



Students Perceptions of the use of Quizizz Applications for Engineering Mathematics 2 in Politeknik Ungku Omar

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Abstract: Quizizz was introduced in online Mathematics lessons and quizzes (formative assessments – can use this if you want?) to be more interactive. This Quizizz was designed specifically for semester 2 students who were taking the Engineering Mathematics 2 Course. This study was carried out to examine students' perceptions on the use of Quizizz Applications for Engineering Mathematics 2 Course at Ungku Omar Polytechnic. Identifying students' perceptions of the usage of Quizizz and its contents (this sentence is hanging – I think the before sentence has already clearly state the aim of the study). A total of 102 respondents who took Engineering Mathematics 2 course in Ungku Omar Polytechnic involved/participated in this study. This quantitative study used online questionnaire instrument through Google Form and the data was analyzed using SPSS version 26 to obtain the mean value of the findings. The findings show respondents' positive feedback on the use of Quizizz. Games have demonstrated higher engagement and increased motivation towards learning especially for Mathematics.

Keywords: Quizizz, engineering mathematics, application

1. Introduction

Engineering Mathematics 2 is a compulsory course which is taken by all the semester 2 Engineering students in Malaysian Polytechnic. This course was taught by lecturers from the Department of Mathematics Science and Computer. This course consists of 3 topics which are Indices & Logarithms, Differentiation and Integration, a course perceived to be difficult by many semesters 2 engineering students in Malaysian Polytechnic.

The learning and teaching scenario has changed drastically as technology advances as a result of globalization bringing technological change to society. The explosion of information and technological capabilities, especially digital power and computing has changed the education system and learning theory a bit.

Online learning is any form of teaching and learning that is delivered through digital technology. Delivery of teaching and learning materials using this media contains visual, word, animation, video or audio graphics elements. With this online learning, it makes all the information and knowledge accessible everywhere without the time and place and the number of members who visit is unlimited. Students can continue to learn online at anytime and anywhere.

In 2019, education has changed drastically due to Covid 19, with the distinctive rise of e-learning, whereby teaching and learning is undertaken remotely and on digital platforms. Due to this pandemic outbreak, many educators have to change their teaching methods by leveraging the use of smartphones, computers and the internet to conduct online learning. There is evidence that learning online can be more effective in a number of ways. Some research shows that on average, students gain 25-60% more material in online classroom compared to only 8-10% during normal classroom. Students are also able to learn faster online compared to traditional methods but still depends on different levels of abilities of the students. The objectives of this study are:

- i. To identify students' perceptions of the usage of the Quizizz in Engineering Mathematics 2
- ii. To identify students' perceptions of Quizizz contents

2. Literature Review

E-learning solutions are making teaching and learning possible in this pandemic but engagement is a big problem attached with e-learning (Tarkar, P. 2020). One of the ways is using web 2.0 tools especially for Mathematics subjects. The use of Web 2.0 can help change the way 21st Century Teaching and Learning methods. This approach can shape students' ways of learning, lecturers' ways of learning and lecturers' ways of interacting with students (Mohamed 2011). Web 2.0 application is a learning technology that has the ability to support, encourage informal discussion, dialogue, collaborative and open knowledge sharing (Mohamed Amin 2013).

Web 2.0 application as a social networking tool between students and students and students with lecturers. According to Zuhri & Zawiyah (2013) the use of Web 2.0 social networking applications is a favorite for students and lecturers because of its open nature and user-friendly. Among the social ranges that are embedded in Web 2.0 technology are Facebook, Twitter, LinkedIn, Edmodo, Ning, Grouply, Squidoo and Google Wave (Mohamed Amin 2012). Therefore, with the advent of Web 2.0 this interaction between humans is becoming more widespread, comprehensive and fast especially during this pandemic Covid-19.

A study conducted by Zamil and Nizan (2015) stated that almost 100% of BA201 students showed a positive response to the use of MyMath application to understand and master the BA201 course. According to Zamil and Nizan, the MyMath application is very interesting and can help respondents improve their understanding of engineering mathematics course 2 much better.

In addition, Web 2.0 technology provides interactive board applications. It serves as a space for students and lecturers to share information or materials such as audio, pictures, text, videos and website links in one interface.

3. Research Method

This quantitative research study utilized a questionnaire to investigate student's perceptions of the use of Quizizz Application for Engineering Mathematics 2 in Ungku Omar Polytechnic. The participants in this study were 102 students who were the students who enrolled in DBM20023 (name of the course) at Ungku Omar Polytechnic. Hundred two students from different areas educational field mainly Civil Engineering, Electrical Engineering and Mechanical Engineering. The participants' age ranged between 18 and 20 years and various races.

The questionnaire used in this study was adapted from Borg (2009) and Rahimi and Weisi (2018) to investigate student's perceptions of the use of Quizizz Application for Engineering Mathematics 2 in Ungku Omar Polytechnic. Questionnaires through google form were used as instruments and comprises 13 questions prepared on a 5-point Likert scale, which consists of 5 options of "Totally disagree", "Disagree", "Not Sure", "Agree" and "Strongly Agree".

3.1 Application of Quizizz in Classroom

The COVID-19 pandemic has affected people regardless of nationality, level of education, income or gender. Education is no exception where students from different backgrounds have to cope with access to the broadband and computers for online education. Implementation of Teaching and learning with Quizizz has the potential of blended learning and flipped classrooms. This method is very suitable for all the levels of polytechnic students as they are familiar with online learning tools.

4. Results and Discussion

4.1 Demography

The demographics of the respondents of the study is about the information of the respondents that is the gender of the respondents.

Table 1. Gender of the respondents

Gender	Number of Students	Percentage (%)
Male	88	86.3
Female	14	13.7
Total	102	100

Table 1 shows that 102 students were involved in this survey. Male respondents were found to be more numerous than female respondents where 88 students were male respondents, and 14 students were female respondents.

4.2 Findings: To identify students' perceptions of the usage of the Quizizz in Engineering Mathematics 2

Table 2. Students' Perceptions of the Usage of the Quizizz in Engineering Mathematics 2

Item	Questions	TDA	DA	NS	A	SA
B1	I found the Quizizz to be very fun and interactive in learning Engineering Mathematics.	0 (0%)	0 (0%)	0 (0%)	22 (21.6%)	80 (78.4%)
B2	I found the Quizizz to be very interesting in learning Engineering mathematics.	0 (0%)	0 (0%)	1 (1%)	22 (21.6%)	79 (77.5%)
B3	I found the icons/buttons in the Quizizz to be easy to understand	0 (0%)	0 (0%)	2 (2%)	30 (29.4%)	70 (68.6%)
B4	I found the Quizizz lesson presentation to be interesting	0 (0%)	0 (0%)	2 (2%)	37 (36.3%)	63 (61.8%)
B5	I can easily access the contents/ questions in the Quizizz	0 (0%)	1 (1%)	4 (3.9%)	30 (29.4%)	67 (65.7%)
B6	I found the Quizizz display on the laptop/ PC/ smartphone screen to be clear	0 (0%)	0 (0%)	2 (2%)	30 (29.4%)	70 (68.6%)
B7	I found the contents on the Quizizz lesson well arranged	0 (0%)	1 (1%)	2 (2%)	31 (30.4%)	68 (66.7%)
B8	I found the colors and graphics used in Quizizz lesson to be very attractive	0 (0%)	0 (0%)	1 (1%)	30 (29.4%)	71 (69.6%)

*TDA–Totally Disagree, *DA - Disagree , *NS - Not sure , *A - Agree , *SA - Strongly Agree

Table 2 shows students' perceptions of the usage of the Quizizz in Engineering Mathematics 2. The findings found that the item for 'I found the Quizizz to be fun and interactive in learning Engineering Mathematics' as many as 80 respondents (78.4%) strongly agreed while as many as 22(21.6%) respondents agreed with this statement. For the second item 'I found the Quizizz to be very interesting in learning Engineering Mathematics' as many as 79 respondents (77.5%) strongly agreed while 22(21.6%) respondents agreed and 1 respondent was neutral with this statement.

Next, 70 respondents (68.6%) strongly agreed that 'I found the icons/buttons in the Quizizz to be easy to understand'. Followed by 30 respondents (29.4%) agreed while 2 respondents were not sure.

The analysis also showed that a total of 63 respondents (61.8%) strongly agreed with the statement 'I found the Quizizz lesson presentation to be interesting', while 37 respondents (36.3%) agreed while 2 respondents (2%) were not sure.

A total of 67 respondents (65.7%) strongly agreed with the fifth statement which is 'I can easily access the contents/questions in the Quizizz'. Followed by 30 respondents (29.4%) agreed, 4 respondents (3.9%) were not sure and 1 respondent (1%) disagreed with this statement. From the statement of the sixth item that is 'I found the Quizizz display on the laptop/PC/smartphone screen to be clear', 70 respondents (68.6%) strongly agreed with this statement, followed by 30 respondents agreed (29.4%) while 2 respondents (2%) were not sure.

The statement 'I found the contents of the Quizizz lesson well arranged', 68 respondents (66.7%) strongly agreed and 31 respondents (30.4%) agreed while 2 respondents (2 %) were unsure. For the last statement, 71 respondents (69.6%) strongly agreed and 30 respondents (29.4%) agreed with 'I found the color and graphics used in quizizz lesson to be very attractive' and only one respondent (1%) was not sure with this statement.

4.2 Findings: To identify students' perceptions of Quizizz contents

Table 3. Students' perceptions of Quizizz contents

Item	Questions	TDA	DA	NS	A	SA
C1	I can understand and solve questions in Quizizz.	0 (0%)	0 (0%)	8 (7.8%)	36 (35.3%)	58 (56.9%)
C2	I enjoy learning using Quizizz as opposed to the usual learning methods.	0 (0%)	0 (0%)	5 (4.9%)	30 (29.4%)	67 (65.7%)
C3	I found the videos and exercises in Quizizz lesson helped me to understand the subtopics.	0 (0%)	0 (0%)	7 (6.8%)	37 (36.3%)	58 (56.9%)
C4	I would rather refer to Quizizz lesson to solve math problems than using printed sheets.	0 (0%)	3 (2.9%)	8 (7.8%)	36 (35.3%)	55 (53.9%)
C5	I found Quizizz to be more interactive than usual learning methods.	0 (0%)	0 (0%)	5 (4.9%)	36 (35.3%)	61 (59.8%)

*TDA–Totally Disagree , *DA - Disagree , *NS - Not sure , *A - Agree , *SA - Strongly Agree

Table 3 shows students' perceptions of Quizizz contents. The findings found that the item for 'I can understand and solve questions in Quizizz' as many as 58 respondents (56.9%) strongly agreed while a total of 36 respondents (35.3%) agreed with this statement.

On the second item, 'I enjoy learning using Quizizz as opposed to the usual learning methods' a total of 67 respondents (65.7%) strongly agreed and 30 agreed (29.4%) with this statement. Next, as many as 58 respondents (56.9%) strongly agreed that 'I found the videos and exercises in Quizizz lesson helped me to understand the subtopics', followed by 37 respondents (36.3%) agreed with this statement.

On the fourth item, 'I would rather refer to Quizizz lessons to solve math problems than using printed sheets' a total of 55 respondents (53.9%) strongly agreed and 36 respondents (35.3%) agreed and only 8 respondents (7.8%) were not sure with this statement. For the final statement, 'I found Quizizz to be more interactive than usual learning methods' a total of 61 respondents (59.8%) strongly agreed and 36 respondents (35.3%) agreed and 5 respondents (4.9%) were not sure with this statement.

4.3 Discussion

The most recent research demonstrates that introducing students to ICT-based activities increases when Quizizz is used to teach and learn Engineering Mathematics 2. Additionally, actual data demonstrate that this programme improved learning outcomes and that using Quizizz for Engineering Mathematics 2 training and learning is significant, thorough, and well-liked by students. Students surely gain a lot from using Quizizz, a game-based learning application, to educate and master Engineering Mathematics 2. Table 3 demonstrates how thorough and significant Quizizz is for Engineering Mathematics 2 learning among semester 2 students at Ungku Omar Polytechnic.

According to Thulasirani (2021), playing a game in the classroom has the advantage of allowing students to get immediate feedback on their responses. Additionally, it teaches students vital lessons that ensure tangible outcomes rather than nebulous long-term advantages (Lee, JJ & Hammer, 2011). The overall results in the tables above reveal that most students had positive opinions of Quizizz and a positive perspective for learning Engineering Mathematics 2 in class. Computer game-based activities can effectively encourage students' thinking, interest, humour, and social associations, as Suo, Suo, and Zalika (2018) demonstrate. Additionally, this application aids in reawakening pupils' minds. The survey results also demonstrate that students prefer utilising Quizizz for learning over traditional teaching techniques. Additionally, the majority of students discovered that using Quizizz to study math did not solve their quizzing problems. In the end, the majority of students concur that using Quizizz for Engineering Mathematics 2 has significantly increased Quizizz's relevance for teaching and learning. The majority of students agreed that using Quizizz is an effective way to teach Engineering Mathematics 2 in the classroom and that the games could help students feel less anxious about learning arithmetic. Many kids understand that because they are automatically learning the structures while playing a game, they do not need to pay close attention to them. The majority of students acknowledged that the games are entertaining and packed with information from formative assessments for learning Engineering Mathematics 2.

The major goal of this study was to determine whether it was appropriate to teach calculus to students at Ungku Omar Polytechnic utilizing games. As Vernon (2006) contends, when playing a game of trivia, young learners "concentrate on movement and somehow keep their language." Games are a new method that students can utilize to learn, master, and conceal various mathematical systems, according to Gunn and McCallum (2005). The current study's findings further demonstrate that games are an essential component of teaching and learning Engineering Mathematics 2, and that they may be the best strategy for directing young kids' energy into math learning because they genuinely want to be dynamic. They are also creative, imaginative, and suitably suited for themselves.

In order for a game to be able to encourage pupils, it is crucial that both students and teachers consider a number of aspects, including the game's choice and its suitability for classroom application. Students must comprehend their work and the numerous factors that determine a game's performance in order for it to be formatively effective. The outcome of a formative assessment enables students to familiarize themselves with the topic and receive quick feedback on their practices, particularly to increase their scoring authority for action words, things, and student growth goals.

5. Conclusion

Based on the results of the findings, students agreed that Quizizz helps a lot and motivates them to focus more in Engineering Mathematics. Students find these interactive sessions enjoyable and feel competitive among themselves when doing the Quizizz. With these findings, it is hoped that the use of technology can be expanded in the teaching and learning process of students. Therefore, it is the responsibility of all parties, especially educators and developers of educational technology to continue to further develop its use in line with the policy of the Malaysian Education Development Plan 2015-2025 (Higher education), especially high-quality graduates in Technical Vocational Education and Training (TVET) (4th shift), ecosystem for innovation (7th shift) and globalize online learning and transformation of higher education delivery (9th shift). This is because the educator is the person closest to the students where they better understand the needs of their students compared to other authorities. Educators also need to explore new web 2.0 tools in creating interactive and more conducive learning environments for the students.

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Conflict of Interest

The authors declare no conflicts of interest.

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