# The Effective of Quizizz's Gamified Learning among Undergraduate and Postgraduate Students' Engagement and Perception

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## Abstract

This study aimed to determine the effective of using Quizizz`s gamified learning among undergraduate and postgraduate students' engagement and perception and to explore on how undergraduate and postgraduate students' willingness to use Quizizz's gamified learning to enhance students' engagement and perception in Educational Psychology subjects. The researcher applied sequential mixed method study to utilized to evaluate the effective of assessing Quizizz gamified in learning on students' engagement and perception in Educational Psychology subjects. A total of 177 undergraduate and postgraduate students were respondents in this sequential explanatory mixed method study. The quantitative study was evaluated by using descriptive statistics such as mean, standard deviation. In addition, correlation and regression analyses were analyzed to find out the research question 1 (hypothesis 1 – 2). In addition, a qualitative study evaluated by using the thematic analysis which utilized and interpret the data. The regression analysis was a statistically significant predicted that Quizizz gamified in learning on students' engagement had a positive and significant effective (R-square = 0.336; F = 34.401; Beta ($\beta$) = 0.204; T-value = 3.339; and P-value = 0.000). Moreover, the regression analysis was a statistically significant predicted that Quizizz gamified in learning on students' perception has a positive and significant effective (R-square = 0.061; F = 2.134; Beta ($\beta$) = 0.422; T-value =5.865; and P-value = 0.000). Therefore, four respondents (two undergraduate and two postgraduate students) were selected to participate for interviewing. All the

students agreed that Quizizz gamified in learning and teaching in Educational Psychology subjects were effective positively to perceive the experience of learning and engagement in learning.

**Keywords:** Quizizz's Gamified; Undergraduate Students; Postgraduate Students; Engagement; Perception

## Introduction

Learner-centered approach has been improved to support students' engagement, critical thinking, and academic performance outcomes (Federick et al., 2023). Methods of teaching and process of learning have been debated in the sense of Improving the educational system (Margallo et al., 2023; Yanti, Suarnajaya, & Pratiwi, 2021). The things in classroom that made the learners felt boring that were monotonous and did not used the learning media, there is one application which could be used in learning, there is Quizizz's gamified in learning (Fadiyah et al., 2023; Espana-Delgado, 2023). The increasing of Quizizz's gamified in education has been led to the availability of various digital games. Gamification affected the learning-related behaviors or attitudes (Permana, Permatawati, & Khoerudin, 2023).

The atmosphere/environment in the Educational Psychology courses are boring so undergraduate and postgraduate students needed the other teaching and learning techniques in the classroom to create more engagement and perception in classroom's atmosphere/environment. This study is aimed to determine the effective of Quizizz gamified learning among undergraduate and postgraduate students' engagement and perception in learning experience and to explore on how undergraduate and postgraduate students' willingness to use Quizizz's gamified learning to enhance students' engagement and perception.

This present study has theoretical reviews referred to the theories which used Quizizz gamifies learning to enhanced students' engagement and perception. There were including with Theory of Gamified Learning; Problem Solving, and Theory of Perception.

Theory of Gamified Learning The theory of gamified learning is defined by Landers (Landers, 2014; Wang, Qiao, & Wang, 2021), gamification was the use of game attributes outside the context of game which can be used to affect the behaviors and attitude of the learners. Educational community has been started to look on how well, which gamification is worked as the way to learn (Lailani et al.,

2023). In the 21st century, game-based and digital-based teaching methods have been used and required. The effects of gamification strategies on learners' motivation in the New Normal were used to ensure the quality of education (Lebuna et al., 2022). Gamification learning theory is contends while gamification did not directly affect learning, it could be predicted by students based on how knowledge has been perceived, understood, and used. Furthermore, gamification is worked such as the way to learn (Moseley & Whitton, 2014; Margallo et al., 2023). Moreover, the theory of gamified learning provided an effort through learners' behavior and learners' attitudes by providing mediating and moderating processes, theses was linking to specific game elements to learning outcomes. (Landers & Landers, 2014).

Problem Solving Theory of problem solving is related to the terms of the ability to perceive the problem, the perceptibility of the problem, the willingness to solve the problem, the awareness of existence of the problem or strategies of problem solving (Dostal, 2015). Theory of problem solving is studied by Hardin (Hardin, 2003). Hardin (2003) claimed that problem solving is as theories of how learning occurred evolved, the understanding, of the problem-solving process also evolved. The model of problem solving is associated with each concurrent of learning theory. The dominant of learning theories are discussed within the conceptual domains of behaviorism, cognitive psychology, and information processing. Moreover, theory of problem-solving is defined by Tallman (Tallman et al., 1993), there was a nonroutine activity oriented toward changing an undesirable situation, focusing on change differentiates problem solving from coping which was oriented toward relieving feelings of stress.

Theory of Perception The theory of perception is defined by Gibson (Gibson,1951). Gibson (1951) suggested that there were four types of perception such as an interest in perception considered as discrimination; an interest in the perception of objects and events in space; an interest in the perception of the meanings and values of things, including people and symbols; and a widespread interest in the sort of perceptual game which can be induced by looking at inkblots, and which is characteristic of the individual perceiver.

## Research Objectives

1. To determine the effective of using Quizizz`s gamified learning among undergraduate and postgraduate students' engagement and perception.

2. To explore on how undergraduate and postgraduate students' willingness to use Quizizz's gamified learning to enhance students' engagement and perception.

## Research Questions

1. What is the difference between the effective of the Quizizz's Gamified learning among undergraduate and postgraduate students' engagement and perception?

2. How do undergraduate and postgraduate students' willingness to use Quizizz's gamified learning to enhance students' engagement and perception?

## Research Methodology

The researcher applied explanatory sequential mixed method to first conduct a quantitative study, analyzes the results and then builds on the results to explain them in more detail with qualitative study (Cresswell & Cresswell, 2018). The researcher indented to explain quantitative results with qualitative data. In this study, qualitative data collection phase followed the quantitative phase (Cresswell & Guetterman, 2021). This study designed to identify the effective of Quizizz gamified learning among undergraduate and post graduate students' engagement and perception that built on the initial quantitative phase. Quantitative data, such as scores on instruments, yield specific numbers that could be statistically analyzed, can be produced results to assess the frequency or describe the large number of the respondents (Cresswell & Guetterman, 2021). This study followed up the qualitative phase to ask the questions which explored the responses in more detail. The research used thematic analysis to find the effective of Quizizz gamified learning among undergraduate and postgraduate students' engagement and perception.

### Population/Sample

The population in this research, they were undergraduate and postgraduate students who have been studied at Rajamangala University of Technology Thanyaburi, Pathum Thani Province, Thailand, there is 3,645 students from school of Technical Education and School Fine and Applied Arts (Office of Academic Promotion and Registration, 2023) who were studying Educational Psychology Subjects. The researcher is selected the undergraduate and postgraduate students who were studying Educational Psychology courses by using purposive sampling (Cresswell & Guetterman, 2021; Bekele & Ago; 2022).

Then the samples for this study, there were comprised 177 students from two schools, 138 (78.00%) of them studied at school of Technical Education and 39 (22.00%) of them studied at school of Fine and Applied (Table 1).

Undergraduate students participated in this study were 57 (32.20%) students and 120 (67.8%) were postgraduate students. Seventy first (40.10%) students have had grade point average between 2.00–2.50, followed by 64 (36.20%) students have had grade point average between 2.51–3.500, 36 (20.30%) students have had grade point average between 3.01–3.50, and six (3.40%) students have had grade point average between 3.51–4.00 respectively (Table 1).

**Table 1** Demographic Information of the Respondents.

| Demographic Information | n | % |
| --- | --- | --- |
| Gender | | |
| Male | 70 | 39.50 |
| Female | 107 | 60.50 |
| Level of the study | | |
| Undergraduate | 57 | 32.20 |
| Postgraduate | 120 | 67.80 |
| School | | |
| Fine and Applied Arts | 39 | 22.00 |
| Technical Education | 138 | 78.00 |
| Grade Point Average (GPA) | | |
| 2.00–2.50 | 71 | 40.10 |
| 2.51–3.00 | 64 | 36.20 |
| 3.01–3.50 | 36 | 20.30 |
| 3.51–4.00 | 6 | 3.40 |

### The Instruments

This study, the researcher was used the Quizizz gamified learning (Noordin et al., 2023), Engagement in Learning (Permana, Permatawati, & Khoerudin, 2023), and Perception in Learning (Espana–Delgado, 2023) to examine the effective of Quizizz gamified learning among undergraduate and postgraduate students' engagement and perception.

### Quantitative Study

### Quizizz Gamified Learning

Quizizz gamified learning (Noordin et al., 2023) consisted of 15 items. The students were rated to assess a 5-point scale and measure on how effective of using Quizizz gamified learning. The scale is ranged from 1 (Strongly Negative) to 5 (Strongly Positive). Quizizz gamified learning (Noordin et al., 2023) was validity by a lecturer in school of education and two counsellors. The reliability was measured by using internal consistency based on the interpretation rules of Cronbach`s alpha (Cronbach, 1984). Cronbach Alpha was 0.90 (Table 2).

### Engagement in Learning

Engagement in learning comprised ten items, this study adapted the questionnaire in learning engagement of students Engagement (Permana, Permatawati, & Khoerudin, 2023). The students who participated in this study, they were responded to answer each item by applying a 5-point scale, it ranged from 1 (Very Ineffective) to 5 (Strongly Effective). Engagement in learning (Permana, Permatawati, & Khoerudin, 2023) was validity by a lecturer in school of education and two counsellors. The reliability was measured by using internal consistency based on the interpretation rules of Cronbach`s alpha (Cronbach, 1984). Cronbach`s alpha was 0.85 (Table 2).

### Perception in Learning

The questionnaire of perception in learning (Espana-Delgado, 2023) consisted of 14 items. Undergraduate and postgraduate students were responded on how effective and perception of Quizizz's gamified in Educational Psychology subjects by scoring a 5-point scale, the scale was ranging from 1 (Strongly Ineffective) to 5 (Strongly Effective). The reliability was measured by using internal consistency based on the interpretation rules of Cronbach`s alpha (Cronbach, 1984). Cronbach`s alpha of the 14 items of Perception was 0.78 (Table 2).

**Table 2** Cronbach`s alpha of the variable in the study

| Variable | Cronbach`s Alpha | No of Items |
| --- | --- | --- |
| Quizizz's Gamified Learning (Noordin et al., 2023) | 0.90 | 15 |
| Engagement in Learning (Permana, Permatawati, & Khoerudin, 2023). | 0.85 | 10 |
| Perception (Espana-Delgado, 2023) | 0.78 | 14 |

**Qualitative Study**

This study analyses by using thematic analysis approach and refined scientific evidence (Cresswell & Cresswell, 2018; Kalinauskas, 2018; Cresswell & Guetterman, 2021) by applying Quizizz's Gamified Learning (Noordin et al., 2023), Engagement in Learning (Permana, Permatawati, & Khoerudin, 2023), and Perception (Espana-Delgado, 2023).  Based on purposeful sampling method (Cresswell & Guetterman, 2021), the researcher implemented the study by dealing with four individuals, gathering data through reporting individual experiences for the interviewing with four students (Ivankova & Stick, 2007; Cresswell & Guetterman, 2021).

# Research Result

**RQ 1:** What is the difference between the effective of the Quizizz`s Gamified learning among undergraduate and postgraduate students` engagement and perception?

$H_{01}$: Quizizz's gamification learning has a positive and significant effective among undergraduate and postgraduate students` engagement.

To answer this research question, the researcher used descriptive statistics such as means, standard deviations. Then, Pearson's correlation and regression were used to analyze and test the hypotheses of this study.

To answer this research question, the researcher used descriptive statistics such as means, standard deviations. Meanwhile, Pearson's correlation and regression were analyzed and tested the hypotheses.

The correlation indicated that the Pearson correlation between Quizizz's gamified learning and engagement in learning had a positive (r = 0.051) (Table 3). Regression analysis results conducted that Quizizz gamified learning had a positive and significant effective (R-square = 0.336; F = 34.401; Beta ($\beta$) = 0.204; T-value = 3.339; and P-value = 0.000) (Table 4). The results of Beta ($\beta$) identified that Quizizz gamified learning and engagement in learning had a positive effective. The finding results of regression analysis comprised that that the Quizizz's gamified learning among undergraduate and postgraduate students improved students participating in the classroom 33.60% due to engagement in learning (Table 4).

**Table 3** Correlation, Descriptive Statistics Analysis (n = 177)

| Variables | Mean | S.D. | 1 | 2 | 3 |
|---|---|---|---|---|---|
| Quizizz's Gamified Learning (Noordin et al., 2023) | 4.49 | 0.45 | 1 | | |
| Engagement in Learning (Permana, Permatawati, & Khoerudin, 2023) | 4.50 | 0.35 | 0.051 | 1 | |
| Perception in Learning (Espana–Delgado, 2023) | 4.21 | 0.40 | 0.591** | 0.349** | 1 |

**H$_{02}$:** Quizizz's gamified learning has a positive and significant effective on students` perception.

The researcher answered this research question by using descriptive statistics such as means, standard deviations. In addition, Pearson's correlation and regression were analyzed and tested the hypotheses. Furthermore, the correlation results found that the Pearson correlation between Quizizz gamified learning and perception in learning had a positive (r = 0.591) (Table 3). Meanwhile, the regression analysis results supported that Quizizz's gamified learning and perception in learning among undergraduate and postgraduate students had a negative and significant effective (R–square = 0.061; F = 2.134; Beta ($\beta$) = 0.422; T–value =5.865; and P–value = 0.000) (Table 4). The results of the model confirmed that Quizizz's gamified learning and perception in learning had a positive effective. The finding results of regression analysis confirmed that the Quizizz's gamified learning among undergraduate and postgraduate students have been cooperated in the Educational Psychology courses 6.10% because of perception in learning (Table 4).

**Table 4** Regression and Descriptive Statistics Analysis (n = 177)

| Quizizz's Gamified Learning (Noordin et al., 2023) | | | | | |
|---|---|---|---|---|---|
| | Beta ($\beta$) | T–Statistic | F–Statistic | Sig (p–value) | R–Square |
| Engagement (Permana, Permatawati, & Khoerudin, 2023) | 0.204 | 3.339 | 34.401 | 0.000 | 0.336 |
| Perception (Espana–Delgado, 2023) | 0.422 | 5.865 | 2.134 | 0.000 | 0.061 |

**RQ 2:** How do undergraduate and postgraduate students' willingness to use Quizizz's gamified learning to enhance students' engagement and perception?

This study, four respondents (Ivankova & Stick, 2007; Cresswell & Guetterman, 2021), there were two undergraduate students and two postgraduate students whose were responded to be

participated in this study. As interview by two female students, she was an undergraduate student and a post graduate student. The following are their expression on the effective of Quizizz's gamified learning on students' engagement and perception.

*"A female undergraduate student who has expression of engagement using Quizizz gamified learning. Quizizz is very excited for me to be the winner, I needed to learn more, the time has passed very fast. I felt happy and enjoy to learn through Quizizz in Educational Psychology subject I was paid attention in learning Educational Psychology course even it was very difficult to learn because in the class applied Quizizz for learning"* (Respondent 1, P 1–2).

*"A female postgraduate student, she said that Quizizz made me fun and learnt faster. Quizizz was a useful application in development of Educational Psychology course. I enhanced and motivated to learn Psychology subject. Quizizz was an entertaining application in the classroom. The feedback provided by Quizizz helped me to self–study and self–improve my knowledge and academic performance in Psychology course."* (Respondent 2, P 3–4).

In addition, the other two students, there was a male undergraduate student and a male postgraduate student, they also learnt by using Quizizz. Bellowing highlighted their opinion about using Quizizz in Educational Psychology courses.

*"A male undergraduate student has said that Quizizz in Psychology subject affected me to improve my attitude, motivation, and engagement. I found that Quizizz was user–friendly, and I loved competition in Quizizz. I was very eager to complete all questions in Quizizz and I would like to be the winner. I discovered a lot of information and usefulness to improve my mistaken answering in Quizizz"* (Respondent 3, P. 5–6).

*"A male postgraduate student has experienced to use Quizizz gamified learning in Psychology subject. He argued that Quizizz is the best choice for learning in the classroom. Quizizz helped me to see immediately on how scores I have got and I competed with myself. Quizizz is the best technique for teaching and learning in Educational Psychology subject, I did not boring, and it motivated and interested me to learn. Quizizz helped me to learn easier in Psychology subject"* (Respondent 4, P. 7–8).

## Conclusion

Based on the results of the findings in this study, Quizizz gamified learning was positive effective to undergraduate and postgraduate students' engagement and perception ($r = 0.349$) (Table 3).

The samples participated in this study, there were selected from two schools (school of Technical and school of Applied Arts), undergraduate and postgraduate students who were respondents in this study. They have studied Educational Psychology subjects, there were 177 undergraduate and postgraduate students, students were completed the questionnaires and then four students have agreed for interviewing. One hundred and seventy–seven students, 57 (32.20%) were undergraduate students and 120 (67.80%) were postgraduate students (Table 1). The finding results found that Engagement in Learning had the highest mean scores (Mean = 4.50, S.D. = 0.35), followed by Quizizz`s Gamified Learning (Mean = 4.49, S.D. = 0.45), and Perception in Learning (Mean = 4.21, S.D. = 0.35) respectively (Table 3).

To answer Research Question 2, the researcher used thematic analysis to interpret the finding from interviewees. The interview results with two students, they agreed on the effect of Animation–based performance testing improving their thinking skills such as critical thinking skills. Moreover, Animation had a positive effect on students' thinking skills and motivation.


## Suggestions

**Implications** This study identified the implications to the Government, university, lecturers, and undergraduate and postgraduate students. As shows bellowing:

**The Government** could assist the learning process to learn better if there are certain constraints students to improve internet connection in the educational areas (Yanti, Suarnajaya, & Pratiwi, 2021) so the educational community would be started to investigate how well gamification such as Quizizz's gamified in learning worked as the way to learn (Magallo et al., 2023).

**University** could be set up the learning environment to encourage students' thinking. Quizizz application has the highest effective and influence on students' cognitive and affective students' learning outcomes (Munawir & Hasbi, 2021; Wang, Qiao, & Wang, 2021).

**Lecturers** were perception to use Quizizz as material in the classroom. Perception thought lecturers' experiences were very effective to assess students' scores, students were enjoyable in Educational Psychology subjects, so lecturers indicated in using Quizizz's gamified learning to enhance students' engagement and perception (Yuliati, Jafar, & Sunra, 2023).

**Undergraduate and postgraduate students** expected to use gamification to enhance their learning experience and improve their learning outcomes ( Nair & Mathew, 2021). Gamification such as Quizizz is over-studied than other educational materials because these application included image, voice, or pre-post testing so students were more motivated and improved students' learning level of attainment (Ceken & Taskin, 2022; Espana-Delgado, 2023).

## New Knowledge from this Study

As the suggestion for further study, there were addressed in the future as following:

Undergraduate and postgraduate students have had a positive in using Quizizz' s gamified learning in the Educational Psychology courses, Quizizz is effective to student'engagement and perception, the lectures needed more investigation to put the Quizizz's gamified learning, internet, and WIFI in the classroom.

The interviews results from this explanatory sequential mixed method could be used the qualitative interviews to help lecturer explain the effective of using Quizizz's gamified in learning among undergraduate and postgraduate student' engagement and perception in Educational Psychology courses. Quizizz is positive accepted among undergraduate and postgraduate students.

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