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Effects of Using Gamification on Accounting Students' Motivation, Enjoyment and Academic Performance in learning Introductory Accounting at Libyan Universities

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Abstract

Gamification can lead to better learning when properly applied in educational settings. However, In Libyan education context, gamification is not applying in many institutions. Therefore, this study aims to identify effects of gamification on accounting students' motivation, enjoyment and academic performance in learning introductory accounting at Libyan universities. A sample of 154 students (77 students per each group: Control group and experimental group) which study introductory accounting course was participated from two public Libyan universities: University of Benghazi and University of Tripoli, which are the first two universities in Libya, in the classification for the year 2023, according to the website: https:\\www.webometrics. The University of Benghazi's students were the control group. Whereas, the University of Tripoli's students were the experimental group. A questionnaire was distributed to both groups on their motivation, enjoyment and academic performance in learning introductory accounting. As for the control group, it had been spend this month explaining lectures in a traditional and usual way. On the other hand, the experimental group was applying Kahoot! game at the end of each lecture to enhance their understanding of the lecture's topic through gamification "once a week a full month". After the month has passed, a questionnaire was distributed again to both groups. By comparing the results of their two

answers on the questionnaire was find out the effects of using gamification on accounting students' motivation, enjoyment and their academic performance in learning accounting at Libyan universities. Suitable statistical tool had been used for data analysis which is (SPSS) by extracting Cronbach's α, Percentage and Frequency and Descriptive statistics, Arithmetic Mean and Standard Deviation and T- Test. Simple Linear and Multiple Regression, Correlation test.
Keywords: Gamification, Accounting Students, Students' Motivation, Students' Enjoyment, Students' Academic Performance.

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 (Chung et al., 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 (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 (Buckley & Doyle, 2016; Dichev & Dicheva, 2017; Huang et al., 2019; Park et al., 2019; Sailer et al., 2017; Stott & Neustaedter, 2013; Toda et al., 2019; Yildirim, 2017; Zatarain 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 (Rosli et al., 2018; Sánchez-Martín et al., 2017). 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).

In fact, the basis of gamification in the field of education was discovered a long time ago, in almost every subject, whether straightforwardly or not. The evidence of this is: When asked about previous positive instructional experiences, it is very obtaining in common from students like: That teacher was great, he/ she taught us as it was a game, we learned as we were playing or his / her classes were as telling a story (Sailer et al., 2017).

Problem Statement

Accounting is viewed as a difficult, boring, repetitive, quantitative subject, and many other negative perceptions (B.N. et al., 2014; Shah, 2017). Students often face difficulties in understanding accounting issues, which negatively affects their performance, and leads them to fail due to the use of traditional teaching approach, which have poor elements of enjoyment that do not have any elements of gamification applied during its use (Masli, 2020;

Pechenkina et al., 2017; Rosli et al., 2018; Velasco et al., 2019). Consequentially, instructors of accounting courses face significant challenges in capturing their students' attention and interest to eliminate their bad perception towards accounting (Mardyatul & Wan, 2018).
In Libya, particularly, the students are not motivated in studying accounting, and their performance and achievement are still unsatisfactory due to their bad perception of the field. Besides that, the use of traditional approaches in teaching accounting are monotonous and lacking in enjoyment for the students (Masli, 2020; Pechenkina et al., 2017).
The emergence of this problem has created a need for finding a path that motivates the students to learn, raise their achievement level, and help instructors to make their students interested in the topics they teach and lead them to achieve their goals and attain success in their studies.
Therefore, the problem of this study lies to determine the extent to which the use of gamification approach affects the educational process and whether this approach has an effect on students' motivation to learn the introductory accounting course, their enjoyment of studying it and their academic performance in this course by identifying the appropriate characteristics of the games to be applied in the educational process, as well as, determining whether the teaching style has an effect on the relationship between the use of gamification and the instructors' competency needed in IT skills. Gamification is therefore a suitable solution for such a problem, and a powerful approach which is positioned to provide a variety of advantages over the traditional lecture pedagogy for motivating and engaging the students in the learning process. Gamification transfers the tedious and serious knowledge process into a gamified flow with the purpose of providing a more enjoyable and entertaining learning environment for the students to educate, train, or change their behaviours. Consequently, gamification can be helpful toward students, This is supported by (Ed et al., 2019). Moreover, {Formatting Citation} also confirmed that the game approach was effective in improving students' knowledge of accounting principles, encourage competitiveness, teamwork, decision-making ability and more motivational than the traditional approaches. Several studies conducted in different countries, universities, and schools found that there is a positive effect of using gamification in the educational process (Huang et al., 2019; Hursen & Bas, 2019; Özdener, 2018; Sánchez-Martín et al., 2017; Subhash & Cudney, 2018; Tsay et al., 2018; Yildirim, 2017; Zatarain Cabada et al., 2018). However, some studies have reported that there is a negative effect of the same matter (Micarelli et al., 2016; Toda et al., 2018). Yet, some other studies have concluded that there are both effects, positive and negative, in using gamification in the educational process (Subhash & Cudney, 2018; Zhonggen, 2019).
Since the effectiveness of using gamification has not yet been studied in the accounting departments of Libyan universities, this study therefore aims to investigate the effects of using gamification on accounting students' performance and motivation at Libyan universities (Masli, 2020; Pechenkina et al., 2017)

Objective of Study

The Main Objective of this study is

- To identify any positive effect of using gamification on accounting students' motivation, enjoyment and academic performance in learning introductory accounting at Libyan universities.

Question of Study

The study revolves around the main research question that can be summarized as follows:

What is the effect of using gamification on students' motivation, enjoyment and academic performance in introductory accounting at Libyan universities?

Literature Review

Many studies have been done on gamification teaching and learning approach:

In the study of {Formatting Citation}, the positive results were evident on development of different skills. This positive results were again evident in a study on the "Evaluation of a gamification and flipped-classroom program used in teacher training: Perception of learning and outcome". The study stated that there was a positive effect of using gamification and activities in a flipped-classroom. The positive effect was evident on the students' learning and their motivation to learn (Gómez-Carrasco et al., 2020). Another study also confirmed that combining gamification-based learning with problem-based learning will have an effective positive effect on the learners (Panis et al., 2020).

In addition to that, using gamification in education is an effective and successful way to motivate students. It was concluded in a study conducted by studied Sánchez-Martín et al (2020) that gamification increased students' motivation in learning and helped develop their learning skills. Moreover, this method helped in developing the scientific and technological content of the subjects to be studied. The participants of the study: "Participants' Responses to Training on the Utilization of Online Gamification Features in Primary School Learning" reported that integrating gamification in the learning process better than prohibiting using their smartphones in classrooms because it will lead to learning with enjoyment (Rosali, 2021). And in another research on the use of Quizizz in the classroom, the results confirmed the positive effect of this educational tool on attracting students, their interaction with the lesson, their enthusiasm for taking exams through Quizizz and their good performance in these exams (Handoko et al., 2021). The purpose of Halim et al (2021) study was to identify the students' perception of using gamification in accounting education. It was found that the majority of students participating in this study reported that the use of gamification in the educational process increases their motivation to raise the level of their academic performance, critical thinking and teamwork in the classroom. They also confirmed that the student's gender has no statistical significance in explaining the difference in perception between male and female students. This was exactly confirmed by Krisanti et al (2021) on the effectiveness of gamification in the educational process. In another study, the results showed that students' use of games in studying accounting curricula had a positive effect on their motivation to study (Silva et al., 2021).

The results of another study showed positive effects in the use of gamification in class by improving learning process performance through the use of points and team leader board-based intervention. However, there was no significant effect on students' competence. The study therefore called for a careful regard of item difficulty and students' challenges when designing games or quizzes (Sailer & Sailer, 2021).

Gap of Study

Based on the aforementioned presentation of previous studies related to the use of gamification in education, it can be said that there are three gaps that this research try to fill and cover:

Practical Gap: In Libya, in general, the proportion of students studying accounting is lower than other majors because of the lack of interest among students to study accounting, and

their performance and achievement are still unsatisfactory due to their bad perception of the field and the use of traditional approaches in teaching, which are monotonous and lacking in enjoyment and excitement (Masli, 2020; Pechenkina et al., 2017). Wherefore, this study tries to exam another method in teaching accounting, which is a gamification method. This method has some elements that motivate and excite students to learn accounting.

There is also an **Industrial Gap**: represented in the lack of accounting graduates in the labor market. So much so that, not so long ago, accounting graduates were exempted from compulsory military service because the country needed them. Therefore, there is an urgent need to engage students to choose and study accounting, succeed and graduate from accounting departments to bridge the gap related to them in the labor market. Wherefore, this will be done by using motivation and enjoyable teaching methods for teaching accounting (Al Mahjoub, 2017; Amarif et al., 2018; Al- Nehwi et al., 2018).

As for the **Theoretical Gap**: it lies in the absence of literary studies covering this topic in Libya, compared to its extensive study in most countries of the world (Masli, 2020; Pechenkina et al., 2017). Moreover and based on previous studies, the academic performance of students has been studied alone as a dependent variable in some of these studies - and this is what the researcher thinks is not enough, so this study added two variables which are: motivation and enjoyment to add something new to the body of knowledge.

Methodology

Purpose of Study

The purpose of the study was to evaluate the effects of the gamification approach on students' motivation, enjoyment and academic performance in learning introductory accounting at Libyan universities. This involved the use of Kahoot! game that was used as an intervention tool to evaluate and examine the opinion of students.

Data Collection and Analysis

Data collection in this study was taken from two public Libyan universities: University of Benghazi and University of Tripoli, which are the first two universities in Libya in the classification for the year 2023, according to the website: https:\\www.webometrics.

In this study, suitable statistical tool will be used for data analysis which is (SPSS) by extracting Cronbach's α, Percentage and Frequency and Descriptive statistics, Arithmetic Mean and Standard Deviation and T- Test. Simple Linear and Multiple Regression, Correlation test. As used in many studies similar to this study (Erhel & Jamet, 2019; Jagušt et al., 2018; Özdener, 2018; Tsay et al., 2018).

Sample of Study

The researcher chose 154 students (77 students per each group: Control group and experimental group)

Sample Size = 86

Considering 20% drop out rate n=103

Considering the Design effect: DE=1+ p(C-1) = 1+ 0.01(52-1)

DE= 1.5 Final Sample Size = 103 *1.5 = 154 (77 students per each group)

Instrument of Study

A questionnaire has been used as an instrument to achieve the objectives of the study.

- The questionnaire was about the effects of gamification on students' motivation, enjoyment and academic performance in learning introductory accounting at Libyan universities.

A scale for the measurement of the effect of gamification approach on students' motivation, enjoyment and academic performance in learning introductory accounting at Libyan universities is developed using a 5- point Likert-type scale (SD: Strongly Disagree, D: Disagree, N: Neutral, A: Agree, SA: Strongly Agree). Moreover, it was adapted from (Acosta-Medina et al., 2021; Nabhani et al., 2020). Many studies which are related to this study have used a similar questionnaire, such as: (Bourgonjon et al., 2010; Erhel & Jamet, 2019; Hamilton-Hankins, 2018; Özdener, 2018; Qu et al., 2017). It comprises of six main sections. First, demographic questions about the participants, include: Gender, Age, University Name and Student Number.

The other sections, specific questions regarding students' motivation, enjoyment, academic performance, respectively. Furthermore, two open-ended questions were also added to the experimental group. They were at the end of the questionnaire, specifically after the sample had completed a full month of applying Kahoot game.

Results and Discussion

The purpose of this study was to identify the effects of using gamification on accounting students' motivation, enjoyment and academic performance in learning introductory accounting at Libyan universities. In the research conducted on accounting students at Libyan universities, it was found that using gamification positively increased their motivation, enjoyment and academic performance in learning introductory accounting. The results obtained from the study showed that there is significant increase in the motivation, enjoyment and academic performance scores of students on learning introductory accounting before and after using gamification - Applying Kahoot! Game- within the experimental group.

Results

Comparison of Mean Score of Control and Experimental Groups on Pre- and Post-Test in Tripoli University for Using of Gamification

Students' Motivation

The mean and standard deviation among the differences (mean) and the t-value (t), degrees of freedom (df) and *p*-value (Sig.) for pre-test and post-test between control and experemntal groups in University of Tripoli for using of gamification. In this example $p = .000$ (which means $p < .001$), suggesting a significant mean difference in students' motivation scores between the pre-test and post-test periods among accounting students in Libya. There is a significant difference in the mean scores and S.D for pre-test of students' motivation (M= 3.86, S.D = .872) and mean scores for post-test of motivation (M =4.507, S.D = .391). The results indicate the improvement in motivation of mean from 4.507 to 3.864 an improvement of 0.642 (increase 16.6%) and 95% Confidence Interval (.4741, .8115) was statistically significant $t(77) = 7.589$, $p = 0.000$. Therefore, there was significant difference ($p<0.001$) within the experimental group for student' motivation among accouinting students in University of Tripoli based on the pretest and the posttest results.

Students' Enjoyment

The mean and standard deviation among the differences (mean) and the t-value, degrees of freedom (DF) and p-value (Sig.) for pre-test and post-test. The results indicated that there is

a significant difference in the mean scores and S.D for pre-test of students' enjoyment (M= 3.413, S.D = 1.469) and mean scores for post-test (M =4.410, S.D = .949). The result indicates the improvement in enjoyment of mean from 3.413 to 4.410 an improvement of 0.996 (increase 29.18%) and 95% Confidence Interval (.7730, 1.219) was statistically significant t (77) = 8.883, p = 0.000. Therefore, there was significant difference (p<0.001) within the experimental group for student' enjoyment among accounting students in University of Tripoli based on the pretest and the posttest results.

Students' Academic Performance

The mean score and S.D for pre-test of students' academic performance (M= 4.101, S.D = .2.163) and mean scores and S.D for post-test (M= 4.385, S.D=2.027). The result shows the improvement in academic performance of mean from 4.101 to 4.385 an improvement of 0.283 (increase 6.9%) and 95% Confidence Interval (.1841, .3836) was statistically significant t (77) = 5.665, *p* = 0.000. Therefore, there was significant difference (*p*<0.001) within the experimental group for students' academic performance among accouinting students in University of Tripoli based on the pretest and the posttest results

Comparison between Control Group in University of Benghazi and Experimental group in University of Tripoli

Students' Motivation

The mean and standard deviation among the differences (mean) and the t-value with *p*-value for pre and post-test between conterol group in Universty of Benghazi and expermental group in Universty of Tripoli for using Gamification. The finding reaveled that there is a significant difference in the mean scores and S.D for pre-test of students' motivation (M= 3.844, S.D = .8952) and mean scores for post-test (M =4.507, S.D = .391). The result shows the improvement in motivation of mean from 3.844 to 4.507 an improvement of 0.66 (increase 17%) and 95% Confidence Interval (.4164, .9044) was statistically significant t (77) = 5.391, *p* = 0.000. Therefore, there was significant difference (p<0.001) within the experimental group for student' motivation in Universty of Tripoli based on the pretest and the posttest results.

Students' Enjoyment

The mean and standard deviation among the differences (mean) and the t-value , degrees of freedom (df) and *p*-value (Sig.) for pre-test and post-test. The results indicated that there is a significant difference in the mean score and S.D for pre-test of students' enjoyment (M= 3.334, S.D = 1.189) and mean scores for post-test of enjoyment (M =4.410, S.D = .949). The finding shows the improvement in student' enjoyment of mean from 3.334 to 4.410 an improvement of 1.07 (increase 32.27%) and 95% Confidence Interval (.7730, 1.219) was statistically significant t (77) = 6.663, *p* = 0.000. Therefore, there was significant difference (p<0.001) within the experimental group for student' enjoyment in University of Tripoli based on the pretest and the posttest results.

Students' Academic Performance

The mean score and S.D for pre-test of students' academic performance (M= 3.879, S.D = .841) and mean score post-test of academic performance (M= 4.385, S.D=2.027). The result shows the improvement in students' academic performance of mean from 3.879 to 4.385 an improvement of 0.499 (increase 12.8 %) and 95% Confidence Interval (.7544, 1.397) was statistically significant t (77) = 2.085, *p* = 0.040. Therefore, there was significant difference

($p<0.05$) within the experimental group for students' academic performance between University of Tripoli based on the pretest and the posttest results.

Open Ended Questions and the Responses (Experimental Group)

At the end of the questionnaire, two open-ended questions were also added to the experimental group. They were about their opinion on using gamification method in learning accounting. As well as, for giving any opinions or comments on the matter. As a result, the majority of the sample's responses supported the using gamification method in learning accounting because it is a very good approach - according to their opinions - due to increasing their motivation and enjoyment in learning accounting and increasing their academic performance. Seven of them pointed out a particularly important point, which is the role of universities in supporting such programs, including the Internet services and classrooms equipped with advanced electronic devices. As well as training students and faculty members on such programs. They also expressed their desire to use this approach in other accounting courses and other subjects in universities.

Discussion

To examine the effect of using gamification on students' motivation, enjoyment and academic performance in learning introductory accounting. It was found that using gamification positively increased their motivation, enjoyment and academic performance in learning introductory accounting. The results obtained from the study showed that there is significant increase in the motivation, enjoyment and academic performance scores of students on learning introductory accounting after using gamification. "After using gamification by applying Kahoot! game". The results indicate the improvement in motivation an improvement of 0.642 (increase 16.6). Additionally, the result indicates the improvement in enjoyment an improvement of 0.996 (increase 29.18%). Furthermore, the result shows the improvement in academic performance an improvement of 0.283 (increase 6.9%). Based on that, the results of this study were consistent with the results of many previous similar studies on this topic, including, but not limited to:
(Acosta-Medina et al., 2020; Chaiyo & Nokham, 2017; Halim et al., 2021; Hamari et al., 2014; Hamilton-Hankins, 2018; Handoko et al., 2021; Hanus & Fox, 2015; Hussin et al., 2017; Krisanti et al., 2021; Licorish et al., 2018; Mardyatul & Wan, 2018; Nitkin, 2011; Panis et al., 2020; Qu et al., 2017; Rosali, 2021; Sánchez-Martín et al., 2020; Shah, 2017; Silva et al., 2021; Tanaka et al., 2016; Zhao, 2019) and (Sailer & Sailer, 2021). Other than that, there were some studies whose results contradict the results of this study - and they are few in any case - They found a negative effect of using gamification. This negative effect was due to the transformation of the educational game into an entertainment games, and neglecting its importance in terms of the educational point of view. What is more, is that playing some of these games becomes an addiction for students, moreover, applying complex and expensive educational games. These studies are: (Aji & Napitupulu, 2018; Micarelli et al., 2016; Roy & Zaman, 2018; Toda et al., 2018) and (Krisanti et al., 2021).

Conclusion

This study was conducted to effect of using gamification approach on accounting students' motivation, enjoyment and academic performance in learning accounting introductory at Libyan universities. Additionally, gamification is considered a modern technique in science education that involves the student's participation as a gamer in a playful

structure. The results of study obtained from the study showed that there is significant increase in the motivation, enjoyment and academic performance scores of students on learning introductory accounting after using gamification - Applying Kahoot! Game- within the experimental group for teaching style among accounting students in University of Tripoli based on the pretest and the posttest results. "After using gamification by applying Kahoot! game". Additionally, a set of recommendations can be made, which are: Future research for the same topic, but with an increase in the sample size, and an increase in the participation of a larger number of Libyan universities, increasing the period of application of educational games for more than one month, as it is advisable to apply them throughout the whole semester, as well as, application of educational games that are more advanced than Kahoot! game, and are closer to accounting specialization such as: ACE, Bet on Accounting, Hasbro Game of LifeTM and Quitch. Also, application of educational games in other accounting subjects. Moreover, limitations several limitations of this study are important to acknowledge. First, because this study was conducted in only two public universities in Libya, these results may not necessarily be extended to other universities due to some political and security restrictions that prevented the researcher from further expanding the scope of the study sample and involving more Libyan universities in the study. Second, this study is limited to the assessment of the effects of using gamification approach on accounting students' motivation, enjoyment and academic performance in learning accounting introductory at Libyan universities by involving Kahoot! game that was used as an intervention tool to evaluate and examine the opinion of students. Third, the duration of applying the Kahoot game to the experimental group was limited to only four weeks, due to Libyan universities entering into frequent protests and cessation study from time to time.

Significance of Study

The intent of this study - in general- is to contribute to the overall knowledge base about using gamification to reach a high students' motivation, enjoyment and academic performance in learning accounting at Libyan universities to the advancement of the country and its progress. As well as, the use of game applications can increase students' motivation and enjoyment in what they study, lead to better educational outcomes and encourage competition among students, teamwork and decision - making ability. Moreover, this study will help Libyan government, university education officials and members of the accounting faculty in Libya to pay more attention to accounting education to improve its effectiveness and meet the requirements of the labor market in this country.

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