

# STUDENTS' PERCEPTIONS TOWARDS THE USE OF GAMIFICATION

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## Abstract

The Higher education system has been facing some difficulties to attract the millennial generation in engaging within the classroom setting using the traditional face-to-face learning environment, leading to other problematic issues in the long run. Millennial students often get bored, less motivated and lose their focus in the traditional learning environment due to the lack of engagement between students, as well as the instructors/ lecturers. Therefore, Higher Education Institutions (HEIs) are encouraging the use of gamification in education for the purpose of improving the intrinsic motivation as well as engagement. This paper reports the students' perceptions towards the use of gamification during their class. This study used observation and questionnaire survey towards a group of second year and final year Quantity Surveying students in the International Islamic University Malaysia (IIUM). Eighty-three students responded to the questionnaire. The results showed a positive perception toward the use of gamification in their lecture. Students require effort-demanding, challenging, sophisticated learning systems that increase competency, enhance recall memory, concentration, attentiveness, commitment, and social interaction. Findings from the study shows that gamification was found to promote the student's engagement in terms of their participation in class, enjoyment throughout the activities as well as their motivational factor to focus in class. Limitations of the study are identified, which highlights the need for further research on the subject area.

**Keywords:** Gamification, HEI, students, perceptions, engagement, motivation.

## INTRODUCTION

[1] mentioned that the theory of student engagement has been in literature for more than 70 years. Even though it appears in diverse terms but it raised to the similar

meaning, that is “students learn from what they do in college” [2, 3]. According to [4] “the concept of student engagement has growing importance in serving two higher education objectives namely development”. At the institutional level, there are certain positive policies and practices highly associated with student engagement which directly increase institutional productivity [5]. Student engagement also helps the administrators to identify activities that engage students and areas of improvement in higher educational institutions (HEIs) [6].

Student engagement is often used as the tools to foresee the learning and personal improvement which the principle is that the more students study or practice a subject, the more they tend to learn about the subject matter [7]. Furthermore, it is considered that the students would adjust more if they constantly practice and receive feedbacks of their work either from writing, analysing or problem solving work. [7] added that the act of being engaged also adds to the foundation of skills and dispositions that is essential to live a productive and satisfying life after college. [8] explained that the students who are involved in educationally productive activities in HEIs develop habits of the mind and heart that enlarge their capacity for continuous learning and personal development. In addition, participation of students either in academic or non-academic activities could lead to the development of sense of belonging towards their friends and lecturers/ instructors and resulting in good relationship with them. Hence, they are able to identify and value the purpose of learning. Others conclude that engaging in various educational activities will affect the quality of life after HEI in a positive way. Moreover, student engagement is crucial to the development of the skills needed for academic achievement and the future employee readiness of HEI graduates.

Rather than engagement, studies have revealed the problems faced by many HEIs with regards to the signs of disengagement showed by the students or lack of commitment from the students [9]. Studies conducted in Australia and United States have proved that not only that the new generation are not as excel as previous generation, the undergraduates have also become less involved with their HEIs. Therefore, implying that the level of engagement in HEIs have worsen. Within the Malaysian context of study, stated that the same scenario of disengagement has also occurred based on the concepts of student engagement in terms of “student-faculty interaction” and “active learning”.

[10] mentioned that the quality of our education system has been brought to manifestation since more than 3 decades before. Even though many strategies have been developed in order to increase the quality of education system, the result was still not favourable. According to Fredricks, [11] changes in pedagogic practice have given significant affect towards the betterment of student engagement. Research done by [12] [13] have found that the majority public and private universities of Malaysia are still practicing lecturer/ instructor-centred style of teaching which resulting in lacked of personal independence. At the moment, the traditional system of teaching which are commonly practice by our public universities no longer fits into the new generation style of learning. Hence, one of the 2018 mandate made from the then Higher Education Minister Datuk Seri Idris Jusoh under the Learning and Teaching 4.0, is the introduction of lecturing without lecturers and also cybergogy as one of their strategic move to redesigning the higher education to ensure all HEIs to be relevant and remain competitive in the dawning of Industry 4.0 [14].

Due to difference in generational factor, it can be said that the traditional system of teaching is becoming less effective for the Millennials generation as compared to the previous generation. According to [9] the traditional method has been mainly accentuating too much on the role of lecturer/ instructors/ lecturers and instructors as the knowledge delivery person which resulting in them being the main focus of the class. This situation has made the students to became in a passive position which then will limit the possibility of the student to enhance their creativity and mould their individual personality. In addition, there have been less opportunity for the student to

think since most of the lecturer/ instructor have been stressing more towards the completion of each topic. The inability to provide thinking space for the student have led them to be passive in the class teaching which will then subsequently be resulting in the constraint of the knowledge to be well developed [9, 15]. The education system should be aware of the teaching style which should take into consideration of the millennials' characteristics such as technology driven, fond toward group work and seeking instant feedback [15-17](

Lack of engagement of students have led to several problems in our society. Hancock & [2] highlighted that there are series of adverse academic and social outcomes that can be potentially give harmful effect towards the disengagement student. Disengagement has been considered to lead to the student's dropout are affecting those students in terms of a greater risk of unemployment, low income, social exclusion, risky health behaviours, and engaging in crime. Furthermore, those who disengaged from school was found to be unprepared for life-long learning [3, 12] Lack of engagement have also affected the student's value of education. Student only see the HEIs/ colleges as a place to gain paper qualification.

Therefore, based on the above clarification, it is seen that the traditional method of teaching is no longer suitable to the new generation. The difference in generation have led to different style of learning that should be considered. The traditional system which uses single mode have limit the opportunity to create the interaction between students due to the fact that their preference of study is more towards. In addition, less usage of technology has become the factor that affect the attractiveness of them to take part in the class interaction. Hence, the interactive learning should be practiced in order to fit the characteristic of these new generation which prefer to learn and work in teams or small group [14] Newer learning methods should involve hands-on learning, whereby students can manipulate objects as well as work in groups to learn the lesson's objectives in a stimulating way. In addition, since the millennials have been grown up in the technology driven environment, the usage of technology in their learning is essential to attract their interest to study [6] [1, 16] added that the understanding of the subject being taught can be enhanced by including the elements of innovative teaching and learning method.

Hence, this paper reports the findings from the study conducted in testing the use of Gamification within the students' learning environment, and to gain their perspectives and acceptance towards the new approach to teaching which is considered to fit the characteristic of the new Millennial generation.

## LITERATURE REVIEW

### Student Engagement

Generally, student engagement is a term widely used to describe the involvement of students not only in class but also outside classroom during learning process which is measurable. There are many other broad terms used to deliver the same message, however, student engagement is the most appropriate to be used in this paper since the scope only focuses on academic learning. In order to learn the student's whole experience in HEIs, this topic is particularly important so that the current teaching could be improve. Student engagement have been given a diversity of description by different scholars through their studies. However, it can largely be referring to a multidimensional or meta construct [18, 19] which consists of several elements through the agreement by some scholars.[18, 19] list (i) behaviour, (ii) emotion and (iii) cognitive as the 3 different dimensions to be looked at in order to view the student engagement.

### **Behavioural perspective**

Engagement have been widely viewed to emphasized on the behavioural aspect in order to actually know the level of enjoyment of student having during period of studies. [5, 20] described how the student engagement is concerning to captures a range of institutional practise and student behaviours in terms of student satisfaction and achievement, including time on task, social and academic integration, and teaching practise. In the same vein, [11, 18, 19] notes that “behavioural engagement draws on the idea of participation; it includes involvement in academic and social or extracurricular activities and is considered crucial for achieving positive academic outcome and preventing dropping out.

### **Emotional perspective**

Emotional engagement or psychology engagement focuses on the extend of positive (and negative) reactions to lecturer/ instructors, classmates, academics, or schools. With the emotional perspective included, the students become more motivated to engage in cognitively and behaviourally actions in order to aim for a better outcome such as great result or qualification. It has been further clarified that the ‘emotional engagement encompasses positive and negative reactions to lecturers/ instructors, classmates, academics and HEIs and is presumed to create ties to an institution and influence willingness to do work.

### **Cognitive perspective**

Lastly, the cognitive engagement draws on the idea of investment; it incorporates thoughtfulness and willingness to exert the effort necessary to comprehend complex ideas and master difficult skills [19]. Similarly, added that a student becomes psychologically invested when she or he expends cognitive effort in order to understand, goes beyond the requirement of the activity, uses flexible problem solving, and chooses challenging tasks.

While there are few researchers have used these three (3) elements to explained the term student engagement [16, 19, 21, 22] there are also few other researchers who view the student engagement from another perspective. discover a fourth dimension from their research which is agentic engagement that mentioned on the contribution of student in addition to the instruction by the lecturer/ instructor. The authors have further explained by describing how students may communicate preference and interest related to class content and the instructor will react by focusing on that content and providing a more in-depth analysis which results in alteration of the flow of instruction. In addition, [5] found out the socio-cultural perspective as well as holistic perspective to understand more on the subject matter. The socio-cultural perspective on student engagement focuses on the impact of the broader social context on student experience and holistic approaches is recognizing the need to consider the student’s own motivation and expectation [1]

Even though there are a variety of aspects the student engagement has been viewed, this paper intends to focus on the student engagement with respect to behaviour and emotional which is more appropriate to be studied in different set of learning experience between the traditional system of teaching and the addition of interactive learning experiences, i.e. Gamification.

## Impact of Traditional Teaching Style to Students' Performances

There are several impacts that have been identified towards students' performances due to the current traditional teaching style; such as academic performance and critical thinking & decision making skills,

### Academic Performance

Student's learning may be affected by the lecturer/ instructor-factor [6, 13, 19, 20] who plays a significant character in a learning process. The social situation which create between lecturer/ instructor and student when they interact with each other will affect greatly on the student's academic achievement [7, 11, 20, 23]. The professional skills and abilities of each knowledge area can be developed through the introduction of change in the pedagogical method as well as the assessment system [12]. [2, 3, 12] also mentioned that the traditional system which exercise lecturer/ instructor as the centre role in education is no longer relevant and student should become the active role in the learning process. Based on the result done by their research, its shows the ineffectiveness of the current teaching using the examination result obtained for three consecutive years.

[21] states that proper teaching technique which best suits the learning objective should be applied by lecturers/ instructors in order to ease the knowledge transmission process to the student. [24, 25] found that the application of ineffective teaching method used by lecturer/ instructor to deliver the knowledge to the learner are often become the leading factor to the regular poor academic performance by majority student. The accomplishment of the learners is the result to show the quality of teaching based on the extensive research on the efficiency of teaching method [21],

### Critical thinking & Decision Making

[3, 12] pointed out that there are other additional skills to be required by students such as critical thinking and problem solving, creativity and innovation, communication and collaboration in order to sustain in today's world aside from outshining in academic performance. This view was supported by Alweihaibi (2012) who writes that critical thinking is recognized as the vital significance in shaping the way students learn and think these days. "Critical thinking has been defined as an important educational goal and is understood to mean reasonable reflective thinking that is focused on deciding what to believe or do" [3, 12]. In addition, learning to think critically and creatively is a lifelong skill with broad applications both inside and outside the classroom [4, 13, 24]

[25] suggested that in order to develop effective critical thinking skills, a well systematic plan of direct instruction is needed. Several research has been done to examine the effect of different teaching method to the development of critical thinking to the student.[2, 3] in their research shows that inquiry-based learning activities using social network and cloud computing could enrich the students' critical thinking as well as assist the growth of their knowledge which will then help them to acquire accomplishment in this information age.[23, 25, 26]) explained how the enquiry-based learning is promoting the acquiring of information or understanding of knowledge by the student through the means of active learning where the students get to explore the issues or scenario given by themselves and hence that's where the learning is self-directed because it is driven by students 'own decisions. Furthermore,[6, 14] concluded that student's self-assessed skills in multiple key abilities which could lead to the success both in classroom and workplace can be improve using various methods by single instructor. Several techniques were identified to give positive impact towards



the student's development of critical thinking which are; multiple written assignment and emphasizing research, providing detailed feedback on scholarship, logic and style, and online classroom discussion to extend the classroom discussion.

However, [8, 10, 14, 16] Cheung previously had argued that some method used sometimes do not facilitate all student to actively participate in the development of critical thinking. For example, the face-to-face classroom debates and discussion are often dominated by the more vocal student and the other student often becomes the passive listener. Hence, this shows that any method use by the lecturer/ instructor should give the opportunity for all student in enhancing their critical thinking skills. Based on these studies, it shows how the teaching method not only affect the academic performance of student but also the development of other skills to students.

### **Student's Preference for Teaching Method**

According to [25] teaching methods can be described as "the means by which the lecturer/ instructor attempts to impart the desired learning or experience in a way that the learners understand and bring behavioural changes". In order to make better effect in learning and to improve current learning environment, it is crucial to encourage a thorough considerate on the student's learning style and preference Hence, [25] suggested that the understanding towards the student's distinctive preference in learning would assist in planning of group and individualize instruction by the instructor.

### **Non-traditional Method**

Several researches suggested that the traditional method of teaching are not the main preference of students [7, 8, 10, 19, 23, 26] ,The most predominant activities preferred by them are the field trip followed by discussion, problem solving and brainstorming which provide the opportunity to develop the interaction with people and express their opinion. Learner centred method or better known as active learning is "any teaching method in which students are directly involved in the learning process, e.g. through collaborative learning, projects, or discussion [1, 15]. On the other hand, study by [26] have showed that most student preferred lecturer/ instructor direction, cooperative learning and knowledge construction. The preference is further explained that the student who adopted deep approach preferred knowledge construction and cooperative learning, while students adopting a surface approach had a preference for lecturer/ instructor direction and passive learning. In addition, didactic teaching method have been considered to be an obstruction for the students in medicine field [10]. Meanwhile, a study to almost 200 dental students indicated that Practical/Clinical method of learning which is more hands-on method are more favoured over traditional lecture based teaching [8] Similarly, the other survey done by presented the same outcome with over 60% chose non-traditional styles of teaching as their preference in learning. To add, student tend to prefer interactive classroom activities over a traditional lecture [26]

### **Mixed Method**

Meanwhile, [15] proposed based on their research that the students may benefit better in terms of their performance and student preference when the active and passive learning is being combined in their courses compared that either method alone. Similarly, the students wished that all method of teaching to be applied in their studies to enhance their understanding and effectively assist them is their future career choice [4]

### Gamification: Definition

There have been many definitions associated with gamification. Table 1 shows several definitions provided by different scholars regarding the terms gamification.

**Defining Gamification**

*Table 1*

Scholars	Definition
[7]	"gamification is the use of game design elements in non-game contexts"
[20]	"the use of game elements and game-design techniques in non-game contexts."
[12]	"the use of game-thinking and game mechanics to engage users and solve problems."
[21]	commented that rather than creating the actual games, gamification is only using the game-technique to enhance the engagement of the user.
[8]	stated that the term is generally applied when the interactive system is using the game element and mechanic with the intention to increase the motivation and engagement of the user
[22]	"referred to as the selective incorporation of game elements into an interactive system without a complete game as the end product"
[8]	"Gamification is an integration of game elements and game thinking in activities that are not games"

**Table 1: Defining Gamification**

Based on the above definition, it can be concluded that gamification is the application of the game element and technique into an interactive system to engage the users in problem solving and critical thinking in the non-game environment.

There are several unique characteristics that features in the gamification which make it exciting to be implemented. [1] have listed out some of the individual features which play a significant part in gamification: users are all participants, challenges/tasks that users perform and progress towards defined objectives, points that are accumulated as a result of executing tasks, levels which users pass depending on the points, badges which serve as rewards for completing actions; ranking of users according to their achievements.

### Gamification in a Classroom Setting

[5, 18] stated that the use of gamification has increased in its popularity around the education world for incorporating the games aspects into the learning processes.[21] stated that there are variety of ways or format that the gamification involvement has been implemented in higher education. [22] that while the widespread gamification application available in the market are in digital forms, there should not be limited to digital technologies only. [2] commented that the concept of gamifying a classroom can simply mean "implementing game components by simply trading out the parlance of pedagogy for that of gaming culture".

[18] in his study have used the method of gamification in his class. It started by giving brief explanation to the students on how the setting would work in their course. First, the element of levels as mentioned in the definition section of gamification is used where the course would be divided in phases, unknown to all until each group unblocked them by completing the previous phase. So, groups could progress independently and compete for the lead. Both groups and individuals could collect points throughout the course according to some criteria which the point would be translated into their grade. Also, the common element of rankings is also being used to published the students' progress through the phases, feedback on deliverables and activities, and points earned.

Another example of the implementation of gamification can be seen from the study by [9] that focused more on narrative (which also includes aesthetical elements such as genre), player interaction, problem solving and action in context than external motivation and creating incentives, though these mechanics also have a place in the scheme of gamification in his teaching.

Table 2 shows how the element of games can be integrated into the teaching and learning environment. From Table 2, it can be indicated that the game element can be beneficial to the education setting in many ways depending on choice of the element to be implemented in the teaching and learning environment. According to [22] the main aims of all gamification is the user-engagement.

Game elements	Meaning in game context for players	How it can be used in a teaching and learning situation
Points, badges and leader-boards	To quantify and visualise a players performance and/ or achievements	These elements can be used in addition to marks and grades to quantify and visualise student performance
Trial and error	Game players have multiple-lives, which allow them to play again and again	It can be used to encourage learning by allowing the student to explore a topic, make analytical decisions and be exposed to the consequences of decisions made
Feedback	Game players tend to receive frequent and targeted feedback related to their performance and/or achievements through the game	While feedback is common in teaching, the use of frequent and targeted feedback during learning (i.e. formative assessment) may enhance students motivation in a learning activity
Progression	The use of game levels or sequence of missions informs the player about their progression in a game	Can be used in teaching to inform the students about their progression, e.g. presenting students with progressive learning objectives with increased difficulty
Narrative	The overarching story that grabs hold of the player through the game	Stories (e.g. case studies or scenarios) can be used in teaching to make links between theories and real-world situations
Multiple Choice	Game players can select between various paths, including level of difficulty, when playing a game.	In a teaching situation, multiple choice can be presented to students to select a path appropriate for them in achieving their learning objectives
Role play	Game players can choose both character (who they want to be) as well as selecting a path to complete a game	In a teaching situation, students can be asked to take on different roles to encourage discussion and debate
Challenge	Game players are challenged with difficult tasks	In education, students are challenged with tasks that engage them to learn
Competition	Many games allow game players to compete with each other	Competition can motivate students to learn
Enjoyment	Games are fun	Learning can be fun

**Table 2: Game Elements, Contexts and How it can be used**

[7]indicated that gamification have shown positive impact to the learning environment as follows:



- significantly higher engagement of students in forums, projects, and other learning activities;
- increased attendance, participation, and material downloads;
- positive effect on the quantity of students' contributions/answers without a corresponding reduction in their quality;
- increased percentage of passing students and participation in voluntary activities and challenging assignments;
- minimizing the gap between the lowest and the top graders.

As the lack of engagement and motivation of the student to actively participate in the learning process, the element of reward in the gamification for the efforts and achieved results by awards would help to increase the motivation of the student to participate in the activity [5]. The taxonomy also states the need to provide feedback and information about progress as well as the social and competitive elements necessary to promote learners' engagement. (Ibáñez et al., 2014). Thus, in the cognitive area, gamification is able to provide students with clear and reasonable tasks, while providing immediate feedback and rewards throughout the whole learning process. [2].

[22] mentioned that in the traditional learning environment, the student often loses the motivation. Moreover, it has been noted that one of the main reasons for this is due to the high inferior feeling toward their peers whom they perceive to be understanding easily. Hence, suggested that that for the educator to include the component of game which is freedom to fail so that it will encourage the players to persist even if they fail. Similarly, the element of progression which only allow the participant to move up to another level also help to trigger the desired action of the student to keep moving forward[2]

Gamification has been considered to help students gain motivation towards studying, and because of the positive feedback they get pushed forwards and become more interested and stimulated to learn. Gamification can constitute a powerful boost to determine them to study/read more (Muntean, 2011). The game element implemented in the learning setting to encourage student to stay active in the class as well as promoting deep approach in learning (Langendahl et al., 2016). Although there are many positive impact predicted from the implementation of gamification, the impact will likely to be affected by the context in which the gamification is being implemented, as well as on the users using it (Hamari et al., 2014).

## RESEARCH METHODOLOGY

For the purpose of this study, both quantitative and qualitative method of data collection technique were adopted. According to [16] by adopting both research strategy, diverse range of perspectives, qualitative and quantitative viewpoints, data collection, and analysis and reference techniques could be incorporated. In this study, a class observation technique was conducted in order to view the behavioural characteristics of students during real class time and to support the data obtained from questionnaire survey. The qualitative research enables the researcher to find out the possible explanation on the social phenomena. It relates to social aspect of our life which usually attempts to answer why things happens and how it happens. Researchers use the qualitative approach to explore the behaviour, perspectives, experiences and feelings of people and emphasise the understanding of these elements. An observation checklist was developed after identifying the variables in measuring the students' engagement behavior. The questionnaire survey was designed to find out the perceptions and acceptance of students on the implementation of gamification within their learning environment. Their emotion and behaviour that are

being record from the observation are then compared with their own perception during the interactive learning environment using gamification.

One course was chosen within the Quantity Surveying programme in the International Islamic University Malaysia as the case study. However, only two levels of students were chosen as the two levels implemented the gamification within their learning environment. The observation sessions were conducted twice for the two levels of study. Within each levels, 10 students were observed in each session where it consists of 5 females and 5 male students. For both of the sessions, the same participants will be observed. The participants chosen are a group of students who sit nearby each other which eases the observer to spot their behavior during a 15 minutes' duration. For the questionnaire survey, a total of 83 students from both the two levels of study had participated as they have experienced both the traditional lecture based class as well as the innovative teaching style which is through gamified learning. Both the data obtained from the observation and questionnaire survey were analysed using qualitative and quantitative method respectively.

## DISCUSSION AND FINDINGS

This section reports the discussion and findings obtained from the study conducted.

### Observation

In term of listening, during the gamification session, it was found that the female students have showed their interest for the activities by giving their attention to the instructor or lecturer. In can also be seen that not only that they focus during the activities, the activities have also raised their attention in the learning outcome as they make their own initiative to take notes on the answers given by the lecturer as well as took some picture for their further references. This results reflects the claimed made by [10] who found that student engagement and in-class participation increased through the integration of the game mechanic in classroom activities. Meanwhile, for the male students, most of them do not really care on the input lecture of the question posted due to the fact that they do not taking any notes or picture during the activities. However, they have showed some of their interest when they nodding and leaning forward during the activities. Nevertheless, they are also some of them, who are not really participated or responsive to the class activities by looking at other things and wandering their eyes around. Besides, some also have frowning or wrinkle their brow. It indicated that they do not really having an interest to the activities and one of the reason might be the location of the groups which is at the far back to the lecturer that making them difficult to listen and focus on the instruction and the activities. Still, this result is contradicted with the typical believed that male usually is more drawn toward game compared to female.

Based on the observation during the activities, it can be seen that the students also have use the technology for the beneficial purposes when they look for the information and their teacher's slide from the previous lesson. The results revealed that these activities have encourage the students to used their phone in a good way. In contrast, there are some of the male students who also abuse the usage of technology during the session by playing with their phone to checks for their WhatsApp and social media. Instead, it was found that the activities of the gamification chosen during the observation does not really boost the student's usage of technology. Hence, it does not really emphasize on one of the elements of gamification which is technology usage that can attract the millennials who are technology savvy.

Meanwhile, in terms of student's interaction, this activity can be seen to inspire the peer teaching among the students. They have works together to solve the question

given to their teams. Both female and male students have showed good students interaction by having discussion and helping each other to answer the question posted for their groups. As compared with traditional teaching, this situation rarely happens during the class as it emphasized too much on the teacher's role as the information delivery.

On the other hand, for interaction with the instructor or lecturer, based on the observation, both female and male students have showed their enthusiastic to answer the question posted when the opportunity is given to the other group to answer the question that the designated team fail to answer. This outcome is supported by [16] who believe that one of the characteristic of the millennials is their strong desire to achieve. Hence, the gamification has awakened their strong longings desires to win the games. Again, typically during the traditional lecture, it is rare for the students to put up their hand when the lecturer asking if there are any question from the audience especially for Asian students. In contrast, they have showed their passionate in participating the activities through the activities. The result corresponding with study done by [9] who found that there are growing number of student who take part in voluntary activities during the course that associated with gamification.

Lastly, in terms of emotion during the gamification session. All of the students both male and females have indicated their enjoyment during the activities and none of them have shown a sign of boredom through their facial expression. Based on the observation, it displayed that gamification activities have improve their emotional engagement during the class time.

### Questionnaire Survey

The result indicates that the majority of the respondents have either agreed or strongly agreed with all the statements that points out on how the gamification have raised the importance of learning towards the students as well as the lecture input is incorporated as part of the gamification activities. 86.8% of the respondents believed that they were challenged and stretched beyond their comfort level. This due to the fact that they are given limited time during the gamification activities to answer a specific question for their teams. Failure to do so will result in losing their opportunities to gain points for their team. Then, the instructor will give the golden chance to answer that question to the other teams. This will make all the members of the team to stay focused with the games. Hence, it will increase their engagement towards the class. This finding confirms with [17] which mentioned that millennials believe that pressure lead them to perform better when being judged and given immediate and continual feedback on progress.

In addition, 90.3% of the respondents found that they have gained interest in the course due to the implementation of gamification element. Similarly, a research conducted by [19]that students agreed that the implementation of games within their learning environment would engage them more, and is found to be an effective learning tool and thus enhance their interest in their course. Furthermore, almost 90.0% of the respondents claimed that the variety of games they played help them to stay interested and focused. The result indicated that the gamification should be designed to include various activities to avoid boredom and keep the students involved and attentive throughout the class activities.

75.9% of the respondents believed that the element of instant feedback helps them to engage better in class. During the activities, after each team answer the questions posted for them, they were given points and if they fail to answer those questions, the instructor will show the correct answer instantly. This finding conforms with who identified that the millennials enjoy the instant feedback given by the instructor. Moreover, the results corresponding with Ibáñez et al. (2014) who indicated that providing feedback and information about progress as well as the social and

competitive elements are essential in encouraging learners' engagement. In addition, the respondents also believed that peer teaching as one of the elements that promote engagement in class. This result was agreed by [8] who stated that the active participation of students makes learning more self-directed. In addition, added that the active involvement of students increases their motivation in learning.

Apart from that, the element of prize for reward has received 77.1% total percentage of respondents who agree and strongly agree. This conforms with [1] as it was stated that the element of reward in the gamification for the effort would help to increase the motivation of the student to participate in the activity. Lastly, technology usage has been perceived as one of the elements that encourage engagement during class time. This is because the activities during the gamification session permit them to use their gadget specifically their smartphone to assist them in answering the question during the quiz game. This finding is in compliance with study by [10] who suggested that usage of "technology and mixed teaching methods will maximize the extent to which younger generations feel engaged".

With regards to enjoyment, the students were asked several questions. The purpose of these questions are to discover the students' level of enjoyment especially related to their emotional engagement during the activities. Based on the survey, over 80% of the total respondents have either agreed or strongly agreed to the first 5 statements under this question that indicate that they are enjoying the gamification activities. The statements including 'I feel genuinely fun', 'I feel happy when playing the game (my energy level rises)', 'I feel that it is great for killing time productively', 'I enjoy the variety of interaction' and 'I enjoy friendly peer competition'. These findings conform with [8] who indicates that gamification provides positive effects. Based on the observation during the activities, it was found that the interaction that occur either with their friends or lecturer are adored by the students. Interestingly, even though majority of the students have showing their enjoyment during the gamification activities, there are about 20% of the total respondents who feel both exhausted and miserable when playing the game. The findings discovered that not only that the gamification can cause an increasing level of enjoyment, it also can cause tiredness to some which might due to the design of the game that permit the students to have some free time while waiting for their turn to answer the question.

The result illustrate that the majority of the respondents have either agreed or strongly agreed with all the statements that indicates positive engagement during the gamification session. This results reflects the claimed made by [8] who found that student engagement and in-class participation increased through the integration of the game mechanic in classroom activities. The positive statements including 'I wanted to explore all the options because it was very challenging', 'I felt that time passed quickly', 'I wanted to complete the game', 'I focused on the activity' and 'When I'm in class, I listen very carefully. All the statements show that the students were interested in participating in the class activities and focused on the activities due to their immersion in the activities provided during the gamification session. [14] supported this statement when he believed that one of the element of gamification which allow the progression of the participants to move up to another level also help to trigger the desired action of the student to keep moving forward. However, almost half of the total respondents (45.7%) agree and strongly agreed that their mind often wanders during the class lesson. This is because during the activities, the question will be posted to each group, one after another. Hence, the time to wait for their turned to answer the question might give a chance for the other group to do other things.

Based on the findings, 79.6% of the students believed that it was important for them to do well during the game and 83.1% of them think that the activity in the gamification session was interesting. Meanwhile, only about half from the total respondents focus on the prize during the gamification activities. Its shows that the reward is not the main attraction of the gamification activities to the students. This is

because during the activities, the reward is not intended to be given to the team that scores the highest, but it is given to all the teams. Hence, the students do not feel the eagerness to win the quiz as they will ultimately receive the reward regardless of the result of the games.

Other than that, the results obtained for cross tabulation of data with different group of variable which is gender. Both genders from the total respondents chose team competition environment over individual competition during the gamification activities. The total percentage of male and female respondents who chose team competition are 87.2% and 90.9% respectively. The results indicated that there is no major variance of preference between the two gender of respondents. Meanwhile, the findings are constant with the outcome of the research by [3] which found that there is no significant relation to the approach to studying according to gender.

Based on the findings from the questionnaire survey, the results verified that majority (86.75%) of the total respondents opted for the gamification (interactive learning) approach which encourage them to have better learning experience rather than the old traditional method of learning through lecture based style. This is because of the elements in the gamification which as mentioned above help to increase the engagement which eventually motivate them to learn better as compared to the old style of teaching. This conforms with [23] who stated that the students tend to prefer interactive classroom activities over lecturer. From the analysis, it was found that there was no major variance of preference between the two gender of respondents.

## CONCLUSION AND WAY FORWARD

The implementation of gamification within a learning environment of HEI students were considered to be one of the appropriate teaching that can make better learning environment for the Millennials towards producing an engaging environment. There are a few gamification elements that were discovered to promote the students' engagement. Based on the observations made, gamification was found to improve the traditional method of teaching in several aspects:

- The students were found to be more interacted with their friend through the activities by having group discussions and they help each other by having peer teaching. They also believed that they have learned valuable concepts from more knowledgeable peers. Apart from that, the students believed that peer teaching encourage them to engage better in class.
- As compared to the traditional lectures, gamification have been considered to promote the interaction of the students with their classmates as well as with their instructor/ lecturers.
- The students actively participated in the class activities and discovered that they have gained interest towards the course better through the gamification activities.
- The elements in gamification activities were found to fit with the Millennials which are instant feedback, peer teaching, prize for reward and technology usage.

With respect to the acceptance of students towards the adoption of gamification within their learning environment, it was found that the students were very positive and had enjoyed their session very much. The adoption of gamification had also managed to promote students' engagement in terms of their participation in class, enjoyment throughout the activities as well as their motivational factor to study. Majority (86.75%) of the total respondents believe that the adoption of gamification (interactive learning) within their learning environment would encourage them to have a better learning experience as compared to the traditional method of teaching. Therefore, the adoption



of gamification is considered to be timely and suitable to match with the current millennials studying in HEIs.

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## REFERENCES

1. Kuh, G.D., *The national survey of student engagement: Conceptual and empirical foundations*. New directions for institutional research, 2009. **2009**(141): p. 5-20 DOI: <https://doi.org/10.1002/ir.283>.
2. Teoh, H.C., et al., *An investigation of student engagement in a Malaysian Public University*. Procedia-Social and Behavioral Sciences, 2013. **90**: p. 142-151 DOI: <https://doi.org/10.1016/j.sbspro.2013.07.075>.
3. Thaiposri, P. and P. Wannapiroon, *Enhancing students' critical thinking skills through teaching and learning by inquiry-based learning activities using social network and cloud computing*. Procedia-Social and Behavioral Sciences, 2015. **174**: p. 2137-2144 DOI: <https://doi.org/10.1016/j.sbspro.2015.02.013>.
4. Abanador, J.R., et al., *Teaching methods and learning preferences in the engineering department of an Asian university*. International Journal of Academic Research in Progressive Education and Development, 2014. **3**(1): p. 1-15 DOI: <https://doi.org/10.6007/IJARPED/v3-i1/499>.
5. Kuh, G.D. and S. Hu, *Learning productivity at research universities*. The Journal of Higher Education, 2001. **72**(1): p. 1-28 DOI: <https://doi.org/10.2307/2649131>.
6. Nold, H., *Using Critical Thinking Teaching Methods to Increase Student Success: An Action Research Project*. International Journal of teaching and learning in Higher Education, 2017. **29**(1): p. 17-32.
7. Carini, R.M., G.D. Kuh, and S.P. Klein, *Student engagement and student learning: Testing the linkages*. Research in higher education, 2006. **47**(1): p. 1- 32 DOI: <https://doi.org/10.1007/s11162-005-8150-9>  
<https://doi.org/10.1023/A:1021363527731>.
8. Shulman, L.S., *Making differences: A table of learning*. Change: The magazine of higher learning, 2002. **34**(6): p. 36-44 DOI: <https://doi.org/10.1080/00091380209605567>.
9. Liu, C. and F. Long. *The discussion of traditional teaching and multimedia teaching approach in college English teaching*. Citeseer DOI: <https://doi.org/10.2991/icmess-14.2014.9>.
10. Shrewsbury, D. and C. Wiskin, *Medical student preference in teaching methods and educational support*. Health and Social Care Education, 2013. **2**(2): p. 11- 15 DOI: <https://doi.org/10.11120/hsce.2013.00028>.
11. Femi, O. and A.M. Adewale, *The Effects of teaching methods on academic performance in primary school science*. International Journal of Innovative Research and Development, 2012. **1**(5): p. 319-335.
12. Tejedo-Romero, F., et al., *Effects of innovative teaching methods on students' academic performance: An empirical study on financial accounting= Efectos de los métodos de enseñanza innovadores en el rendimiento académico de los estudiantes: un estudio empírico sobre la contabilidad financiera*. Effects of innovative teaching methods on students' academic performance: An empirical study on financial accounting= Efectos de los métodos de enseñanza innovadores en el rendimiento académico de los estudiantes: un estudio empírico sobre la contabilidad financiera, 2015: p. 109-128 DOI: <https://doi.org/10.14201/eks2015162109128>.
13. Alwehaibi, H.U., *Novel program to promote critical thinking among higher education students: Empirical study from Saudi Arabia*. Asian Social Science, 2012. **8**(11): p. 193 DOI: <https://doi.org/10.5539/ass.v8n11p193>.
14. Rickes, P.C., *Make way for millennials! How today's students are shaping higher education space*. Planning for higher education, 2009. **37**(2): p. 7.

15. Minhas, P.S., A. Ghosh, and L. Swanzy, *The effects of passive and active learning on student preference and performance in an undergraduate basic science course*. Anatomical sciences education, 2012. **5**(4): p. 200-207 DOI: <https://doi.org/10.1002/ase.1274>.
16. Hew, K.F. and W.S. Cheung, *Improving social studies students' critical thinking*, in *Using Blended Learning*. 2014, Springer. p. 59-78.
17. Monaco, M. and M. Martin, *The millennial student: A new generation of learners*. Athletic Training Education Journal, 2007. **2**(2): p. 42-46 DOI: <https://doi.org/10.4085/1947-380X-2.2.42>.
18. Fotinatos, N. and E. Sabo, *Impact of centrally coordinated higher education pre-commencement of teaching student support initiative (FedReady) on student engagement: A regional university case study*. Student Engagement in Higher Education Journal, 2018. **2**(1): p. 86-92.
19. Fredricks, J.A., M. Filsecker, and M.A. Lawson, *Student engagement, context, and adjustment: Addressing definitional, measurement, and methodological issues*. 2016, Elsevier. p. 1-4.
20. Lee, C.C., *An Interactive Approach To Teaching Quantity Surveying Measurement*. ICERI2013 Proceedings, 2009: p. 3862-3871.
21. Ganyaupfu, E.M., *Teaching methods and students' academic performance*. International Journal of Humanities and Social Science Invention, 2013. **2**(9): p. 29-35.
22. Gonzalez-DeHass, A.R., et al., *Pre-service elementary teachers' achievement goals and their relationship to math anxiety*. Learning and Individual Differences, 2017. **60**: p. 40-45 DOI: <https://doi.org/10.1016/j.lindif.2017.10.002>.
23. Buskirk-Cohen, A.A., T.A. Duncan, and M. Levicoff, *Using generational theory to rethink teaching in higher education*. Teaching in Higher Education, 2016. **21**(1): p. 25-36 DOI: <https://doi.org/10.1080/13562517.2015.1110787>.
24. Appleton, J.J., et al., *Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument*. Journal of school psychology, 2006. **44**(5): p. 427-445.
25. Aynalem, S., et al., *Students' preference for the various teaching methods in tourism courses: A case of tourism management department, Madawalabu University*. J Tourism Hospit, 2015. **4**(175): p. 2 DOI: <https://doi.org/10.4172/2167-0269.1000175>.
26. Bishop, J. and M.A. Verleger. *The flipped classroom: A survey of the research*.