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Fostering Online Learning Engagement via Gamification Diffusion among Tertiary Students

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ABSTRACT

The Covid-19 pandermic outbreak has accelerate the adoption of online teaching and learning among formal educational providers such as schools and universities. Online learning is the future of education especially in tertiary education.On the other hand, online learning requires high engagement among students. The lack of engagement to learn through the online medium should be resolved through the implementation of interesting activities during the delivery. Todays learners are no longer digital immigrants. They are digital natives who are users of digital devices starting from an early age. They learn from videos, online applications and games. Therefore, it is important for educators to adopt with the way they learn. By adopting gamification, educators may solve the main problems faced by todays learners which are motivation and engagement. Gamification broadly applied of game design elements in non-game contexts with the goal of promoting users' engagement. Without Gamification, students in class will remain as passive learners and result in lack of engagement in the learning process. Their lack of involvement in their learning tasks not only in terms on behaviour but also intellectual and emotion. This is due to lack of interaction between students and educators by means of accessing, discussing and sharing associated information through webex meeting. Gamification strategies appear as an advantageous tool to increase the motivation and involvement of users during lecture session. The researcher applied action research approach to address engagement improvement through action that is at once a means of effecting better engagement and generating positive knowledge after the gamification adoption in teaching and learning. Data collected among hundred fifty media and accounting students.

1. Introduction

In an era of Covid-19 pandemic where still no concrete answer when the right time for us to declare an endemic situation, technology is the main catalyst in continuing the process of teaching and learning that is best for human beings who are students. This pandemic situation puts a stressful effect on students especially students in higher education because despite the pandemic situation the teaching and learning process runs as usual without semester postponement. This encouraged

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researchers to apply gamification applications to reduce some of the stress among students in this critical situation. In tertiary education, by dint of this current situation, gamification presents the prospect of offering a critical move from traditional asynchronous forms of engagement. On the other hand, developing approaches to foster greater levels of synchronous interaction between tertiary students and coordinator [1,2]. By dint of adapting, educators may solve the main problems faced by todays learners which are motivation and engagement [3].

Online learning is the future of education especially in tertiary education. The method of distance learning eliminate the traditional cassette tape and replace by smart phone for higher speed, interactive, effectively and efficiently. The trends will likely take hold in the next five years, allowing more students access to high quality of education and maintain the engagement with the lecturer from any geografical area [2,4]. Among the popular method is Gamification. Gamification broadly refers to the use of game design elements in non-game contexts with the goal of promoting users' engagement [1]. Without Gamification, students in class will remain as passive learners and result in lack of engagement in the learning process. Their lack of involvement in their learning tasks not only in terms on behaviour but also intellectual and emotion. This is due to lack of interaction between students and teachers or lecturers by means of accessing, discussing and sharing associated information through social media.

Gamification strategies appear as an advantageous tool to increase the motivation and involvement of users. The purpose of this systematic review conducted by Dacre *et al.,* [1] is to identify studies using gamification strategies in distinct intervention contexts and to describe their impact in each type of intervention. Thus, the focus is on the construct (gamification) rather than on a particular area or population.

2. Definition of Gamification

According to Dacre *et al.,* [1] gamification broadly refers to the use of game design elements in non-game contexts with the goal of promoting users' engagement. This is supported by Li *et al.,* [5] and Schöbel *et la.,* [6]. Research is lacking on which determinants of gamification promote engagement and improve problem-solving out-comes in learning. Therefore, the goal of our study is to analyse how gamification can impact engagement, problem solving outcomes and their related constructs such as motivation during teaching and learning. Gamification can be executed both with and without mobile devices. Nevertheless, for the proposed research, we intend to utilize mobile devices. Mobile devices include any types of devices that is portable with Internet connectivity, providing access to social interactions and accessing tools to collect information. In other words, gamification is game-based learning facilitated by wireless technological devices which can be utilised wherever the learner's device is able to receive unbroken transmission signals [7].

3. Studies on Gamification Integration in Teaching and Learning

Application of gamification in education is still progressing compared to other areas such as business, and marketing. Nevertheless, starting from 2011, the number of studies in education has increase. Most implementations are made into Computer Science or IT courses, while other neutral subjects still apply traditional methods of teaching with little involvement of gamification. Majority of reported studies shows positive results from their experiments such as higher engagements [8], increase attendance, participation, and material downloads [9], higher student contribution [2], and others. Also reported that students mentioned gamification to be more motivating, interesting and easier to learn as compared to other methods of teaching [2,9,10].

Today's technology has provided flexibility for teachers and students to engage in academic discourse irrespective of the location. With rapid technological advancements, gamification offers incredible opportunities, especially in the area of higher education. However, there is an ongoing debate regarding the influence of mobile devices on students' academic engagement and performance. Previous studies showed that teacher and students believe that mobile devices are useful for teaching and learning, especially for gamification [2,11,12].

Some teachers found challenges in accessing education resources due to poor Internet connectivity, while others required skills and knowledge about the technology that promote interactive learning [13] and lack of teachers' values beliefs in technology integration [14].

Key success factors that affect the acceptance of gamification within universities are collaboration during studies, the prospect of ubiquitous learning in space and time, and user-friendly application design [15] followed by teacher efficacy beliefs about technology integration [16]. In study by Nouri, Cerratto-Pargman, Rossitto and Ramberg (2014), found that there was no statistically significant difference between the two teaching methods (with mobile support or without mobile support) but that mobile technology could support actions relevant to inquiry-based learning.

Based on Li *et al*., [5] and Schöbel [6], the study indicate that engagement is a central construct for explaining the effects of gamification on problem-solving outcomes. Their results contribute to theory by explaining the meaning and role of motivation, engagement, and their influence on the problem-solving skills learned by the students [17,18]. Furthermore, Li *et al*., [5] contributes to practice by offering suggestions regarding the design of online training programs and how to make them more motivating and engaging to learners. To achieve our goal, Li *et al.,* [5] conducted a randomized experiment by creating a gamified online training program to teach students how to construct and develop value proposition canvases. Recently, only limited of research that aims on gamification in teaching and learning process has mainly focused on the implementation of pre-determined game components. In addition, this method reveals an asynchronous approach to the development of learning practices in educational environment and engagement in their design and adoption. In this research, theory of co-creation applied to examine the expansion process of gamification-based learning as a synchronous among students and coordinators in teaching and learning [1]. Empirical insights suggest that students gain a greater sense of coordinators and inclusivity as part of a synchronous co-creation gamification-based learning expansion and application process [1,6].

4. Gamification Application

Literature identifies several design elements of games that can be integrated into educational contexts. Both traditional and video games tend to have objective, specific rules. Salen and Zimmerman (2004, p. 81) define a game as “a system in which players engage in an artificial conflict defined by rules that results in a quantifiable outcome.” [19]. In a gamified learning intervention, rules structure the learning activity, placing clear limits on the actions a learner can take. This makes it fundamentally different from free-form learning activities, such as essays, projects or presentations. For example, when writing an essay, a student can use an infinite variety of sentences to construct a narrative.

Games have reward systems. Individuals receive rewards for achieving a goal or overcoming an obstacle. Examples are badges or prizes. Interactive Learning Environments identify different types of rewards is SAPS – Status, Access, Power and Stuff [20,21]. The reward is often not directly related to the goal achieved but serves as notice to the player and others that a level of competence has

been achieved. Progress tracking is often enabled and guided by reward systems; progress towards an overall objective is mapped out by a sequence of intermediate goals.

Game playing is associated with trial, error, failure and eventual success through practice, experience, reflection and learning [17]. A key objective of most games is not to forbid failure but to develop a positive relationship with it [20]. Failure is not seen as an end, but as a step on the journey to mastery. Gamified learning interventions seek to maintain a positive relationship with failure by creating rapid feedback cycles and keeping the stakes for individual learning episodes low [3].

In many ways, the paradigm that governs current educational systems has many game like elements. Most assessments strive for objectivity and continuous assessment is seen as desirable [1,20]. Students earn points for completing assignments correctly. These translate into comparable rewards – grades. If they perform well, students "level up" by proceeding to a more advanced course of study at the end of every academic year [3]. What distinguishes gamification most distinctly from more traditional approaches is the explicit use of competition as a motivational tool. This competitive element is a source of motivation. It is often operationalized in the form of a leader board ranking players on the basis of performance in the game [2,22]. These ranking systems serve as motivators because participants see their efforts publicly and instantly recognized [1,2].

5. Gamification Studies in Malaysia

Many studies have been on gamification in Malaysia. Ong *et al.,* [23] assessed the practicality and effectiveness of implementing gamification within education as a viable solution. Through a total of 186 surveys collected, it is found that university students' perceived effectiveness of gamification is largely independent of past gaming experience and personality/learning styles, except for reducing academic amotivation and stimulating intrinsic motivation.

Mohamed Salleh *et al.,* [24] explored the effects of gamification on lower secondary school students' motivation and engagement in the classroom. Two-group posttest-only experimental design were employed to study the influence of gamification teaching method (GTM) when compared with conventional teaching method (CTM) among secondary school students. The Student Engagement Instrument (SEI) and Intrinsic Motivation Inventory (IMI) were used to assess students' intrinsic motivation and engagement level towards the respective teaching method. Finding indicates that students who completed the GTM lesson were significantly higher in intrinsic motivation to learn than those from the CTM.

Thinking of the young generation hobby interested in gamification, providing the cybersecurity materials through a gamification is an idyllic solution to raise the cybersecurity awareness among the young generation [25]. They were motivated and engaged in the educational process by the interactive gamification if there are rewards and clear objectives established. A computer game named "BEWARE" designed and developed with an attractive graphic, leadership board feature, and simulation element that would greatly inspire the young generation to effectively increase their awareness of cybersecurity in a much interesting way in Malaysia. In the BEWARE gamification, the players, as well the Youngs, are given scenarios that were happened in real life to answers [25].

Ismail *et al.,* [26] through the Rasch Model Analysis involving 105 respondents concluded that the use of SMSes managed to be effective in assisting the respondents with their studies. Respondents also agree that '...SMS-learning is safe, easy, effective and useful to help them study.' However, Issham *et al.,* [26] also revealed that it was difficult for the respondents to endorse that their interaction with the lecturer via Gamificationis clear and understandable. On the other hand, Zin *et al.,* [18] investigated students' awareness and requirements of gamification services among Malaysian students in the higher education environment. The results indicate that the higher

education environment has the required infrastructure to utilize gamification services [2]. Furthermore, the results show that the students have adequate knowledge and awareness to use such technology in their education environment. In another study, Hashim *et al.,* [27] conducted a study using Mobile System Analysis and Design (MOSAD) to investigate the satisfaction level towards Gamificationand the results indicated that the MOSAD application usability level was good and it could be a useful revision tool for the students of higher education.

6. Conclusion

Gamification diffusion has motivated students to deepen their knowledge of the subject taken. This has a positive impact and encourages students to better connect and engage with their lecturers. High engagement leads to a conducive teaching and learning process and has a positive impact and benefits on students in this critical pandemic situation. Better engagement between students and lecturers provides the best learning environment for students to get the best assessment results and instill caring nature in each other. this encourages the growth of thoughtful ideas and mutual help among the students. students' problems can be immersed by educators more clearly. Educators need to use technological supports such as gamification and another technological tools for better engagement with the students in teaching and learning during lecture time. Student given good and positive feedbacks regarding gamification activities in majority of the gamification applied and implementation. Researchers need to explore more interesting tools in fostering better engagement and connection for tertiary education level.

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