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:

**First: Plan the Review**

1. Identify the objective of the systematic literature review
2. Select the keywords & databases

**Second: Conducting the Review**

1. Search the articles in databases (120)
2. Review the title and the abstract to eliminate papers for duplication, foreign language and no educational application
3. Detailed review of papers to eliminate those that were not applied in higher-educational contexts (17) articles selected for full review.

**Third: Report and Disseminate**

1. Group the selected literature based on common themes
2. Report the key findings

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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
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

Web of Science & Scopus

- Journal of Education for Business
  - Meditari Accountancy Research

- Advances in Accounting Education: Teaching and Curriculum Innovations
- BAR - Brazilian Administration Review
- International Journal of Higher Education
- Journal of Accounting Education

- Accounting Education
  - Behaviour & Information Technology
  - Computers in Human Behavior
  - Heliyon
- Indonesian Journal of Electrical Engineering and Computer Science
- International Journal of Emerging Technologies in Learning
- Issues in Accounting Education
- (Revista de Contabilidad Spanish) Accounting Review
- Turkish Online Journal of Distance Education

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
# Summary of literature on Using Gamification in Accounting Education

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Keywords</th>
<th>Year</th>
<th>Study Focus</th>
<th>Methodology</th>
<th>Key Findings</th>
<th>The Region</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Efficacy of Using Monopoly to Improve Undergraduate Students’ Understanding of the Accounting Cycle</td>
<td>Accounting cycle; Monopoly; Introductory financial accounting; active learning; business games</td>
<td>2017</td>
<td>The effects of using Monopoly on student achievement</td>
<td>Qualitative Method</td>
<td>Playing Monopoly has a positive effect on students’ achievement</td>
<td>Australia</td>
<td>(Authors, 2017)</td>
</tr>
<tr>
<td>2</td>
<td>Is it worth it to consider videogames in accounting education? A comparison of a simulation and a videogame in attributes, motivation and learning outcomes</td>
<td>Student learning, Student motivation, Learning outcomes, Learning and teaching Masters degrees</td>
<td>2017</td>
<td>To assess the effectiveness of video games in comparison to simulations in a higher education environment</td>
<td>Quantitative Method</td>
<td>Blending simulations and video games in a single course positively effects on students’ achievement</td>
<td>Spain</td>
<td>(Careys et al., 2017)</td>
</tr>
<tr>
<td>3</td>
<td>Game-Based Accounting Learning: The Impact of Games in Learning Introductory Accounting</td>
<td>Accounting Classroom, Accounting, Games, Introductory Accounting, Motivation</td>
<td>2017</td>
<td>The impact of learning introductory accounting course using of games as a supplement to the traditional teaching methods</td>
<td>Qualitative Method</td>
<td>Games is one of the motivational factors to maintain student’s interest</td>
<td>United Arab Emirates</td>
<td>(Shah, 2017)</td>
</tr>
<tr>
<td>4</td>
<td>Acquisition of competencies with serious games in the accounting field: an empirical analysis</td>
<td>Serious games Simulation Digital generation Innovation Active learning Higher education Competencie s</td>
<td>2018</td>
<td>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</td>
<td>Qualitative Method</td>
<td>Serious games has a significant contribution in the students’ acquisition of competencies and to foster collaborative work</td>
<td>Australia</td>
<td>(María Sol Calabor et al., 2018)</td>
</tr>
<tr>
<td>No.</td>
<td>Research Topic</td>
<td>Method</td>
<td>Key Findings</td>
<td>Location</td>
<td>Authors</td>
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<tr>
<td>5</td>
<td>Understanding Technology Acceptance Features in Learning through a Serious Game</td>
<td>Quantitative</td>
<td>Analyzing the determinant factors related to the use of DEBORAH Game in teaching accounting</td>
<td>Brazil, USA &amp; South Korea</td>
<td>(Rodrigo F. Malaquias et al., 2018)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>The Use of A Serious Game and Academic Performance of Undergraduate Accounting Students: An Empirical Analysis</td>
<td>Qualitative</td>
<td>The use of serious games yielded higher indexes of academic performance</td>
<td>Brazil</td>
<td>(Rodrigo Fernandes Malaquias et al., 2018)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bringing active learning into the accounting classroom</td>
<td>Quantitative</td>
<td>Improving student’s motivation in accounting education and the likelihood in choosing accounting as their academic major and improving their confidence</td>
<td>Australia</td>
<td>(Sugahara &amp; Dellaportas, 2018)</td>
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</tr>
<tr>
<td>8</td>
<td>Just opt in: How choosing to engage with technology impacts business students’ academic performance</td>
<td>Qualitative</td>
<td>The use of the gamified mobile app, Quitch and Blackboard LMS were associated with improved performance and overall student achievement</td>
<td>New Zealand</td>
<td>(Beatson et al., 2019)</td>
<td></td>
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<tr>
<td>9</td>
<td>The future of ‘serious games’ in accounting</td>
<td>Mixed</td>
<td>Using serious games would help undergraduate students to simulate “real world” and to</td>
<td>Spain</td>
<td>(Mari Sol Calabor et al., 2019)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The table includes the following details:
- **No.**: Page number
- **Research Topic**: Title of the study
- **Method**: Quantitative or Qualitative
- **Key Findings**: Description of the findings
- **Location**: Countries where the research was conducted
- **Authors**: Names of the authors and year of publication
<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Methodology</th>
<th>Year</th>
<th>Country</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Play it again: how game-based learning improves flow in Accounting and Marketing education</td>
<td>Qualitative</td>
<td>2019</td>
<td>Portugal</td>
<td>Silva et al., 2019</td>
</tr>
<tr>
<td>11</td>
<td>The effect of game-based learning as the experiential learning tool for business and accounting training: A study of Management Game</td>
<td>Qualitative</td>
<td>2019</td>
<td>Japan</td>
<td>Sugahara &amp; Lau, 2019</td>
</tr>
<tr>
<td>12</td>
<td>Using Quizizz to Integrate Fun Multiplayer Activity in the Accounting Classroom</td>
<td>Quantitative</td>
<td>2019</td>
<td>USA</td>
<td>Zhao, 2019</td>
</tr>
<tr>
<td>13</td>
<td>Can the Game-Based Learning Come? Virtual Classroom in Higher Education of 21st Century Game Approach</td>
<td>Qualitative</td>
<td>2020</td>
<td>Hungary</td>
<td>Lengyel, 2020</td>
</tr>
<tr>
<td>No.</td>
<td>Research Question</td>
<td>Method</td>
<td>Country</td>
<td>Year</td>
<td></td>
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<td>-----</td>
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</tr>
<tr>
<td>14</td>
<td>Games based learning in accounting education – which dimensions are the most relevant?</td>
<td>Game-based learning; motivation; flow; attitudes; perceived learning; accounting education; higher education</td>
<td>2021</td>
<td>Portugal</td>
<td>(Silva et al., 2021)</td>
</tr>
<tr>
<td>15</td>
<td>Developing mobile game application for introduction to financial accounting</td>
<td>Educational game Financial accounting Game based learning Gamification Mobile application</td>
<td>2022</td>
<td>Malaysia</td>
<td>(Ariff et al., 2022)</td>
</tr>
<tr>
<td>16</td>
<td>Putra Salamanis board game: the game of bookkeeping for fundamental financial accounting learning</td>
<td>Accounting education; bookkeeping; game-based learning; board game; framework-based teaching</td>
<td>2022</td>
<td>Malaysia</td>
<td>(Selamat &amp; Ngalim, 2022)</td>
</tr>
<tr>
<td></td>
<td>The study on designed gamified mobile learning model to assess</td>
<td>Accounting education Game-based learning</td>
<td>2022</td>
<td>Taiwan</td>
<td>(Kao et al., 2023)</td>
</tr>
</tbody>
</table>

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.
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

<table>
<thead>
<tr>
<th>No</th>
<th>The Item of Effect</th>
<th>The Article</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enhancing the learning experience</td>
<td>(Carenys et al., 2017)</td>
</tr>
<tr>
<td>2</td>
<td>Motivating students and stimulating the effectiveness of the learning process</td>
<td>(Lengyel, 2020); (Silva et al., 2021)</td>
</tr>
<tr>
<td>3</td>
<td>Increasing students’ engagement</td>
<td>(Shah, 2017)</td>
</tr>
<tr>
<td>4</td>
<td>Increasing students’ enjoyment and interest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Title</td>
<td>Authors and Dates</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Improving students’ academic performance and overall achievement</td>
<td>(Authors, 2017); (Rodrigo Fernandes Malaquias et al., 2018); (Beatson et al., 2019); (Selamat &amp; Ngailim, 2022); (Kao et al., 2023)</td>
</tr>
<tr>
<td>6</td>
<td>Improving student's confidence to choose accounting as their academic major</td>
<td>(Rodrigo Fernandes Malaquias et al., 2018) (Sugahara &amp; Dellaportas, 2018)</td>
</tr>
<tr>
<td>7</td>
<td>Acquiring knowledge and skills</td>
<td>(Sugahara &amp; Dellaportas, 2018) (Sugahara &amp; Lau, 2019)</td>
</tr>
<tr>
<td>8</td>
<td>Acquisition of competencies and additional fostering of collaborative work</td>
<td>(Beatson et al., 2019); (María Sol Calabor et al., 2018)</td>
</tr>
<tr>
<td>9</td>
<td>Impacting positively on students' learning experiences</td>
<td>(Silva et al., 2019); (Zhao, 2019)</td>
</tr>
</tbody>
</table>

**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:
**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](chart)

**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 cognitively 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.
References


