



Students' Participation in Learning Economics Subject: Interactive Learning using Game-Based Learning

Nor Zuriati Amani Ab Rani
norzuriati@uitm.edu.my
Faculty of Business and Management
Universiti Teknologi MARA, Malaysia

Nik Suriati Nik Hassan*
niksu146@uitm.edu.my
Faculty of Business and Management
Universiti Teknologi MARA, Malaysia

Corresponding author*

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ABSTRACT

The pandemic has led to a shift from traditional classrooms to online learning environments, causing students to face challenges such as lack of motivation, limited interaction, and feelings of isolation. This becomes more difficult and challenging for economics classes because of the subject's complicated nature, which includes graphs, mathematical computations, and extensive reading theories, which students frequently find difficult and disinterested. However, some of these problems were mitigated using interactive tools, including interactive quizzes that used game-based learning chat rooms and synchronous online classes. The study aims to examine the effectiveness of implementation of interactive learning strategies in the instruction of economics and to enhance student engagement during class using educational games specifically Quizizz and QuizWhizzer. By using a total of 40 respondents who took economics subjects, the study found that the implementation of Quizizz and QuizWhizzer increased the number of students actively participating in class and enhanced their learning by increasing students' interest and preventing them from being bored in class. The degree of integration into the economics subject and ability to leverage curiosity show the effectiveness of game-based learning that finally



suitable to use in conjunction with other teaching strategies to provide an extensive educational experience and increase participations in online learning.

Keywords: student participation; economics subject; interactive learning; game-based learning

INTRODUCTION

The education system has been significantly affected by the COVID-19 epidemic, particularly in the context of online learning. Universities and schools were pressured by the pandemic to quickly switch to remote learning. In numerous academic institutions, traditional classroom structures have been substituted with online classrooms. As a result, the transition to remote learning increased students' reliance on technology and increased their screen usage. Because of this scenario, concentrating and participating in class activities have become more challenging and difficult, even after going back to traditional classroom settings. Students may become less motivated and engaged when there is less face-to-face connection. Economics subjects can be particularly impacted because it frequently requires in-depth discussion and problem-solving. Online assessment of students' performance and comprehension can be more difficult than traditional exam invigilation.

Some people find economics to be a fascinating subject since it deals with resource analysis and strategic decision-making. Adding an interactive element, such as economic games, can increase the accessibility of economics. However, because of the mathematical foundations or abstract ideas, some pupils could find it less interesting. Teachers promote innovative teaching strategies like technology, multimedia, group projects, policy discussions, and game-based learning to make economics interesting and engaging for students and promote real-life application of economic concepts. These strategies aim to enhance creativity and efficiency in selecting materials, techniques, and learner evaluation, and lastly, improve learner performance (Yu et al., 2021; Ramasimu, 2024).

Maintaining engagement is essential to effective learning since it is critical to student excitement and academic achievement. To keep students participating, teachers had to adjust their approaches and offer timely feedback and interactive learning opportunities. Game-based learning is one of the interactive and active learning techniques which allows students to practice decision-making and critical thinking skills by applying economic principles to solve real-world problems. Using this game-based learning in economics can create a more immersive and interactive learning experience, making it more engaging and motivating for students.

Additionally, game-based learning in economics can also help students develop a deeper understanding of economic concepts and theories by providing them with opportunities to see the direct impact of their decisions and actions within the simulated game environment. Platz (2022) mentions that by integrating general purpose commercial games into the educational context, educators can leverage the fun and meaningful learning experiences that these games provide. This approach can address the limitations of developing specially designed educational games, as it allows for a wider range of subjects and reduces costs. By leveraging game-based learning in economics subjects, students can gain practical skills and knowledge that can be directly applied



to real-life economic situations.

Furthermore, game-based learning in economics subjects can help address the perception of economics as being too mathematical or disconnected from real-life applications. By incorporating game-based learning in economics courses, teachers can bridge the gap between theoretical concepts and their practical application, making the subject more relatable and engaging for students. For educational purposes, game elements are a novel form of interactive content that merits investigation (Zaina et al., 2019). The integration of game elements and techniques into higher education instruction is intended to simplify the comprehension of difficult theoretical concepts (Gachkova & Somova, 2020).

Game-based learning employs scoring, peer competition, and collaboration as mechanisms to sustain student interest, facilitate the assimilation of novel information, and evaluate their comprehension. Game-based learning using Quizizz and QuizWhizzer as online assessment tools that facilitate student participation and interaction within the virtual classroom will mitigate feelings of fatigue, drowsiness, and boredom that may arise during the online economics course. Besides that, from the Quizizz and QuizWhizzer tools students can also review previously concepts, and theory was already learned in class.

A new educational revolution has begun, benefiting both instructors and learners. In the realm of education, instructors are required to adjust to emerging pedagogical paradigms that involve the implementation of educational technology and online learning. For enrolling students in online courses, a stimulating and educational online learning environment is necessary. In this regard, this article aims to study the acceptance of uses of Quizizz and QuizWhizzer in learning economics subjects and how Quizizz and QuizWhizzer can increase student engagement in online classes.

LITERATURE REVIEW

Interactive learning is an educational strategy that encourages active participation between teachers and students, cultivating exploration and discovery. Utilizing ICT such as hypermedia, online tools, and educational software will stimulate dynamic interactivity. To collaborate, students may engage with simulations, study topics through hypermedia connections, or exchange ideas online (Yu et al., 2020). Dixit et al. (2024), who discuss various innovative pedagogical approaches that cater to diverse learning styles and emphasize student-centric learning, conclude that the evolving education landscape necessitates adapting teaching methodologies to meet students' needs.

Traditional lecture-based methods are being replaced by interactive methods like Understanding Learning Styles, Cyber-hunt, and Keyword Concept. These techniques emphasize the importance of tailoring education to individual preferences for effective knowledge transfer. A more immersive educational experience can be achieved through careful planning and implementation. Overall, interactive learning is a useful method for the teaching and learning process.

Interactive learning encourages active participation and collaborative learning, enhancing



cognitive and social-emotional development. It also enhances digital competencies, learning motivation, engagement, and achievements, while increasing joy, autonomy, critical thinking, creativity, and imagination. This statement has been supported by Aslan et al. (2022) by stating that game-based learning (GBL) is an interactive education strategy that can help students learn where global technology is growing quickly.

Instead of just absorbing knowledge, students will actively interact with the teachers and the course materials. Lampropoulos (2023) mentions that digital game-based learning is a valuable educational approach that offers interactive and student-centered learning environments. It improves teachers' communication and digital skills, enabling them to create motivational virtual learning environments.

As stated by Zolkipli et al. (2023), children will be inspired to learn and explore by the range of learning materials that GBL may provide in interactive environments and user interfaces. For this reason, GBL is being used in education to support children's cognitive development, whether it be in the classroom or online. This statement is aligned with Alemdag and Cagiltay (2018) that agree that children must be engaged and involved in the learning process throughout the GBL courseware interactive learning settings. For reinforcement or memorization, the GBL learning process necessitates a combination of multiple media types (alphabet or numerals), symbols, pictures, sounds, and videos.

Game-Based Learning

Game-based learning is an educational approach that incorporates games into the learning environment to motivate and engage students, helping them develop skills and acquire knowledge through game play. This can involve using both educational games designed specifically for learning purposes and commercial games that align with educational objectives. The term "game-based learning" describes the pedagogical application of games. It includes bringing gaming aspects like competition, rewards, and interactive tasks into the classroom setting. Students' engagement can be shown when it comes to how game-based learning affects their participation in economics classes.

Game-based learning is a method that combines motivation, real-world skills, and engagement. It encourages goal achievement, teaches essential skills like decision-making and critical thinking, and provides a safe environment for learning from mistakes. Games encourage active learning and collaboration among peers. GBL offers benefits like improved cognitive abilities, enhanced motivation, higher engagement, experiential learning, and soft skill development. Their fun and challenging nature makes them an effective alternative to traditional rote learning methods and boosts student motivation.

According to Fernando and Premadasa (2024), GBL is an instructional approach that uses computer games to enhance teaching, learning, assessment, and evaluation by combining game activities with established educational goals. The style of the game can influence the learning outcomes and experiences and can be customized to fit the program's learning objectives. Furthermore, Jackson (2016) mentions that gamification is the application of game elements to other types of activities including points, timers, badges, and leaderboards. Then, online learning



can be made more interesting and interactive by using educational games such as Kahoot, Quizlet, Quizzes, and QuizWhizzer (Mei et al., 2018).

Digital game-based learning (DGBL) is not just enjoyable; it may also be useful in educational environments. They can engage pupils in learning activities for an extended period. DGBL makes the learning process more entertaining. This kind of instruction creates learning scenarios that motivate students to create their own knowledge and find solutions to real-world issues. When playing digital games, students gain experience and make informed decisions. Thus, DGBL is a useful tool for developing students' skills and attitudes.

Games in Economics Subject

Economic games are simulations used to study decision-making and interactions in economic contexts for teaching economic principles and in research for testing economic theories and behavioral insights. These are valuable tools for teaching economics, offering interactive learning, application of theory, motivation, complex problem-solving, understanding dynamics, and feedback. These games can be used in various applications, such as market simulation games, budget management simulations, role-playing scenarios, and monetary policy simulations. These games provide students with real-time experiences, allowing them to apply economic theories and concepts, understand market dynamics, and learn from mistakes. They also provide immediate feedback, allowing students to understand the implications of their choices without real-world consequences. Overall, economic games provide a comprehensive approach to understanding economics and its dynamics.

To effectively include games in an economics course, educators should initially choose games that are in line with the desired learning outcomes. Furthermore, adequately instruct the students in preparation for the game, elucidating its relevance to the course material. Furthermore, it is essential to have a debriefing session after the game to analyse the knowledge acquired and its practical implications in the field of economics. Subsequently, evaluate the efficacy of the game in attaining instructional objectives.

Conte Jr (2017) reveals that game-based learning significantly piqued student interest, with participants showing positive attitudes towards the game and believing it improved their learning performance. The educational game helped students master concepts and piqued their interest in learning economics. The study about the impact of game-based learning on students' performance in economics provides valuable insights into educational strategies. An engaging and efficient method of helping students comprehend difficult economic concepts and theories is using games in class. This method can help with the problem that some students think economics is too mathematical or unrelated to real-world applications (Dobrescu et al., 2014).

Digital game-based learning in economics subjects can enhance student engagement by making economic concepts more interactive and engaging. By allowing students to experiment with economic strategies and witness the outcomes of their decisions, games help demystify complex theories and provide hands-on experience without real-world risk (Platz, 2022). The fun and competition elements in games increase student motivation, developing critical thinking, problem-solving, and decision-making skills. Games also provide immediate results for



decisions, allowing students to quickly adapt and understand the consequences of their actions.

Digital games in economics should be carefully included into the curriculum with well-defined learning objectives, followed by reflection and discussion to reinforce students' comprehension to optimize its educational value. Students' enjoyment and engagement with the study of economics can certainly be increased by game-based learning, which can improve their academic achievement.

Students Participation and Engagement

Engagement and participation are interconnected concepts that are fundamental to the educational process. These two concepts aim to involve students actively in their learning process. Engagement is students' involvement and commitment in their learning experiences and is frequently shown by traits like concern, curiosity, passion, optimism, and enthusiasm. Engagement can manifest in various forms, including emotional and cognitive. Trowler (2010) highlights that engagement has been demonstrated to be correlated with outcomes including satisfaction, persistence, academic performance, and social engagement. Engagement is also a crucial component for academic success.

Participation, on the other hand, is one of the behaviors that shows how engaged students are. It focuses on how much they contribute to and participate in class activities. This could include attending classes, participating in discussions, collaborating with peers, and completing tasks. Participation is frequently the outward sign of a pupil's engagement in the subject matter or the wider academic environment. The teaching style and environment have an impact on both participation and engagement. Using interactive and collaborative teaching strategies like project-based learning, problem-based learning, or the use of digital tools and technology to support active learning are some ways that educators may encourage both.

Games can hold students' attention since they are naturally captivating. Students who are more engaged in the learning process may participate more frequently. In the context of learning economics, this can increase students' interest in the subject matter and encourage more active engagement by offering challenges, goals, and a sense of accomplishment. Turan and Meral (2018) and Wang (2015) found that game-based student response systems (GSRs) enhance achievement and engagement, while decreasing test anxiety levels, compared to non-game systems. game-based student response systems (GSRs) boost student engagement levels.

Students' positive reactions to digital game-based learning activities suggest that adding such activities to instruction can increase students' engagement while also making learning fun. Gamification has drawn a lot of attention as a potential means of enhancing the fun and engagement of learning. Gamification is the process of adding elements of games, including leaderboards, badges, and points, to educational tasks to boost interest and motivation (Nadeem et al., 2023).

Digital game-based learning (DGBL) has shown effectiveness in raising student motivation, engagement, and learning. Students' digital etiquette literacy increased because of DGBL, which also had a favorable impact on their motivation and enthusiasm for learning. In



line with behavioral engagement (BE) and emotional engagement (EE) data, students who played the digital game had higher levels of learning engagement. Digital games require students to respond to events in a virtual world, which are inherently more interactive than traditional learning methods. Encouraging participation and engagement is crucial for an excellent education since these factors have a significant impact on the quality of the educational process and the acquisition of a variety of skills that help students be ready for both their personal and professional lives.

Quizziz and Quizwhizzer

Quizizz and QuizWhizzer are popular online educational tools that enhance learning through interactive quizzes and gamified experiences, widely used in classrooms and professional learning environments for their ease of use and interactivity. Both can be found on their official websites, in product documentation, or educational blogs that review and analyze these platforms. The purpose of game-based learning (GBL) is to increase student motivation, participation, and engagement by incorporating gaming ideas into educational settings. Quizizz and QuizWhizzer are two platforms that demonstrate how GBL may be applied in the classroom.

Quizizz is a popular tool that gamifies quizzes to make learning more interactive and engaging. Students may be drawn to Quizizz's engaging features, which include real-time or homework assignments, a variety of themes and power-ups for added enjoyment, the ability to customize quizzes, leaderboards that promote competition, and fast feedback on answers. Quizizz has several beneficial effects, including increased student participation because of its entertaining structure, retention, and its ability to give teachers real-time statistics on student performance, which may help them pinpoint areas in need of development (Quizizz, n.d.). Figure 1 shows the features of the Quizizz.

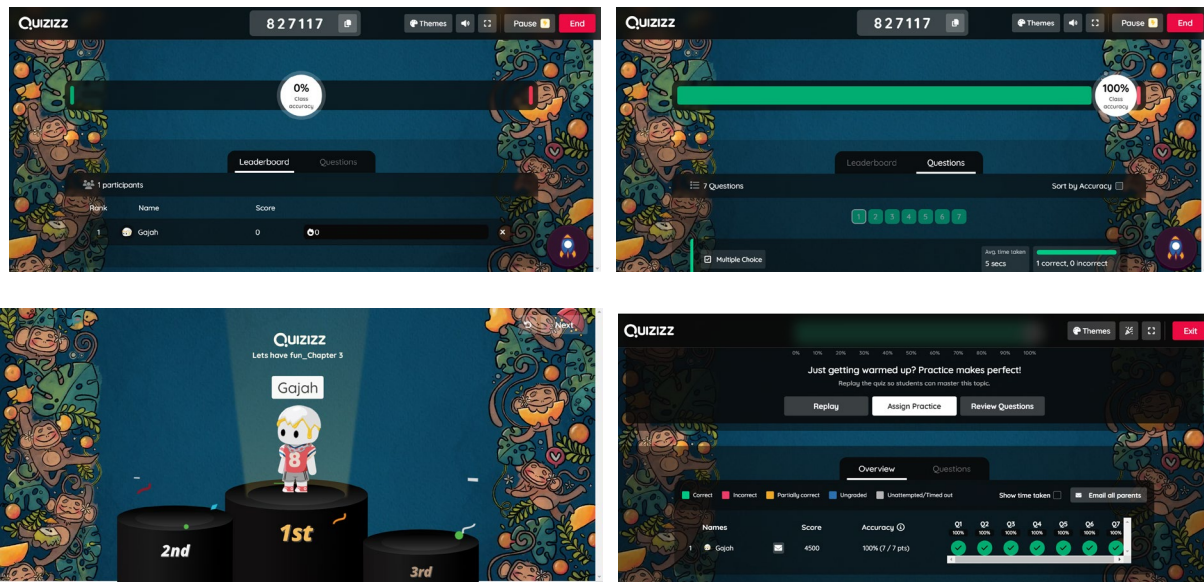


Figure 1. Quizizz

QuizWhizzer offers a distinctive and captivating learning experience by fusing quizzes with a board game structure. The key characteristics of QuizWhizzer are its board game format,

which adds visual and interactive elements; its features, which are customized to match the curriculum; its power-ups, traps, and bonuses, which add excitement and unpredictability; its ability to foster teamwork and collaboration among students through team play; and its ability to give students immediate feedback. QuizWhizzer's educational benefits include interactive and participatory learning, encouraging students to interact with the content through games and competitions, and fostering critical thinking, problem-solving, and collaborative abilities (QuizWhizzer, n.d.). Figure 2 shows the features and flow of using QuizWhizzer.

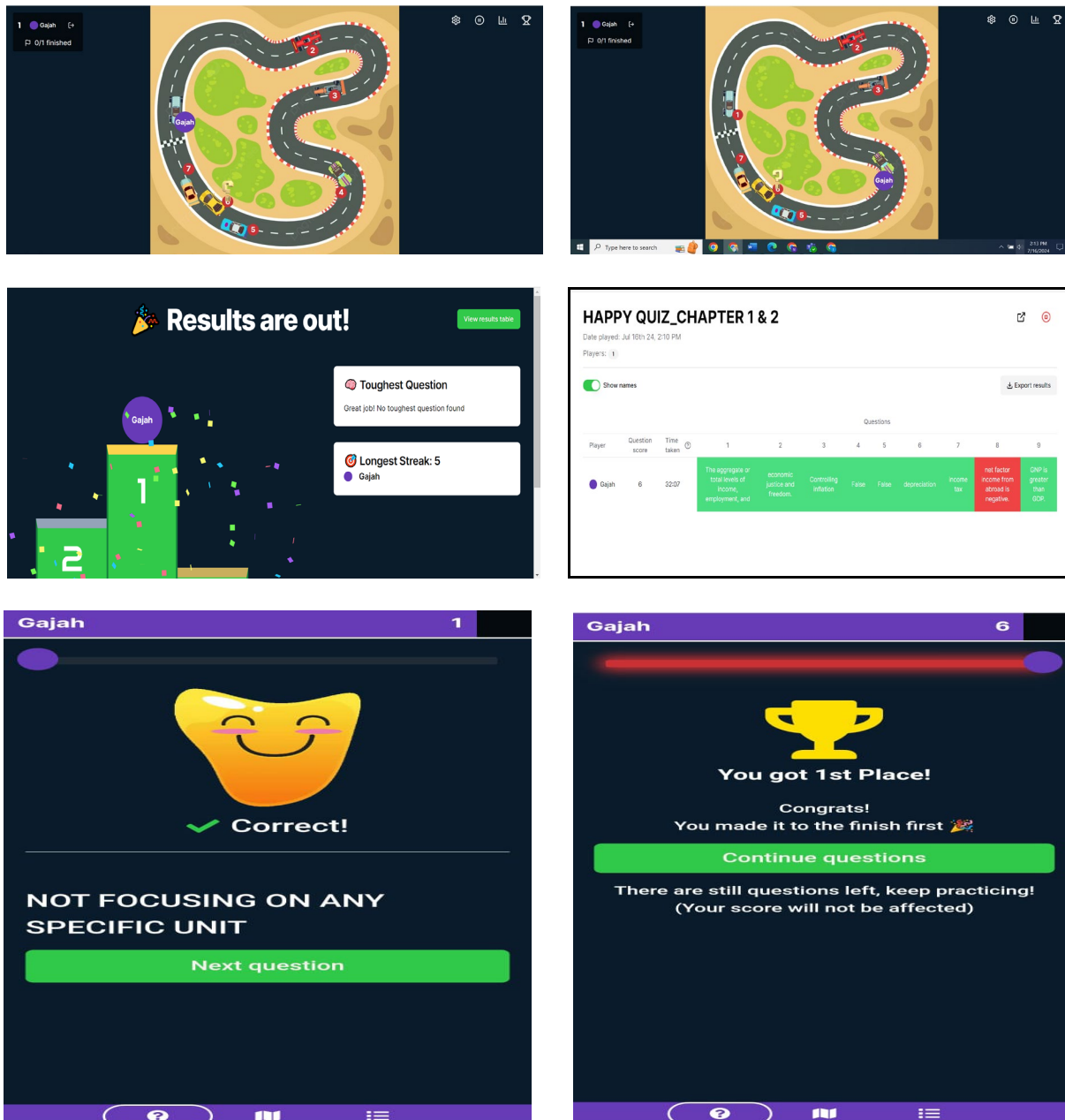


Figure 2. QuizWhizzer

Game-based learning concepts are used by Quizizz and QuizWhizzer to produce interesting instructional content. They are especially good at encouraging cooperation and



communication through team-based activities, allowing teachers to assess student knowledge and modify education accordingly, and fun-interactively reinforcing previously taught information.

Quizizz and QuizWhizzer are two examples of interesting game-based learning platforms that provide creative methods to engage students and improve their learning outcomes. These technologies increase the effectiveness, fun, and interactivity of learning by incorporating game components into the classroom.

Procedure for the implementation of Quizizz and QuizWhizzer for the lecturers or educators are:

- a) Lecturers or educators create the account of Quizizz or QuizWhizzer.
- b) Log in to the Quizizz or QuizWhizzer.
- c) Create a quiz button in the top right corner.
- d) Select the Quiz option.
- e) Choose the question type and write down the questions and answer options.
- f) Click on save question and add more questions to the quiz.
- g) Click on Publish to save the quiz.

While the implementation Quizizz and QuizWhizzer for the students in the classroom are:

- a) Students create the account of Quizizz or QuizWhizzer.
- b) Students log in to the Quizizz or QuizWhizzer.
- c) Students join Quizizz or QuizWhizzer.
- h) Enter the code that is shared by lecturers or educators.
- i) Students answer the questions.
- j) Get the results.
- k) Students who get the higher results are the winners.

These two learning tools are anticipated to help students understand the fundamentals of economics more thoroughly and boost their knowledge because they are accompanied by engaging games.

METHODOLOGY

This study is quantitative research conducted with a sample size of 40 students who were enrolled in the Diploma in Business Studies and the Diploma in Accountancy for the semester from March 2022 to August 2022. For most research, sample sizes ranging from more than 30 to less than 500 are considered adequate (Roscoe, 1975). The instruments used in this study are questionnaires consisting of 10 Likert questions, with the same questionnaire applied to both game learning tools. Students rate their agreement or disagreement on a scale ranging from “Agree” to “Disagree.”

For this study, data was analyzed using descriptive analysis and divided into four (4) parts, which are (i) acceptance of students towards the educational game using Quizizz and QuizWhizzer, (ii) engagement participation of students in learning economics subjects, (iii) interactive learning in economics, and (iv) beneficial uses in teaching and learning. The study used two online game learning tools such as Quizizz and QuizWhizzer. Quizizz is an Indian education software company headquartered in Bengaluru, India, that creates and sells a gamified



student engagement platform. Quizizz software is used in the classroom, group assignments, pre-test reviews, formative assessments, and pop quiz. Quizizz can show the questions and students must answer questions properly to get the higher score. Meanwhile, QuizWhizzer is a tool designed to enhance the classroom experience through gamification, without reducing learning. QuizWhizzer is a tool-friendly competition to do quiz games and a race to the finish, by answering questions.

RESULTS AND DISCUSSIONS

The result of effect in game-based learning in economics will be discussed in four (4) parts: acceptance of students towards the educational game using Quizizz and Quizwhizzer, student engagement in learning economics subject, interactive learning in economics, and beneficial uses in teaching and learning.

Table 1. Acceptance of students towards the educational game using Quizizz and Quizwhizzer

Statement	Percentage of Respondents (%)		
	Agree %	Neutral %	Disagree %
Quizizz and QuizWhizzer are fun and enjoyable	97.6	2.4	0
Quizizz and QuizWhizzer are easy to participate	87.8	12.2	0
Quizizz and QuizWhizzer assist students to understand the topic effectively	80.5	17.1	2.4

Table 1 shows the acceptance of the educational game. More than 80 % of the respondents agree that Quizizz and QuizWhizzer are fun and enjoyable, easy to participate in, and able to assist students in understanding the topic effectively. However, the results indicate that 2.4% of the respondents disagree that Quizizz and QuizWhizzer can assist students to understand the topic effectively. This phenomenon may arise from constraints in internet connectivity and the digital environment, or it may be indicative of students' need for in-person instruction or face to face education, specifically in comprehending mathematical concepts or graphic curve in Economics. According to Hartt et al. (2020), students view conventional lectures as more suitable for honing technical skills or procedures. Based on the survey conducted, the result stated that when a lot of material needs to be covered, games are not that effective and that it is more efficient to talk to students directly and almost tell a story versus having them play a game.



Table 2. Student engagement in learning Economics subject

Statement	Percentage of Respondents (%)		
	Agree %	Neutral %	Disagree %
Quizizz and QuizWhizzer enables visual collaboration during learning session	87.8	12.2	0
Quizizz and QuizWhizzer encourage visual participation in teaching and learning activity	87.8	12.2	0
Quizizz and QuizWhizzer help to increase engagement for teaching and learning purpose	82.9	17.1	0

The results in Table 2 present the student engagement in learning economics subject in the class. The result shows Quizizz and QuizWhizzer enable visual collaboration during learning sessions, encourage visual participation in teaching and learning activities and help to increase engagement for teaching and learning purposes.

Table 3. Interactive Learning in Economics Subject

Statement	Percentage of Respondents (%)		
	Agree %	Neutral %	Disagree %
Quizizz and QuizWhizzer able to develop an interactive learning environment	87.8	12.2	0
Quizizz and QuizWhizzer make learning economics interesting and not boring	92.7	7.3	0

Table 3 shows how Quizizz and QuizWhizzer can become interactive learning in the economics subject. Almost 87.8 percent of students agreed that the implementation of Quizizz and QuizWhizzer can develop an interactive learning environment. While 92.7 percent of respondents explain that by using Quizizz and QuizWhizzer, learning economics subjects becomes more interesting and not boring.

Table 4. Beneficial Applications in Teaching and Learning

Statement	Percentage of Respondents (%)		
	Agree %	Neutral %	Disagree %
Quizizz and QuizWhizzer are beneficial tools to be applied in teaching and learning	90.2	9.8	0
Quizizz and QuizWhizzer should be used by the lecturers or educators	90.2	9.8	0



The results in Table 4 show the beneficial applications of Quizizz and QuizWhizzer in teaching and learning. A total of 90.2 % of students agree that Quizizz and QuizWhizzer should be used by lecturers or educators in their teaching and learning process. This is supported by Mei et al. (2018) who stated that the use of online games during the class is significant in higher education institutes as a teaching tool to make students more interested in and focus on the class.

CONCLUSION AND RECOMMENDATION

The findings of this study show that game-based learning using Quizizz and QuizWhizzer can improve student interaction and participation by enhancing interest and preventing boredom in class. However, for these tools to be truly effective, certain factors, such as the quality of game design, alignment with learning objectives, and integration into the overall subject, must be carefully considered. While game-based learning increases engagement, relying solely on these tools may not be sufficient for deep learning, especially in complex subjects like economics.

To provide a more comprehensive educational experience, game-based learning using Quizizz and QuizWhizzer should be blended with traditional teaching strategies such as lectures, discussions, and problem-solving exercises. This approach ensures that games serve as a complement to more rigorous methods of teaching. Future studies should explore additional online tools that engage students in meaningful ways, focusing on improving participation and commitment in online learning environments. Additionally, further research could investigate the long-term effectiveness of combining game-based learning with other pedagogical techniques to maximize educational outcomes in subjects with technical or mathematical content.

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Conflict of Interest

The authors declare no conflicts of interest in relation to the research, authorship, or publication of this paper.

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About the Authors

Dr. Nor Zuriati Amani Binti Ab Rani, Senior Lecturer (Economics), Faculty of Business and Management, UiTM Cawangan Kelantan Kampus Machang.
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Mrs. Nik Suriati Binti Nik Hassan, Senior Lecturer (Economics), Faculty of Business and Management, UiTM Cawangan Kelantan Kampus Machang.
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