' learning experiences	(Silva et al., 2019); (Zhao, 2019)

Methodology of Articles

It is evident that different methods have been used in each study, the qualitative method and the quantitative method had the best chances of use in the studies that have been covered in this systematic literature review. However, the mixed method had been used only once (Mari Sol Calabor et al., 2019). As shown in the previous table and following figure:

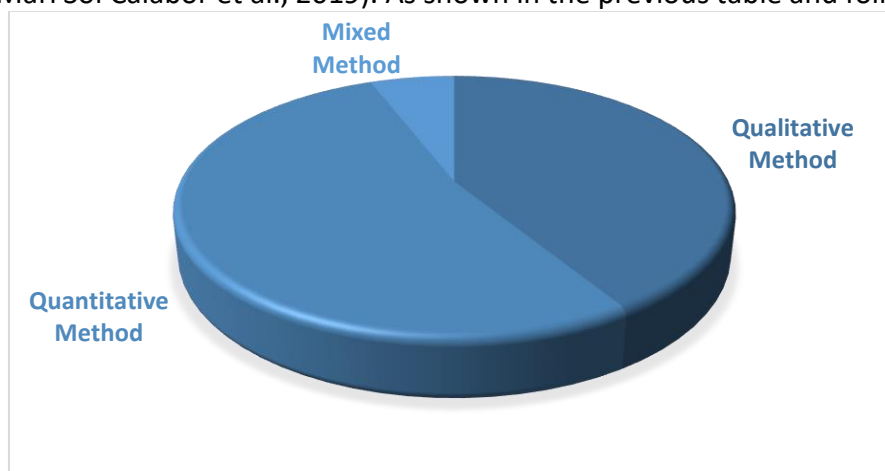


Figure 6. Methodology of Articles

Key Findings of Articles

The majority of articles included in this systematic literature review have found a positive effect in the use of gamification on several aspects of teaching and learning, and on the students, which are: in increasing their achievement and interest, in their acquisition of competency and in fostering collaborative work amongst them, in the students' interaction with their friends, in improving their motivation, confidence, performance and overall achievement, in enabling them to get successful learning experience, as an effective way for them to learn, and in the students' effective acquisition of knowledge and skills.

Regions of Articles

In view of the previous studies included in this research, they can be divided geographically as follows

Australia, Europe: Portugal, Spain and Hungary. Asia: Malaysia, Taiwan, South Korea, Japan and United Arab Emirates. North America: USA, South America: Brazil and New Zealand.

Based on the foregoing, there is no study in any of the African countries on this topic so far. "It can be noted here that the researcher is studying this topic on Libyan universities in Libya in her PhD thesis". The geographical information of the corresponding regions is depicted in the chart below:

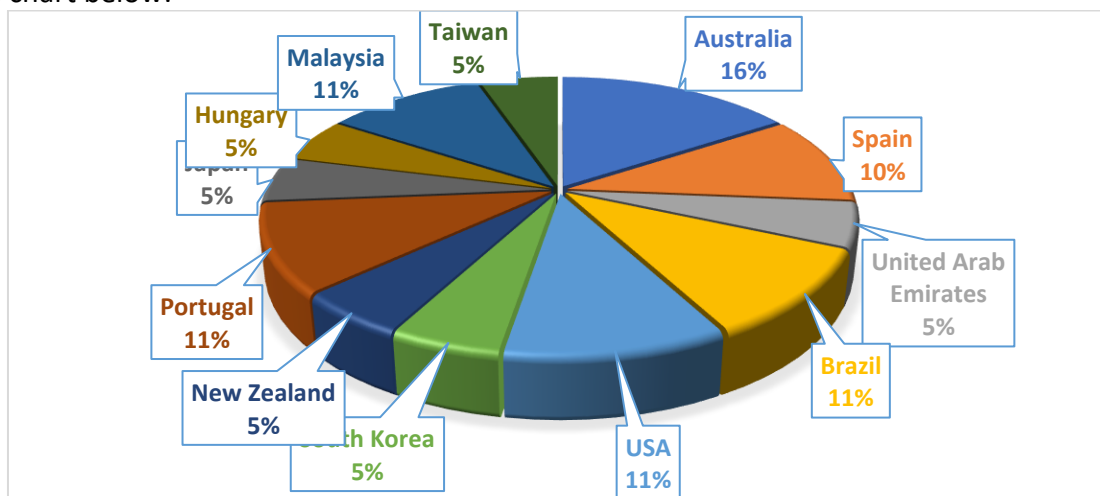


Figure 7. Regions of Articles

Limitations of Articles

As for the limitations of the previous studies, most of them shared one important determinant, which is the small size of the study sample, which leads to the difficulty of generalizing the results. Moreover, the number of games the students had played was small and the number of accounting skills and concepts were limited.

Furthermore, several other determinants in one study, which was about the sample of study, that sample was included exclusively female students, within a rather unique cultural setting. Besides that, the interviews were not recorded because of cultural reasons (Shah, 2017), while some studies have not focused on the variables of age and gender (Rodrigo Fernandes Malaquias et al., 2018).

Results of Study

The use of gamification in education, especially accounting education, has become an important topic for scientific research, as was evident from a review of previous literature,

but it needs to expand the research further. The available previous studies are few limited in number and have their limitations, the most important of the limitations is the small size of the study sample and the lack of covering all the variables that would play a role in changing the results, as well as the small number of games used in the educational process and not covering all accounting issues.

Moreover, at the end of the study and analysis of the articles included in this study, it turns out that the positive effect of using gamification in accounting education is predominant in the results of most studies. While it is not possible to ignore some of the negative effects of the topic, even if it is simple compared to the positive effect.

Additionally, concern must be taken to ensure the availability of all requirements for the use of this approach in accounting education to universities, lecturers and students in order for its use to be meaningful and feasible.

Contributions of Study

Investigating prior research in a field is important, as this reveals the current state of the field and offers guidance to researchers who are seeking suitable topics to explore. Moreover, such systematic reviews provide a concise reference for policymakers, who must make critical decisions regarding to use gamification in accounting education. The examination of prior research in a field also helps researchers to determine which subjects are of continuing importance. There are many literature review studies in the fields of using gamification in accounting education. However, reviews of research on it are less common. Therefore, this study explored trends and patterns in gamification research. For this purpose, a systematic review approach has been used to examine gamification articles published between 2017 and 2023. To fill that gap in the literature, we analyzed all the articles which are under study and review (1) by cognitiving the use of gamification, the results of its use, its advantages, disadvantages and limitations. (2) by organizing the previous studies conducted on this topic and presented them in a way that can be used easily in future research.

Future Research

Based on the foregoing, the limitations that were extracted from previous studies of the topic and summarized can be a starting point for future research because there is still much to do about the possibility of using gamification in accounting education, such as, Increasing the size of the study sample, increasing the number of games that are applied in the study, applying games to most accounting topics and studying the effect of age and gender when using the gamification approach in teaching and learning accounting.

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Conflicts of Interest

The authors declare no conflict of interest.

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