# NON-ACCOUNTING STUDENTS' PERCEPTIONS ON THE USEFULNESS OF GAMIFICATION IN SUPPORTING COGNITIVE DEVELOPMENT

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***Abstract***
***Main Purpose -*** This study aims to examine the usefulness of the gamification teaching method in assisting non-accounting students in understanding accounting courses**.**
***Method –*** The current study adopts a qualitative approach and relies on forty non-accounting students' perceptions as empirical data. As its data collection method, this study uses students' self-reflection reports. Self-reflection is perceived to be the most appropriate medium for students to express their thought and feeling freely.
***Main Findings -*** The results show that most students favor gamification. The specifically designed game for accounting courses assists them in understanding accounting terms and concepts, and financial statements, and helps them visualize a real business environment. Several features of the game also assist in the students' learning process, i.e., the repetitive quiz questions, direct feedback, and the game itself. Nevertheless, while gamification benefits others, few students still perceive self-study and lectures as more critical in their learning experience.
***Theory and Practical Implications –*** Specific designed game can be a valuable tool for students to learn accounting which in this study includes accounting terms and concepts. Nevertheless, educators interested in applying gamification in the classroom need reasonable anticipation and proper preparation.
***Novelty –*** This study contributes to the literature on gamification in accounting education which currently is limited.

***Abstrak***
***Tujuan Utama*** - Penelitian ini bertujuan untuk menguji kegunaan metode pengajaran gamifikasi dalam membantu mahasiswa non akuntansi dalam memahami mata kuliah akuntansi.
***Metode*** - Studi ini berdasarkan empat puluh persepsi mahasiswa non-akuntansi sebagai data empiris kualitatif yang dikumpulkan melalui laporan refleksi diri mahasiswa. Refleksi diri adalah media yang paling tepat bagi mahasiswa dimana mereka dapat mengekspresikan pikiran dan perasaannya secara bebas.
***Temuan Utama*** - Hasil penelitian menunjukkan bahwa mayoritas mahasiswa menyukai gamification dan permainan yang dirancang khusus untuk mata kuliah akuntansi dimana metode tersebut membantu mereka dalam memahami istilah dan konsep akuntansi, laporan keuangan, dan membantu mereka memvisualisasikan lingkungan bisnis secara lebih nyata. Beberapa fitur permainan juga membantu proses belajar mahasiswa, yaitu pertanyaan kuis yang berulang, umpan balik langsung, dan permainan itu sendiri. Namun demikian, walaupun gamifikasi bermanfaat bagi mayoritas mahasiswa, beberapa dari mereka masih menganggap belajar mandiri dan kuliah lebih berdampak dalam proses belajar mereka.
***Implikasi Teori dan Kebijakan*** - Game yang dirancang khusus dapat menjadi alat yang berguna bagi mahasiswa untuk belajar akuntansi dimana dalam penemuan penelitian ini mencakup istilah dan konsep akuntansi. Namun demikian, para pendidik yang tertarik untuk menerapkan gamifikasi di kelas perlu mengantisipasi persepsi negative mahasiswa dan dibutuhkan persiapan yang matang.
***Kebaruan Penelitian*** - Studi ini berkontribusi pada literatur gamification dalam pendidikan akuntansi yang saat ini terbatas.

**Keywords:** Gamification, Accounting course, Student's self-reflection, Student's perception, Non-accounting students.

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## INTRODUCTION

Recently, digital games or gamification have gained popularity among scholars. Gamification is 'any learning game (played) on a computer or online' (Carenys & Moya, 2016, p.600). The use of gamification in classrooms provides several benefits. Those benefits include developing soft skills, such as problem-solving, decision-making, teamwork, thinking skills, and multitasking (Calabor et al., 2019; Rosli et al., 2019).

Besides developing soft skills, most scholars believe that gamification effectively influences positive learning behavior, including improving students' interest, motivation, perseverance, and social interaction (Rosli et al., 2019; Silva et al., 2019; 2021). Due to its efficacy, gamification has been widely adopted in various educational fields, such as marketing, medicine, sport, engineering, mathematics, computing, history, languages, chemistry, biology, and many more (Silva et al., 2021).

However, the adoption of gamification in accounting education is not as popular as in other educational fields. One of the possible reasons is the inadequate specific accounting game available. Consequently, there is limited empirical evidence of the efficacy of gamification in the accounting field (Beatson et al., 2019; Calabor et al., 2019; Carenys & Moya, 2016).

Moreover, the above studies examined the effect of gamification on students' behavior. For example, Silva et al. (2019) investigated gamification's effectiveness in student motivation and interest. From their study, they concluded that games had a positive effect on motivation and interest. Thus, it should be embedded in the curriculum. Beatson et al. (2019) analyzed the effect of mobile phone game apps on students' engagement and performance. Their result demonstrated that students' usage of mobile game apps was high. However, a slight correlation was found between mobile game usage and student achievement. Zhao (2019) analyzed the effectiveness of Quizziz on students' learning experience. His study found that students have a better experience when Quizziz is used. While these studies provide valuable results, the usefulness of gamification in supporting the cognitive development of accounting courses is not yet known. Accounting courses consist of specific procedures, standards, terms, and concepts. Failure to understand the 'particularity' of accounting can bring negative perceptions to the course and, ultimately, students' behavior. Meanwhile, to be successful in accounting courses, students need to have strong motivation and be willing to spend extra time in the course. However, when students perceive accounting as too numbering and boring, they tend to lose interest in the course(Brown & Tegeler, 2022). Consequently, many students develop a sense of fear in learning accounting subjects. The word 'accounting' has become a nightmare for them (Tahir et al., 2018). Such issues are rampant among non-accounting students who do not intend to take accounting as their major. A prior study showed that non-accounting students are less motivated to study accounting courses than accounting students due to a lack of confidence in the courses(Brown & Tegeler, 2022)

Based on the above background, this study seeks to investigate the usefulness of gamification in assisting non-accounting students in their cognitive understanding of accounting. The research questions are

*1. How do non-accounting students perceive gamification in learning and understanding accounting subjects?*

*2. What are the features of the game that perceive to enhance learning and understanding of accounting subjects?*

The importance and originality of this study are. First, it provides the empirical efficacy of gamification in accounting education, which is currently scarce (Beatson et al., 2019; Calabor et al., 2019; Carenys & Moya, 2016). Second, this study uses students' self-reflection as its qualitative data which also complements existing limited studies of gamification in accounting education where many of them employed questionnaires, surveys, or regression analysis (Beatson et al., 2019; Rosli et al., 2019; Silva et al., 2019; Zhao, 2019).

## METHOD

This study is qualitative. It aims to examine non-accounting students' perception of the usefulness of a digital accounting application – DAP in assisting them in understanding accounting subjects. DAP is a specially built accounting mobile digital game to assist students in developing basic accounting and finance skills. DAP is developed by one of the UK universities and as part of the collaboration, ABC University (pseudonym) tested the first version of DAP on ABC University's students. DAP resembles a business simulation game where a student acts as the owner-manager of a retail start-up business. Students are introduced to a series of events that requires them to respond, decide, and/or interpret financial information. For example, the game will ask the student how many inventories s/he intends to buy, how many staff to hire, and many other business-related decisions. The following events and questions depend on the decision taken previously. The game consists of three levels where timed multiple-choice quizzes conclude at each level. The students will receive a score upon completing the quiz on each level. The quiz scores will be recorded as part of the formative assessment of the course. Additionally, there is also a minimum score that the student needs to achieve before unlocking the next level.

The respondents of this study are all non-accounting undergraduate students taking accounting courses between September 2020 and February 2021 at ABC university. They were suitable participants in this study because they had to take accounting subjects while studying at ABC university, although they were not intended to be accountants. In other words, they were the students that the accounting lecturers intended to assist through gamification. Altogether there were 76 students in the cohort with two instructors. The implementation of the game started at the beginning of the semester. The students were introduced to the game's website to gain a general understanding. Instructors in each class explained the purpose of the game, how the game worked, and the compulsory nature of the game for the course. The latter means each student must participate in playing the game, and the instructors will record the results from the game as part of the formative assessment of the course. Students were also equipped with guidelines on installing and operating the game. During the semester, students must complete the three-level game and report the quizzes' scores according to the instructor's timeline.

At the end of the semester, students were asked to write and voluntarily return a self-reflection. In this study, reflection is the intellectual and affective activities that allow students to engage in the exploration of their experiences to gain new understandings and appreciation(Boud et al., 1985) According to Boud et al. (1985), reflection is an essential human activity that allows each individual to recapture his/her experience, contemplate it, and evaluate it. Allowing students to reflect on their learning process encourages critical thinking and deeper learning (Quinton & Smallbone, 2010). Moreover, a prior study indicated that Indonesian students are shy and submissive. They also tend to be more reserved, especially to those they deem superior, such as teachers (Zulfikar, 2009). Employing self-reflection, students may be more accessible in expressing their thoughts and having a chance to contemplate their learning journey.

The reflection questions related to the objective of this study thus, consist of the following:

1. Please rate (low/moderate/high) and explain DAP's usefulness in helping you understand your accounting subject.
2. How does DAP help you in understanding your accounting subject?
3. Do you think similar games other than DAP will help you to understand other accounting subjects?

The first question was designed to explore the usefulness of DAP in assisting students in understanding accounting and discovering what kind of accounting knowledge they learned. It is also meant to be the first stage of reflexive activity where the student was brought to an awareness of what happened.

The second question was aimed at examining in what ways DAP helps the student in understanding accounting. The last question was to understand students' general perception of gamification in learning accounting subjects.

Instructors in each class explained the relevance of the reflection to this study. Students were ensured that their participation in this study was voluntary and that their decision would not affect their grades. Out of the total cohort, only 40 students were willing to participate in this study and thus, turned in their self-reflection. Upon receipt of the reflection, the authors started the data analysis process. First, the authors reviewed the reflection to judge if it had been used as intended (Quinton & Smallbone, 2010). This step is also to ensure the reliability and validity of the data. From the review process, all submitted self-reflection are eligible for this study. Then, the authors classified the reflection into those who perceive DAP as highly useful, moderately useful, and limited in its usefulness. Then the authors look for the most repeated words in each category, as (Quinton & Smallbone, 2010) did. This process included repeatedly reading the reflection line by line and conducting the open coding. During the process, the authors made as many comments as necessary at the margin to immerse and converse with the data. Then the authors refine each code and group the code to form themes. The authors also constantly discussed and reviewed the themes to ensure reliability. The final generated themes consist of accounting terms and concepts, accounting topics, repetition and remembering/memorizing, decision-making in practice, the visual concept of real-life business, direct feedback, interest and engagement, and the unfavorable aspects of gamification. The whole process was conducted manually.

## RESULTS AND DISCUSSION

### The usefulness of gamification in understanding accounting

Most studies argue that game-based learning improves students' motivation (Beatson et al., 2019; Buckley & Doyle, 2016; Prensky, 2003; Rosli et al., 2019; Silva et al., 2019; Tahir et al., 2018). Such an argument is based on the belief that anyone can learn while playing, and studying does not have to be monotonous in a traditional learning setting (Prensky, 2003; Silva et al., 2021). Prior studies demonstrated that a gamified setting where students can make mistakes and try again encourages learning without fear (Silva et al., 2021). Moreover, students' motivation for learning can be intrinsic or extrinsic (Buckley & Doyle, 2016). Students are perceived to have extrinsic motivation when they are motivated to join a game to get a reward. Under such a circumstance, students may opt not to accomplish the given exercises in the game when the desired grade has been achieved (Haaranen et al., 2014). On the other hand, when students intend to participate in a game activity to gain knowledge and understanding, it is assumed to be intrinsic motivation. Therefore, carefully constructing and communicating the gamified activities is essential. Studies have shown that when the game is too difficult, the rules are not well understood, and the game is poorly designed can affect students' motivation (Hartt et al., 2020; Markopoulos et al., 2015; Toda et al., 2019)

This study has found that gamification through DAP has been helpful for most students in understanding their accounting subject. In other words, the use of gamification elements in teaching accounting has made the subject more

accessible and engaging for the majority of the students. However, the study also found that a small number of students did not perceive gamification as helpful in improving their accounting knowledge. To present these findings, the researchers have used Table 1 to summarize the responses of the students. The table likely includes the number or percentage of students who found gamification to be useful, moderately useful, or not useful at all in assisting them with their accounting subjects.

**Table 1. Summary of Students' Responses**

| **Degree of Usefulness** | **Low** | **Moderate** | **High** |
|---|---|---|---|
| Response rate (%) | 15.38 | 61.54 | 23.08 |

Students also explained what accounting knowledge they learned through DAP. Their responses include *understanding accounting terms and concepts*, *financial statements*, and *an opportunity to visualize a real business environment.*

Nearly all students agreed that DAP helped them to understand accounting terms, such as amortization, provision, tangible and intangible assets, and current and non-current assets:
*"[DAP] helps me to understand all the accounting terms and concepts, such as amortization, current and non-current assets, etc., that I didn't understand before playing this game." (Student 03)*

The finding that nearly all students agreed that DAP helped them to understand accounting terms is a significant one, as it suggests that gamification can be an effective tool for enhancing students' understanding of complex concepts.

In terms of accounting concepts, many students perceived that DAP assisted them in understanding the accounting equation and the basic calculation, such as profit:
*"I also learned the necessary accounting equation, such as balancing the assets = liability + equity and finding gross profit within a business ."(Student 22)*

The accounting equation is a fundamental concept in accounting, and understanding it is crucial for students to build a solid foundation in the subject. The quote from Student 22 highlights the effectiveness of DAP in helping students learn and apply the accounting equation in a practical context.

Students also reported that they understood the difference between financial position and financial performance through the game:
*"I gained a much more solid understanding of those [financial] reports. For example, I had little knowledge regarding the difference between a statement of financial performance and a statement of financial position, as well as their other names and what they consist of. However, now I have widened my knowledge about these differences and how to differentiate those statements". (Student 09)*

For some students, DAP also helped them to understand financial statements and how each account was affected by the transactions:
*"DAP helps me in understanding accounting for business. For example, in the statement of cash flow. Initially, I did not understand what are the transactions that affect the financing [activities], whether it is an inflow or outflow, or whether it increases or decreases. Bu the game helps me understand more about accounting [financial statements]. (Student 11)*

Financial statements are essential concepts in accounting, and understanding the difference between them and how transactions affect each of the statements is crucial for students to develop a deep understanding of the subject. This finding suggests that gamification can be a useful tool for teaching complex accounting concepts that may be difficult for students to understand through traditional teaching methods.

Students who did not have any accounting background also perceived DAP as a helpful method for understanding accounting:
*"For me, DAP does help me to understand more about accounting. Especially for a person who did not learn accounting before such as me." (Student 15)*

The finding suggests that gamification can be a useful tool for teaching accounting concepts to students with little or no prior knowledge of the subject.

Besides accounting terms and concepts and financial statements, students also found DAP provided a valuable projection of a real business: *"[Through] the game I can picture myself running my own business, selling kinds of stuff, gain revenue, pay expenses, earn profit. And most importantly, I know how to define which is which" (Student 08).*

The finding indicates that gamification can help students apply accounting concepts in a practical context, leading to a deeper understanding of how these concepts work in real-life situations.

The game also allowed the students to envision the consequence of their business decision:
*"I learned how to balance between customer demands and inventory in order to maintain a healthy operation. [The game] helped me to understand some consequences that come with [my] decisions." (Student 29)*

The above quote shows that DAP can be an effective tool for promoting a practical understanding of accounting concepts and developing higher-order thinking skills, leading to better decision-making and problem-solving abilities among students.

Overall, the findings demonstrate that gamification can assist students in their cognitive comprehension. In this study, DAP helps understand accounting terms and concepts, financial statements, and business simulation. These findings complement existing literature, which primarily discusses gamification's impact on learning behavior (Beatson et al., 2019; Silva et al., 2019). These findings add to this body of literature by demonstrating how gamification can also have a positive impact on cognitive learning outcomes. This highlights the potential of gamification to not only motivate and engage students but also to facilitate deeper understanding and mastery of complex concepts. It is possible to conclude, therefore, that gamification, specifically DAP, can be a valuable tool in accounting education.

While there is various knowledge learned, some students considered DAP less useful as it did not help them in understanding the technical aspects of accounting:
*"The game is pretty good because it emphasizes accounting concepts. But in terms of the accounting calculation, it is constrained." (Student 05)*

The above quote suggests that for some students, the technical part of accounting is equally important as the accounting concepts and terms. The finding also confirms prior studies where most students perceived accounting to be technical and procedural (Brown & Tegeler, 2022; Tahir et al., 2018) . Regardless of how students perceive accounting courses, the above finding also indicates the limitation of DAP. While DAP was found to be effective in improving students' understanding of accounting concepts and terms, it did not have a significant impact on the development of technical knowledge. Nevertheless, balancing both the technical and conceptual aspects of accounting education to ensure that students have a well-rounded understanding of the subject matter is also crucial. This also suggests that educators need to use a variety of tools and methods to ensure that students develop both conceptual and technical skills in accounting.

Additionally, for some students, the game is seen to be less valuable as it did not directly assist them in the examination:
*"[The game] helped me to understand and memorize some basic accounting terms**,** but it doesn't help in the final exam materials kind of questions." (Student 38)*

The above quote suggests that students prefer a direct implication between gamification and assessment. In other words, they prefer that the game-based learning exercises are similar in format and content to the actual examination

questions. When there is a lack of similarity between the two, students may become dissatisfied with the gamified learning approach. This finding also underscores the importance of aligning gamified learning exercises with the desired learning outcomes and assessment criteria. If the purpose of the gamified learning exercises is to prepare students for an exam, then the exercises should resemble the exam questions in terms of format and content. This helps students understand what is expected of them in the exam and helps them prepare more effectively.

However, it is important to note that gamified learning should not be viewed solely as a means of exam preparation. While this may be one application of the approach, gamified learning can also be used to develop a range of skills and competencies that may not be assessed in a traditional examination format.

**The DAP features support students in understanding accounting**

Existing studies showed that gamification enhanced students' participation, mainly when the game is played in a group (Moncada & Moncada, 2014; Rosli et al., 2019; Tahir et al., 2018). Peer interaction assists knowledge and social interactions (Hartt et al., 2020). Furthermore, scholars also argued that features of the game, such as the music, the visuals, the characters, the scoreboards, and the storyline, increase students' participation, provide autonomy, and offer a meaningful reward (Beatson et al., 2019; Carenys & Moya, 2016).

In this study, students mentioned several reasons why DAP helps them understand accounting subjects, including *repetitive quiz questions*, *direct feedback*, and *the gamification method i*n learning accounting subjects.

Many students claimed that the availability of the quizzes at the end of each level helps them to understand their accounting topics:
*"DAP helps me better understand the topic as every month within one year [of the simulated calendar], players are given multiple choice questions regarding the terms frequently used in the course - introduction to financial accounting." (Student 33)*

The finding that many students found the quizzes at the end of each level helpful for understanding their accounting topics is significant as it highlights the importance of reinforcement and retrieval practice in learning. The availability of quizzes after each level encouraged students to review and consolidate the accounting concepts they had just learned, which could have contributed to better retention and understanding of the material.

Moreover, the finding also confirms prior studies, where assessment embedded in the game stimulates learning, understanding, and engagement (Aljaloud et al., 2015; Hartt et al., 2020). Various studies have shown that student engagement is the key to success in education (Martin & Bolliger, 2018; Nguyen et al., 2018; Poondej & Lerdpornkulrat, 2016). Nevertheless, student engagement continues to be a problem. Divergent studies, therefore, argued that game-based learning equipped with immediate feedback could bridge the gap in students' engagement (Aljaloud et al., 2015; Blasco-Arcas et al., 2013). According to Hartt et al., (2020) feedback is one of the reasons students continue to play and learn in gamification. Constant feedback embedded in gamification can also infuse deep learning (Aljaloud et al., 2015).

Additionally, students also claimed that the repetitive questions in each of the quizzes are also helpful in making them remember the previous lessons:
*"[The game] helps me a lot because of the [quiz] questions. Without me realizing it, I remember a lot [of the past lessons]. It is because the questions keep on repeating." (Student 10)*

This study demonstrates that the repetition strategy implanted in gamification generates familiarity, ultimately making the student remember their lessons. Accordingly, students perceived the repetition strategy favorably. The finding also raises awareness among educators of the importance of repetition in the classrooms. Educators can design gamified learning activities that integrate repetition, such as review

sessions, practice exercises, and self-assessment quizzes to aid students in remembering important concepts and information.

Moreover, because the game is a business simulation, it provides a safe learning environment for the students. Therefore, whenever the students did not have the correct answers, the game immediately provided the right answers as direct feedback:
*"This game allows me to make mistakes, but at the same time it provides the right answers. Therefore, I can detect my mistakes and learn from them." (Student 25)*

The above finding indicates that the gamification approach provides a safe environment for students to learn. The finding also confirms prior studies (Silva et al., 2021). It is important to note that the safe environment created by gamification does not imply that students are shielded from challenges or difficulties. Rather, it means that they feel supported and encouraged to take risks and explore new ideas without fear of negative consequences. This can help to foster a growth mindset and encourage students to approach learning as a process of continuous improvement. In other words, the potential of gamification to create a safe and engaging learning environment for students can have a positive impact on students' motivation, confidence, and willingness to take risks and explore new ideas.

Moreover, some students preferred the gamification method of learning accounting instead of the traditional one. Their reasons are that gamification is more fun and interesting and helps them to focus:
*"Through the game, I could also learn accounting in a much more fun and interesting way compared to a lecture or a video which I could say helps a lot in my understanding because I'm not bored or distracted by my phone/computer/social media." (Student 27)*

The finding suggests that a gamification is an effective approach to teaching and learning in accounting classrooms, as it allows students to learn while playing. The finding corroborates existing literature that gamification allows students to learn while playing (Moncada & Moncada, 2014; Prensky, 2003). Therefore, gamification may be an alternative to innovative teaching and learning approaches in accounting classrooms, where it promotes engagement, motivation, and a sense of playfulness (Poondej & Lerdpornkulrat, 2016).

However, for some students, the compulsory nature of gamification puts them off. As previously explained, it is obligatory for all students who enrolled in accounting courses during the semester to participate in gamification. Thus, some of them said:
*"The game does not help much; I would say the game only helps me slightly. While the quiz function helps us understand new accounting terms and explains common terms completely, I do not feel it helps. I feel like I am forced to participate in the game." (Student 17)*

Studies showed that playing games voluntarily has a positive effect on the knowledge and skill of the player (Beatson et al., 2019). Similarly, the above student felt like he was forced to play, and this reduced the fun of the gamification. It is also possible that the student had a different expectation in playing the game. Thus, when he figured that the game focused on improving accounting terms and concepts, he became reluctant to play the game.

Additionally, as previously explained, the game required students to pass a minimum score before going to the next level. While the quiz helped them to memorize and understand accounting terms and concepts, some students did not like the repetition of the quiz. For some students, such requirements and repetition were perceived as a punishment:
*"[…] the fact that the game would punish me if I do not meet the requirement makes it unpleasant to play." (Student 19)*

Supporters of gamification have discussed the positive effect of reward and student motivation

(Beatson et al., 2019; Blankley et al., 2019Hartt et al., 2020). Nevertheless, there is a limited understanding of the consequence of providing minimum criteria to proceed in the game. This study suggests that when students achieve the desired score, it increases their motivation. However, their motivation is adversely affected when the score is below the minimum requirement.

Additionally, some students observed that the multiple-choice quiz questions limited their learning experience. For this type of student, they prefer essay questions that include the technical aspects of the course:
*"However, as the game only reviewed the accounting terms in an MCQ format, the learning experience was limited. The game could test players' accounting knowledge by using short answer essay questions and more to the calculation part." (Student 18)*

The finding of this study suggests that the student prefers essay questions due to the possible perception of a higher level of knowledge gained in an essay assessment. However, it is important to note that the preference for essay questions may not necessarily reflect the most effective way to assess learning outcomes in accounting. Multiple-choice questions, for example, can be an effective way to assess knowledge of technical concepts and can be more efficient in terms of grading and feedback.

Additionally, the finding that students prefer the technical features of accounting confirms the previous limitation of DAP in promoting students' cognitive development in terms of technical skills. This highlights the importance of considering multiple approaches to teaching and learning in accounting classrooms, including both gamification and more traditional approaches that focus on technical knowledge and skills.

Overall, the unfavorable aspect of DAP resonates with prior studies. For example, Toda et al. (2018) explained that when students are obsessed with the scoreboard, it can create a highly competitive spirit. When a student does not achieve the desired result, s/he may become irritated and frustrated, showing undesired behavior. While this study found that it was not the scoreboard that causes the negative perception, the features and application of gamification need to be designed carefully to minimize the unfavorable response.

**The usefulness of gamification in learning and understanding accounting subject**

Students are generally fond of the gamification learning approach compared to traditional learning. Some students reported that the game could be an alternative to listening to a lecture or reading a textbook:
*"I think that this quiz-like game is a good alternative for students who can't focus when listening to a lecture or reading a thick book." (Student 40)*

The student's response reflects a common sentiment among students who find traditional learning methods tedious or monotonous. Gamification has been praised for its ability to increase engagement and motivation, and this is particularly true for students who prefer an interactive and immersive learning experience. By incorporating game elements such as quizzes, rewards, and leaderboards, educators can create a learning environment that is more enjoyable and stimulating for students.

Others emphasize the fun element of the game:
*"[…] similar games would help many people to understand accounting and the learning materials. Most people would be more interested in the gamification approach as it is more interactive and is found to be more enjoyable by most people. Some would also feel more challenged to complete the game." (Student 25)*

The idea that infusing the element of fun can facilitate learning is a key principle of gamification in education. Gamification uses game-like elements, such as points, badges, leaderboards, and feedback, to engage learners and motivate them to achieve learning objectives. This approach has been shown to enhance learners' motivation, engagement, and

learning outcomes (Buckley & Doyle, 2016; Prensky, 2003; Silva et al., 2019).

The above student's comment that gamification is more fun and supports him in learning accounting subjects aligns with this principle. The student's perception that gamification is fun suggests that the gamified approach is effective in engaging and motivating him to learn accounting concepts. Notably, when students observed that the game benefited them, their interest and motivation were boosted. For example, the following student explicitly said that only when gamification relates to his study, then it is useful:
*"It might be depending on what is inside the game. If it relates to the studies, then it could help, but if some does not relate and even some terms make confusion, it might not help that much." (Student 17)*

The above quote highlights the importance of ensuring that the gamified learning approach is relevant to students' learning objectives and curriculum. When students perceive that the game benefits them and relates to their studies, they become more interested and motivated to engage with the game. This aligns with the principles of gamification, which aim to align game mechanics and content with learning objectives to enhance learners' engagement and motivation (Prensky, 2003; Silva et al., 2019).

The student's comment also emphasizes the need for gamified learning to be well-designed and relevant to students' learning objectives. If the game is confusing or does not relate to the subject matter, it may not be useful in promoting student learning. Therefore, game designers and educators must consider students' needs and tailor game mechanics and content to align with their learning objectives and curriculum.

Another student acknowledged that the game that mimics the real-life business environment assists in understanding accounting subject and increases his motivation:
*"In my opinion, similar games such as simulation in doing business help to understand the subject and improve my soft skills. If this game only contains quizzes and rewards, I would not be playing this." (Student 18)*

This student's comment highlights the importance of incorporating real-life scenarios in gamification to facilitate the learning process. Simulation games, which mimic real-life business environments, have been shown to be effective in improving students' understanding of accounting concepts and terms (Beatson et al., 2019). Furthermore, such games can help students develop their soft skills, such as communication, problem-solving, and decision-making, which are essential for success in the accounting profession. This finding supports the argument that gamification can promote deeper learning by providing opportunities for students to apply what they have learned in real-life situations (Silva et al., 2019). Additionally, the comment suggests that the game's content and design play a significant role in motivating students. Games that are too simple or purely focused on rewards may not provide enough stimulation to keep students engaged in the learning process.

Nevertheless, some students believe that gamification is valid only to some extent, and it could not replace self-study:
*"Although I think that games are useful to clarify concepts that are difficult to understand if we try to comprehend them in our self-study, games cannot completely replace them [self-study]." (Student 27)*

The perspective of this student highlights the limitations of gamification in accounting education. While gamification can be an effective tool to enhance learning and motivate students, it should not be seen as a replacement for traditional self-study methods. Self-study and independent learning are essential skills that students need to develop in order to succeed in their academic and professional pursuits.

The above finding is also similar to prior studies where scholars found indifferent results from gamification. Indifferent results mean

gamification does not positively or negatively impact learners (Toda et al., 2018). In Haaranen et al. (2014) study, they found that students were neither showed enthusiasm nor annoyed with gamification. Similarly, Buisman and Van Eekelen (2014) found no positive or negative effect of gamification on students' motivation and engagement. Another study by De-Marcos et al. (2014) also found that there were indifferent results in academic performance between game-based learning and other learning methods.

In addition, while gamification can be an engaging way to clarify concepts, it may not be effective for all students. Some students may prefer different methods of learning, such as reading or listening to lectures and may not find gamification as helpful. Therefore, educators should consider a variety of teaching methods to cater to the diverse learning needs of students.

It is important to note that gamification should be viewed as a complementary tool to traditional teaching methods, rather than a replacement. When used appropriately, gamification can enhance learning outcomes and improve student engagement and motivation.
Likewise, the following student plainly explained the lack of usefulness of gamification: *"Sorry, but I think games will never replace direct studying. It will only help to complete the gaps such as remembering the definition of accounting terms." (Student 02)*

The quote from Student 02 highlights that some students may not find gamification useful in their learning process. It is essential to acknowledge that different students have different learning styles, preferences, and needs. Some may require more structured, direct learning methods, while others may benefit from more interactive and engaging approaches such as gamification.

The findings suggest that gamification may not be a complete replacement for traditional teaching methods or self-study, but it can complement them. For instance, gamification can be used as a tool to reinforce learning, test knowledge, and promote engagement. By incorporating elements of gamification in traditional learning methods, educators may provide a more balanced learning experience that caters to different learning styles.

Furthermore, the finding that there is no one-size-fits-all approach to learning reinforces the importance of personalized education. Educators should consider tailoring their teaching approaches to suit individual students' needs, preferences, and learning styles. The use of gamification in accounting education may provide a valuable option for educators to consider in creating a more inclusive and personalized learning environment.

## CONCLUSION

This study explored how non-accounting students perceive gamification as a learning approach in understanding accounting subjects. The findings reveal that gamification is perceived as an effective and enjoyable tool for learning complex accounting concepts, with the repetition strategy generating familiarity and the direct feedback system aiding in learning. However, the study also identified some limitations of gamification as a teaching tool, such as its inability to entirely replace self-study or traditional lecture-based teaching and the need for it to be played voluntarily. Students also suggested that gamification questions should go beyond multiple-choice questions and include technical skills relevant to accounting subjects. This study suggests that educators can utilize gamification as a supplementary tool to reinforce learning, especially for complex topics, and create an enjoyable learning environment that promotes student cognitive understanding. Nevertheless, educators should also be cautious about over-reliance on gamification as a sole teaching method. The study highlights the importance of balancing gamification with other teaching methods. Educators should also take into account the preferences and feedback of students when designing gamification strategies.

This study is unique as it explores how non-accounting students perceive gamification in their understanding of accounting subjects,

which is a topic that currently has limited literature (Silva et al., 2021). Additionally, most existing literature on gamification as a learning approach focuses on learning behavior rather than cognitive understanding (Calabor et al., 2019; Rosli et al., 2019; Silva et al., 2019; 2021), making this study's exploration of the perception of gamification by non-accounting students in understanding accounting subjects even more unique. Despite its contribution, this study did not measure the long-term effectiveness of gamification in learning accounting subjects. Future studies can analyze whether the benefits reported by students are sustained over time or whether gamification can lead to better academic performance in accounting subjects.

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