Gamification and students' engagement in accounting courses – an experimental study

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Abstract

Purpose – The purpose of this research was to examine the impact of gamification on students' engagement and to understand their perceptions of gamification as a teaching and learning style.
Design/methodology/approach – The participants in this research were students who had studied the principles of accounting courses at University of Technology and Applied Sciences, Ibra, Sultanate of Oman. A total of 131 students participated in this study. This course consisted of five learning outcomes: the first three learning outcomes were taught using a traditional (non-gamified) teaching style, and the remaining two outcomes were taught using a gamification teaching style.
Findings – The results show that teaching accounting courses using game elements enhances student engagement in the classroom. Female students' engagement could be improved in a better way by gamifying accounting courses. This study also highlighted that students who aspire to move on to an excellent academic category exhibit higher engagement in the gamified classroom. This study also found that students have a positive perception of the gamification of accounting classes.
Practical implications – Including game elements in teaching accounting courses leads to increased student engagement, thus enhancing overall learning experiences. Therefore, higher education institutions in the Sultanate may consider the use of gamification in different courses.
Originality/value – This empirical research contributes to the application of gamification in teaching accounting courses in the Sultanate of Oman and similar countries. The effects of gender and previous academic performance of the students were explored. These findings could be used to design appropriate teaching methods for a specific group of students.

Keywords Accounting game, Gamification, Learning experience, Student engagements, Teaching accounting
Paper type Research paper

Introduction

Understanding accounting is challenging for business students. Teaching it through the conventional method could make matters worse, as it does not support active learning and makes students less engaged, less motivated and less attentive. Grabinski, Kedzior, Krasodomska, and

Ethical statement: In this study, student participation in the survey was entirely voluntary, and informed consent was obtained from all participants. Participants were assured of the confidentiality and anonymity of their responses. The survey data were used exclusively for academic research purposes. Moreover, the study was approved by the institutional ethics committee, ensuring adherence to ethical standards for research involving human participants.

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Herdan (2020) pointed out that the accounting discipline is very practical; hence, it is considered difficult to learn. Accounting educators need to methodologically plan and devise a systematic approach for delivering accounting courses. Gamification, a contemporary pedagogical strategy in which game elements are used for teaching, can be employed to make learning more interesting. Moreover, the implementation of gamification does not affect routine class delivery, as it is concerned with adding game elements to traditional teaching (Brigham, 2015). This pedagogical strategy has been adopted in many courses, such as mathematics, finance, statistics and engineering, by different educational institutions. Gamification can be defined as applying the mechanics of games to make learning more appealing (Apostol, Zaharescu, & Alexe, 2013). Educational games have become an interesting teaching tool for enhancing and motivating student performance. The use of gamification in a pedagogical context may provide solutions for students who may have difficulty using traditional methods of instruction. This may partially address motivational, affective and involvement issues in the classroom. It is believed that the introduction of games in the delivery of accounting courses will make them more interesting and appealing to students. Consequently, students' participation, involvement and engagement may increase, resulting in a better and more productive learning experience.

Engaging students and making classes attractive turned out to be a major challenge for the course tutor. Quite a few students lack interest in learning this course, especially those who do not want to choose an accounting specialization. However, basic accounting knowledge is essential for all business students, as they need to know the accounting terminologies to be able to apply them successfully in their relevant work settings. Enhancing students' interest in the classroom is expected to propel their interest in the course toward greater heights. In this context, the present study was conducted for three specific purposes. First, it examines the impact of gamification on student engagement. Second, it analyzes the influence of gender and previous academic performance on students' engagement in both gamified and traditional (i.e. non-gamified) environments. Third, and finally, it explores students' perceptions of gamification in the accounting course.

The present study is significant as it emphasizes the effect of the gamified teaching approach of accounting courses. This could be quite promising and could work wonders if properly planned and executed. Therefore, this study is expected to be significant, as it empirically proves the impact of using game elements in accounting courses. It also sheds light on whether the gender and previous academic background of students affect their perceptions of engagement. In pursuit of these findings, accounting educators and higher educational institutions (HEIs) could pay attention to using gamification to enhance student engagement. Moreover, it supplements the procedures to be implemented by using games as a teaching tool in accounting education.

The remainder of this paper is organized as follows. A review of the related literature is summarized in Section 2, and the methodology used and data collection procedures are reported in Section 3. The results and discussion are presented in Section 4, and Section 5 presents the conclusions, implications and scope for further research.

Literature review

A growing body of literature recognizes the significance of gamification in motivating and engaging students. A great deal of previous research has focused on employing games in several courses in different fields of higher education, such as mathematics, engineering, science, history, business studies and the English language (see, for example, Beatson *et al.*, 2020; Bonner, 2015; Brigham, 2015; Carenys & Moya, 2016; Dehghanzadeh, Fardanesh, Hatami, Talaee, & Noroozi, 2021; Scarfino & Roever, 2009; Sun & Hsieh, 2018).

Student engagement in a gamified class

The effectiveness of gamification in education has been a subject of significant research interest. Hamari, Koivisto, and Sarsa (2014) empirically demonstrated the positive impact of

gamification on learning environments. Chapman and Rich (2018) also highlighted that students who took gamified courses outperformed those who took traditional, non-gamified courses. Student engagement is an area where gamification holds the strongest promise. Poondej and Lerdpornkulrat (2016) found that gamified learning activities engage students much better than non-gamified ones do. A literature review conducted by Rahman, Panessai, Noor, and Salleh (2018), covering studies conducted between 2016 and 2018, supports this hypothesis. According to Bouchrika, Harrati, Wanick, and Wills (2019), gamification elements, such as scores, stars and leaderboards, can drive long-term improvements in student motivation and performance.

Several studies have focused on specific gamified tools and applications to assess their impact on students' engagement and academic performance. Orhan Göksün and Gürsoy (2019) utilized gamified activities in "Kahoot" and "Quizizz," finding positive effects on both engagement and academic outcomes. Similarly, Ding, Kim, and Orey (2017) employed "gEchoLu" – a gamified tool for online discussions – and observed increased student engagement through features like badges, thumbs-ups, avatars and progress bars. The positive impact of gamification on student engagement has been indicated in several studies, including Ding *et al.* (2017), Subhash and Cudney (2018) and Zainuddin, Shujahat, Haruna, and Chu (2020). Tsay, Kofinas, Trivedi, and Yang (2020) further extended this research using mixed methods with computer-based gamified learning systems. The results showed that computer-based gamification has been found to be one of the strongest tools to enhance the students' engagement.

Gamification in accounting courses

Various studies have investigated the effectiveness of game-based learning in accounting education (Durso, Reginato, & Cornacchione, 2019; González-Acosta, Almeida-González, Torres-Chils, & Traba-Montejo, 2020; Jamaluddin *et al.*, 2020; Selamat & Ngalim, 2022). These studies invariably confirm that game-based learning fosters student interest, motivation and skill development in accounting courses. Silva, Rodrigues, and Leal (2019) found that game-based learning improved students' learning flow, concentration and other key factors. Beatson *et al.* (2020) observed enhanced student engagement and performance through the use of gamified mobile applications in classrooms. These findings align with those of Carenys and Moya (2016), who emphasized the benefits of digital game-based learning in financial accounting education.

The positive impact of gamification extends beyond engagement and skill development. Durso *et al.* (2019) reported that, in accounting classrooms where gamified strategies were employed, students exhibited better interaction, critical thinking, collaboration and leadership skills. Rosli, Khairudin, and Saat (2019) also noted that a gamified classroom environment enhanced student interactions in accounting education. Recent research by Almuntsr, Muhamad, San, and Shah (2024) further supports these conclusions by demonstrating improvements in students' academic performance, motivation, confidence and conceptual understanding in gamified accounting classrooms.

Although the majority of the research indicates positive outcomes, some challenges have been identified in some studies. This includes the complexity of utilizing games, as well as the careful implementation of game elements in the course content (Almuntsr *et al.*, 2024; Durso *et al.*, 2019). Nevertheless, there is an increasing consensus that gamification can greatly improve the efficacy of teaching accounting courses (Almuntsr *et al.*, 2024; Rosli *et al.*, 2019).

Various studies have been conducted in the field of student engagement in the learning process using various gamification techniques and strategies. They found that gamification positively enhanced students' engagement. However, most previous studies did not compare students' engagement in gamified and non-gamified learning environments empirically. Similarly, the influence of students' academic performance and gender on the perception of their engagement has not been studied deeply. Furthermore, empirical studies in the

accounting field are limited (Pelser-Carstens, Preston, & Blignaut, 2017). Therefore, the present study was undertaken to test whether student engagement is enhanced in a gamified classroom environment. The outcome of this study adds further information to the available literature in this area.

Methodology

Context

This study was conducted at the University of Technology and Applied Sciences, Ibra (UTAS-Ibra). It is one of the 22 HEIs that offer business specialization programs in the Sultanate of Oman. It is situated in a suburban area but in proximity to the capital city of Muscat. Such a locational advantage of this institution helps draw students from different economic and societal backgrounds. Therefore, conducting research on this kind in UTAS-Ibra would be ideal, as the participants are expected to hail from varied backgrounds and possess varied characteristics. Based on these unique qualities of UTAS-Ibra, the researchers decided to conduct this research, as it is thought to be a representative of the HEIs in the Sultanate of Oman. Principles of accounting is an introductory compulsory course for first-year business students, irrespective of their specialization. This course helps students learn bookkeeping techniques in accounting. Since rules, principles and standards are to be taught in this course, teaching and learning become monotonous. With a view to constructively addressing learner problems in the accounting course using gamification, the present research work is undertaken.

Participants

This study was conducted among students who studied principles of accounting during Semesters 1 and 2 of the academic year 2019–2020. In total, 131 students participated in this study: 36 during Semester 1 and 95 during Semester 2. The course consisted of five learning outcomes. The first three learning outcomes were taught using traditional (non-gamified) teaching styles, and the remaining two outcomes were taught using a gamification teaching style. This was done to measure the impact of gamification, students' perceptions of gamification and a comparison of students' perceptions of engagement in a gamified classroom with a non-gamified classroom.

The students' perceptions of classroom engagement in non-gamified teaching were obtained after delivering the first three outcomes using a non-gamified teaching style. Their perceptions of gamification and classroom engagement were explored after delivering the other two learning outcomes using a gamified teaching style.

Data collection instruments and validity

Two structured questionnaires were developed by the researchers with the help of previous studies (Bicen & Kocakoyun, 2018; Bonner, 2015). The first questionnaire consisted of nine items that helped explore students' opinions on classroom engagement in a non-gamified teaching style. The second questionnaire was administered to measure students' engagement with and perception of gamification. Students' perceptions of gamification were measured using 21 items, whereas classroom engagement was measured using the statements given in the first questionnaire. Responses for all items were measured using a five-point Likert scale with a value of 5 points for "strongly agree" to 1 point for "strongly disagree." The reliability of the data collection instruments was tested using Cronbach's alpha. Table 1 shows that the measurement scales have adequate internal consistency.

Procedure

As discussed earlier, non-gamified pedagogy that includes lecturing, problem solving, student-teacher interaction and video showing was used (excluding game elements) to deliver

Table 1. Reliability statistics

Construct	Cronbach's alpha	N of items
Students' perception of gamification	0.918	21
Students' perception of classroom engagement in non-gamified class	0.866	9
Students' perception of classroom engagement in gamified class	0.769	9

Source(s): Authors' own creation

the first three outcomes. This non-gamified environment was used for approximately six weeks at the beginning of each semester. There were two sessions per week, each with a duration of two hours. After delivering the said outcomes, students' perceptions of their engagement in a non-gamified classroom were obtained. In the case of gamification, the Jeopardy game (URL: https://jeopardylabs.com/) was included along with the conventional teaching method. It is an American television game that features a quiz competition in which contestants are asked to provide answers in the form of questions. At the beginning of the gamified class, the students were asked to form teams; each class had four or six teams. The teams were asked to nominate a leader (as a hand raiser) who should answer on behalf of their team. During the study period, the lecturer played the Jeopardy game at the end of each session. The game was embedded with course content delivered on the game day. As free users, 5 categories of questions were set with different levels of difficulty, with points ranging from 100 to 500 for each category. Traditionally, in Jeopardy games the, "question prompt" is phrased as a statement and the "correct response" is phrased as a question. However, the game builder could set questions and answers as they liked. Once the game is started by the lecturer, the team that has the chance is asked to choose a question from any category, but from the respective point value. Thus, each team obtained one question from each point value and the category. Teams were given 20 seconds to deliberate on and to come up with a response. Points were awarded using the "score button" if the answer was correct. Negative markings were not used in this study, although they were available. This gamified environment was adopted for four weeks in both semesters. Each session's score was recorded by the lecturer, and at the end of the study period, the team that scored the highest cumulative points was declared the game winner.

Data analysis

Data gathered from the students were analyzed using SPSS software (version 20). A descriptive analysis was performed to understand the level of perception of gamification. The effects of gender and academic performance on the perception of gamification were analyzed using an independent *t*-test and one-way ANOVA. Moreover, a paired sample *t*-test was used to analyze the effect of classroom gamification on student engagement.

Results and discussion

Participants' profile

As previously mentioned, this study was conducted with 131 students. Table 2 presents the gender details of the students. Male students accounted for 44.3% in this experimental study, whereas the proportion of female students outnumbered their counterparts by 55.7%. Students were asked to indicate their past academic performance based on their grade point average. As depicted in Table 3, most of the students belong to the group "good," constituting 58%. Students with "very good" form are 19.8%, and the "excellent" category share is 16%. Only 6.1% of the students' academic performance is in the "satisfactory" category, and none of them belong to the "not satisfactory" group.

Table 2. Gender of the respondents

Gender	No. of students	%
Male	58	44.3%
Female	73	55.7%
Total	131	100.0%

Source(s): Authors' own creation

Table 3. Academic performance of the respondents

Level of academic performance	No. of students	%
Not satisfactory (GPA = less than 2)	0	0%
Satisfactory (GPA = 2–2.29)	8	6.1%
Good (GPA = 2.3–2.99)	76	58.0%
Very good (GPA = 3–3.69)	26	19.8%
Excellent (GPA = above 3.7)	21	16.0%
Total	131	100.0%

Source(s): Authors' own creation

Students' engagement in the gamified vs non-gamified classes

As stated earlier, one of the aims of this study was to compare students' perceptions of classroom engagement in gamified and non-gamified classes. The students' opinions on classroom engagement in gamified and non-gamified classroom environments are presented in Table 4.

It is interesting to note from Table 4 that the students felt that they exhibited a high level of classroom engagement when the accounting course was taught along with the game elements. This clearly supports the role of gamification in enhancing student engagement in teaching accounting courses. They felt that employing gamification increased their interest significantly (4.46). It also increases attention and focus, thereby aiding in the retention of knowledge gained (4.44). Furthermore, it enhances their self-confidence (4.4), motivates them to practice higher-level critical thinking skills and promotes meaningful learning experiences

Table 4. Analysis of students' engagement in the gamified vs non-gamified classes

Items	Gamified class Mean	S.D.	Non-gamified class Mean	S.D.	Paired sample test *t*-value	Sig.
The class session enhanced my learning ability and understanding	4.28	0.558	3.95	0.927	5.574	0.000
The class session helped me to retain the knowledge gained	4.44	0.596	3.9	0.876	3.121	0.002
The class session helped me to think critically	4.36	0.542	3.65	0.944	4.865	0.000
The class session helped me to collaborate with other classmates and increase teamwork skills	4.43	0.775	3.87	1.091	4.375	0.000
The class session increased my self-confidence	4.4	0.491	3.78	0.914	4.999	0.000
The class session made learning simple and easy	4.23	0.78	3.76	0.833	8.957	0.000
The class session was interesting	4.46	0.806	4.08	0.645	6.750	0.000
The class session was motivating and engaging	4.27	0.657	3.94	0.782	4.427	0.000
The class session was useful	4.4	0.741	3.79	0.901	3.584	0.000

Source(s): Authors' own creation

(4.36). This shows that gamification enables students to become active in the classroom. Therefore, such active participation and engagement would positively impact lifelong learning and retention (Ashwin, 2005; Murphy, 2005). In addition, gamification provides opportunities to develop teamwork, collaboration and interpersonal social skills among students (Hoffjan, 2005). However, Fowler (2006) noted that the test scores of student groups using traditional pedagogy were similar to those of the group with active learning pedagogy.

A paired sample *t*-test was conducted to examine whether there was a statistically significant impact on classroom engagement in response to introducing gamification in teaching accounting courses. It is noteworthy that the *p*-value (0.000) is significant at the 1% level for all the statements, and hence, there is enough statistical evidence to conclude that there is a significant difference in the students' engagement in gamified and non-gamified classroom environments in teaching accounting courses. Since the mean value of the statements in the gamified classroom is greater than their mean value in the non-gamified classroom, it is concluded that students' engagement is perceived to be significantly high in the gamified classroom. Therefore, teaching accounting courses using game elements enhances student engagement in the classroom. This finding supports the results of previous studies (Bee & Hayes, 2005; Ke & Grabowski, 2007; Nitkin, 2011; Papastergiou, 2009; Zafar, Mueen, Awedh, & Balubaid, 2014). It is worth noting that although students rated the gamified classes significantly higher for all nine items than the traditional classes, the order of significance is as follows: increases critical thinking, increases self-confidence, the class is useful, increases collaboration with other students and teamwork, retains the knowledge gained, makes learning simple and easy, the class is interesting and engaging and enhances learning ability and understanding.

The influence of students' profile on engagement

This section analyzes students' perceptions of gamification based on their gender and academic performance. Gender may influence students' perceptions of and engagement in both gamified and non-gamified classes. Intrinsic differences could lead one to be more attracted to games; hence, their perception of and engagement in both gamified and non-gamified classes may differ. Likewise, students past academic performance may influence their level of perception of gamification and their engagement in gamified and non-gamified classes. Academically good students may view gamification as a grade enhancer or distract from divertissements. The influence of students' gender on the perception of engagement in the gamified classroom and the non-gamified classroom was analyzed using an independent *t*-test, and the results are given in Table 5(a).

The *t*-value of students' perception of engagement in the gamified class was 2.357. Since the *p*-value is less than a 5% level, there is a significant difference between male and female students' perceptions about engagement in the gamified classroom. However, the *p*-value of perception on engagement in non-gamified classes is greater than 5%; hence, there is no significant difference between male and female students about engagement in the non-gamified classroom.

Another *t*-test was conducted to analyze whether there was a significant difference among male students in the gamified and non-gamified classes, and the results are depicted in Table 5 (b). The mean score of perception of class engagement in the gamified environment (4.27) is increased by 0.31 among male students compared with the mean score of the non-gamified environment (3.95). The *t*-value of male students' perceptions in the gamified and non-gamified classrooms was 3.45, and the *p*-value was significant at the 1% level. Similarly, the *t*-value for female students is 7.481, which is significant at the 1% level. Therefore, statistically, there is sufficient evidence to conclude that male and female students have positive engagement in the gamified classroom.

A higher increase in the mean score (0.64) was found among female students regarding their perceptions of engagement in a gamified classroom environment. Therefore, it is evident

Table 5. Analysis of the influence of gender on classroom engagement

Perceptions of engagement	Male (N = 58) Mean	S.D.	Female (N = 73) Mean	S.D.	t	Sig.
(a)						
Gamified class	4.27	0.424	4.44	0.362	2.357	0.020
Non-gamified class	3.95	0.577	3.79	0.642	1.463	0.146

Engagement perception by	Gamified class Mean	S.D.	Non-gamified class Mean	S.D.	t	Sig.
(b)						
Male students (N = 58)	4.27	0.424	3.95	0.577	3.450	*0.001*
Female students (N = 73)	4.44	0.362	3.79	0.642	7.481	*0.000*

Source(s): Authors' own creation

that the positive impact of gamification on classroom engagement is greater for female students than for their counterparts. The results of this study corroborate the findings of Codish and Ravid (2017) that female students have higher enjoyment in the gamified class. However, this is inconsistent with the result of Pedro, Lopes, Prates, Vassileva, and Isotani (2015), who found that gamified classes had a positive motivational effect on male students.

This section compares students' perceptions of the gamified and non-gamified based on the performance category. The result in Table 6(a) reveals that the "satisfactory" category of students has the highest perception of the non-gamified classroom environment among the other categories of students, while the "very good" category has the lowest engagement. In contrast, the "very good" category of students had the highest perception of engagement in a gamified class environment. The highest mean score was among the "very good" category students (from 3.50 in the non-gamified mode to 4.73 in the gamified mode), followed by "satisfactory" and "good" category students. The perception of "excellent" category students increased marginally from 3.81 to 4.06 in the gamified mode. The difference in the mean value

Table 6. Analysis of influence of academic performance on classroom engagement

Engagement perception	Satisfactory (N = 8) Mean	S.D.	Good (N = 76) Mean	S.D.	Very good (N = 26) Mean	S.D.	Excellent (N = 21) Mean	S.D.	ANOVA test F	Sig.
(a)										
Gamified class	4.45	0.358	4.31	0.410	4.73	0.205	4.06	0.128	16.05	*0.000*
Non-gamified class	4.06	0.412	3.97	0.742	3.50	0.212	3.81	0.253	4.39	*0.006*

Engagement perception by	N	Gamified class Mean	S.D.	Non-gamified class Mean	S.D.	t	Sig.
(b)							
Satisfactory performing students	8	4.45	0.358	4.06	0.412	2.022	0.063
Good performing students	76	4.31	0.410	3.97	0.742	3.482	*0.001*
Very good performing students	26	4.73	0.205	3.50	0.212	21.234	*0.000*
Excellent performing students	21	4.06	0.128	3.81	0.253	4.061	*0.000*

Source(s): Authors' own creation

of "excellent" category students is comparatively less because they appear to be endowed with a natural capacity to absorb content without the props of gaming.

The influence of students' academic performance on their perceptions of the gamified and non-gamified classrooms was analyzed using a one-way ANOVA, and the results are presented in Table 6(a). The *F*-value of students' perception of gamification was 16.05, which was significant at the 1% level. Therefore, it was found that students' academic performance significantly influences their level of perception of gamification in teaching accounting courses. Similarly, academic performance influenced students' opinions on engagement in the non-gamified classroom at a 1% level of significance.

To analyze whether there is a significant difference among each of the academic performance categories in gamified class and non-gamified classes, a *t*-test was conducted, and the results shown in Table 6(b).

The *t*-value of the "satisfactory" category of students in the gamified and non-gamified classrooms was 2.022, and the *p*-value was not significant at the 5% level. The *t*-value of the "good" student category was 3.482, which is significant at the 1% level. Similarly, the *t*-values of "very good" and excellent students' categories were 21.234 and 4.061, respectively, which are significant at the 1% level. Therefore, statistically, there is sufficient evidence to conclude that, except for the "satisfactory" category, all other categories of students have positive engagement in the gamified classroom.

The "very good" category of students could be considered aspirants to move on to the excellent category. Most of them would strive to scale to newer heights. Therefore, their higher engagement can be easily understood from the backdrop of the present study. "Satisfactory" category students experienced a marginal improvement in the gamified class. This marginal improvement shows that they appeared to be reliant on the assistance of teachers. It is pertinent to mention that they are the only group of students who rated engagement in non-gamified teaching at the highest level. Although this study analyzes the effect of past academic performance on the level of engagement, the latter is expected to invariably motivate students' achievements. Thus, gamification benefits students in several ways, such as increasing performance (Mekler, Brühlmann, Opwis, & Tuch, 2013), increasing student attendance (Adegoke, Salako, & Ayinde, 2013), increasing participation (Barata, Gama, Jorge, & Gonçalves, 2013), faster learning (Mayer & Johnson, 2010) and reducing the number of failures (Charles, Charles, McNeill, Bustard, & Black, 2011), among other benefits.

Perception of gamification

As mentioned earlier, one of the aims of this study was to measure the students' perceptions of gamification. Table 7 shows the descriptive statistics of the students' perceptions of the gamification of teaching accounting courses.

The mean value of the items ranges between 3.34 and 4.04, with most of the mean values being approximately 3.60. Therefore, it could be inferred that the students had a positive perception of accounting class gamification. Students tended to like learning accounting courses through gamification.

The data in Table 7 show that gamification increases classroom competition (4.04) and encourages students to put more effort into their studies to be successful in the games (3.82). It also improved self-confidence (3.82) and enhanced interaction among students (3.80). Moreover, it improved their interest in learning (3.73) and enabled them to recall what they had learned easily (3.76). Students have rated "I feel my ability to understand the accounting concepts is enhanced" with a moderate value (3.34). This implies that gamification helped students understand accounting concepts at a moderate level. The standard deviation of the items used to measure the students' perception of gamification ranged from 1.391 to 0.818, and such a smaller value indicates that the actual response of the participants was significantly closer to the mean value of the items.

Table 7. Descriptive statistics – students' perceptions of gamification

Items	Mean	Std. Dev.
Game-based method of learning increases my interest to learn	3.73	1.391
I put more efforts to study to be successful in the game	3.82	0.818
Competition with other teams in the game increase my motivation to learn	3.73	1.196
Due to participation in game, I feel my interaction with other students has increased	3.80	0.956
I want gamification methods to be used in other courses as well	3.50	1.326
Earning points associated with gamification motivates me	3.70	1.121
The gamification method enables me to identify areas of self-improvement	3.52	1.321
I feel learning through gamification methods is fun	3.58	1.295
My participation in the game made me realize the importance of collaboration	3.47	1.105
I feel scoring high in the games are important for me	3.66	1.225
Gamification method contributes to information exchange among teammates	3.71	1.004
Gamification method enables me to recall what I learn easily	3.76	0.937
I feel bad if my team is unsuccessful in the game	3.58	1.196
Participation in the game improves my self-confidence	3.82	0.916
Gamification method helps me to become more ambitious for success	3.63	1.112
Gamification method increases classroom competition	4.04	0.906
Gamification encourages the habit of additional reading	3.47	1.230
Gamification method enables me to practice time management skills	3.40	1.213
I feel gamification helps me learn difficult topics easily	3.50	1.186
I feel my ability to understand the accounting concepts is enhanced	3.34	1.352
Each member of my team individually contribute towards team achievement	3.51	1.224

Source(s): Authors' own creation

Conclusion

Building skill sets and knowledge through higher education is vitally important for all learners. Learners' classroom learning experience acts as a catalyst for acquiring new skills and knowledge. If the learner acquires skills and knowledge through pleasant learning experiences, it can be further improved by self-learning. Thus, it paves the way for imparting lifelong learning skills. Providing better learning experiences is a dynamic process for every educational institution and a challenging task for course tutors. However, gamification provides an opportunity for course tutors to experiment with and embrace contemporary teaching methods. As present-day learners are proficient in technology, blending technology with conventional teaching has gained greater attention among education providers. Blending games with conventional teaching methods is one such strategy for this purpose.

In this study, we attempted to examine the effect of gamification on students' classroom engagement in accounting courses. The results show that teaching accounting courses using game elements enhances student engagement in the classroom. Moreover, this study also reports that female students' classroom engagement could be improved in a better way by gamifying accounting courses. This study also highlighted that students who aspire to move on to an excellent academic category exhibit higher engagement in the gamified classroom. Overall, students' engagement in the gamified class was perceived to be significantly higher than that in the non-gamified class. The gamified teaching approach of accounting courses is promising and enhances students' engagement, increases their critical thinking skills and self-confidence and enhances learning experiences.

This study shows that students have a positive perception of gamification and tend to like learning accounting courses through gamification. Blending game elements supports active learning by capitalizing on the entertainment value of the activity (Lippincott & Pergola, 2009). Engaging students in the learning process increased their interest, thereby making the class more interesting. It also increases attention and focus, which results in knowledge

retention. Furthermore, it enhances students' self-confidence, motivates them to practice higher-level critical thinking skills and promotes meaningful learning experiences.

Implications of the study

Learning accounting is ascribed to either being boring or challenging for students, especially those who are not mathematically inclined, particularly when the subject is taught in a very traditional way. For teachers, maintaining students' interests and motivation throughout the learning process is also a challenge. This study examined the impact of gamification on student engagement. The implications of this study are discussed below.

Both genders of the students' engagement in the gamified classroom could be improved. In view of these findings, HEIs in the Sultanate may focus on gamification methods to teach accounting courses for both genders. Through gamification, students' boredom, lack of interest and even lack of motivation may be minimized, if not completely eradicated. Using game elements has the potential to arouse the interest of students, thus making them more active and engaged in class activities. Silent students and even misbehaved ones were encouraged and motivated to participate. They found this method appealing and interesting. This eliminates dull moments in the class. This is because some students find accounting to be difficult and boring. It is believed that students who are more exposed to gamification perform better than those taught using the conventional method. This can also be an effective tool for improving students' performance. Incorporating game elements in teaching accounting courses leads to increased student engagement and thus could enhance overall learning experiences. Based on these attributes, it is recommended that HEIs in the Sultanate consider the use of gamification in accounting courses.

The findings also have broader implications for accounting education and its impact on the workforce. The effectiveness of accounting education extends beyond the classroom by directly influencing future accountants' quality and preparedness. As gamification has been observed to increase student engagement and performance in accounting courses, there is a strong need to allocate more attention and resources to improve its methodologies. HEIs can utilize innovative methods such as gamification to produce better accounting graduates. This improvement in the classroom environment will subsequently affect the economic effectiveness of the accounting profession. Therefore, graduates from gamified learning environments may possess problem-solving skills, adaptability to technological changes, teamwork and collaboration abilities and increased motivation levels, thus mirroring their educational experience.

The positive impact of gamification on accounting education suggests the need for continued research and development in this field. The curricula and teaching methods in accounting should be constantly reviewed and revised to include efficient gamification techniques so that the education system remains aligned with changing industry requirements and technological progress. HEIs can enhance the quality of accounting education by utilizing gamification, thus impacting more effective, adaptable and engaged accounting professionals. Subsequently, this can result in enhanced organizational performance as well as dynamic development within the accounting profession, thereby leading to economic development.

Limitations and future research directions

The present study was confined to a specific institution to administer the experiment effectively. Students who studied the introductory-level accounting course were included in this experimental study. Therefore, the homogeneity trait of the participants might have impacted the results of the study to a certain extent. There are several constraints on the implementation of game elements in teaching, such as resources, time and content coverage, which have not been discussed in this study. The duration of the game was not studied in this study. Hence, a change in the game duration may have affected the results of the study. Furthermore, this study did not analyze whether student engagement affected learning or

improved academic performance because of gamification. This study examined the influence of gender and previous academic performance on student engagement. However, there may be other factors that influence students' engagement perceptions that were not included in the study. This study can be further enhanced by using a larger sample size across different levels of accounting and/or other business courses. The effect of gamification on students' academic performance can also be empirically explored. A study could also be conducted to understand whether learners' engagement perception diminishes if gamification is used over time.

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