

Gamification in Economics Subject: A Dual Perspective on Student and Teacher Understanding

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To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v13-i1/20503>

DOI:10.6007/IJARPED/v13-i1/20503

Published Online: 28 January 2024

Abstract

Gamification is one of newest approaches and trending in 21st century of global education. This standby of the variations correspond of student's usage on mobile phones. Thus, attention to perspective of students and teachers towards gamification in economics subject is the main agenda. Also in contextualizes the study within the framework of economics as a subject for secondary school students, acknowledging its evolving nature. The aims of this study to identify the most challenging economics topics for students and explore their current perspectives on learning. Furthermore, the study seeks out to investigate how digital games can be effectively employed to cultivate students' interest in economics, providing a nuanced exploration of gamification within the educational context. The literature review traverses the gamification paradigm, emphasizing its transformative potential in shaping educational experiences. The qualitative approached is adapting with specifically interviews, the study engages with diverse responses regarding the difficulty of specific topics and the existing learning experiences of students. The findings unveil a spectrum of responses, capturing insights into the perceived difficulty of various topics and the current landscape of student learning. The recommendation underscores the need for further research, advocating a deeper exploration of methods that captivate student interest, thereby urging subsequent studies to delve into innovative approaches for enhancing the efficacy and engagement of secondary school economics education.

Keywords: Gamification, Economics Subject, Tools Education, Teacher and Student's Perspective, Technology in Economic Education.

Introduction

Global education trending moves to the escalating annual growth in the user base serves as an indication of the contemporary generation's profound interest in mobile gamification. Concurrently, the useful of mobile phones has surged significantly in Malaysia, reaching 94.8%. According to the statistic conducted in Malaysia stated that 46.3% of respondents utilize their phones for gaming (Malaysian Communications and Multimedia Commission,

2021). These statistics underscore the critical need to formulate an innovative teaching strategy, particularly one that integrates mobile gamification.

Currently, the dynamic landscape of educational technology, gamification in education has emerged as a transformative tool in teaching. Through gamification in education can increase the level of student focus in learning (Jamar & Noh, 2021). Andrzej Marczewski and Deterding states that gamification involves the conversion of non-game activities into formally structured, game-based experiences (Gilbert, 2016). This approach has garnered widespread attention, particularly in the field of education, due to its multifaceted applications. The fundamental principle of gamification revolves around the development of instructional games, distinguishing it from serious video games (Dicheva et al., 2015). In high school economics subject, the use of gamification in learning holds substantial promise for augmenting the comprehension for the teacher in the learning process (Rugu, 2021). In a field where conventional methods may exhibit limitations; this integration presents a viable avenue for sustaining student interest. This article aims to delve into the diverse perspectives of both teachers and students as they engage with gamification within the economics classroom.

In contrast to traditional video games, mobile gamification prioritizes mobility, capitalizing on the pervasive use of mobile phones. This shift aligns seamlessly with the prevailing trend, evident in the high adoption rates of mobile devices in Malaysia, reaching 94.8% (Malaysian Communications and Multimedia Commission , MCMC, 2021). Effectively harnessing gamification for teaching economics mandates the availability of these gamified experiences on various mobile operating systems, including the Apple App Store, Google Play Store, Windows Telephone Store, and other platforms tailored for specific mobile phone brands (Afaa & Abdul Razak, 2018).

The necessity of incorporating digital games into the economics subject arises from a myriad of challenges. A particularly salient issue becomes apparent through an analysis of the National Examination in Malaysia, revealing a disconcerting number of students falling within the pass and fail categories (Malaysian Certificate of Education, 2022) . The focus of this study centers on these examination results due to the substantial prevalence of students encountering difficulties in the Secondary Economics subject. Despite a slight decrease in pass and fail rates, a significant proportion of students still find themselves positioned within these challenging categories. Secondary students embarking on the study of Economics subject confront formidable challenges, as elucidated by (Aziz et al., 2008). This complexity emanates cause from theory, analysis, and application, thereby presenting a daunting task for teachers in facilitating comprehension (Mazdalifa, 2019). Furthermore, the scarcity of easily accessible resources, such as mobile gaming applications, sets Economics apart from other courses (Mahathir, 2022).

In answer to dominant demands and student preferences, the integration of digital games into the economics subject emerges as a fitting solution. This approach seamlessly aligns with the ongoing shift towards digital platforms in education, exemplified by initiatives like the "Bring Your Own Devices to School" program, piloted in multiple Kuala Lumpur schools this year. Under this program, students are granted permission to bring electronic devices, including laptops and phones, to school for educational purposes. This transformative shift towards a digitally centered educational landscape presents a timely opportunity to seamlessly incorporate digital games into the Economics curriculum, thereby contributing to an elevated level of student comprehension. This study aims to

- explore their current perspectives on learning,

- identify the most challenging economics topics for students, and
- investigate how digital games can be effectively employed to cultivate students' interest in economics, providing a nuanced exploration of gamification within the educational context.

Economic Subject for Secondary School

Economics subject, as a social science, delves into understanding individuals' insatiable needs while acknowledging the constraints imposed by limited resources. These economic subjects are offered under the field of Technical and Vocational Education and this optional subject primarily targeted upper secondary students. The economics subjects in this high school have been organized according to the current circulation of the world. Many theories and models are described to make decisions in economics. This subject aims to provide students with a comprehensive grasp of economic fundamentals. Considering this, the principal objective of this study is to identify the Economics topics posing the greatest challenges for students. The primary goal of this research is twofold: first, to pinpoint the most challenging economics topics for students; second, to explore students' current perspectives on learning and how digital games can be effectively employed to cultivate their interest in economics.

Gamification in Education

The utilization of digital games for educational purposes is a well-established concept in the pedagogical domain (Devendren & Nasri, 2022), however, its exploration within the economic subject in secondary school remains relatively limited. These games, characterized by the transformation of existing activities into organized, game-based experiences Gilbert (2016), fall under the umbrella term of gamification. Pioneering figures such as Marczewski (2014); Deterding (2011) introduced the concept of gamification in educational technology. Specifically designed to address educational challenges (Marczewski, 2014), economic digital games have exhibited a positive impact on student motivation and achievement (Plass et al., 2015). Hence, the incorporation of video games into the classroom emerges as a potentially beneficial strategy for students.

Several elements have been discussed in the design of gamification forms to establish gamification criteria. For instance, game mechanics (Zichermann & Cunningham, 2011), game interface design patterns (Deterding et al., 2011) and eight criteria for e-sports developers (Khairuddin et al., 2021). This standard has been improved upon and accepted in numerous conversations. Accordingly, gamification requires four fundamental components: character, level, grade, ranking board, and badge (Diana, 2020). These components will be utilized in the creation of games that are gamified or instructional. The linkage of digital games to mobile devices is imperative in contemporary discussions specially to increase the motivation factor on student (Razak et al., 2023). Not only does this linkage enhance individual learning productivity from any location, but it also offers various advantages, as elucidated by studies like (Sarrab et al., 2012). The evolution of mobile learning, or m-learning, since the 2000s Pedro et al (2018) has witnessed transformations in both meaning and content. Defined by Saedah et al (2012) as the utilization of wireless internet and technology-based curricula in computer-based instruction, mobile learning aims to attain diverse objectives, including enhancing student motivation, fostering knowledge sharing, providing flexible learning options, and supporting self-directed learning.

In the broader context, the pivotal role of mobile learning, or m-learning, in education becomes apparent. Leveraging wireless internet and technology-based curricula, laptops

have become indispensable tools for instruction and learning (Faruze & Md, 2020). Furthermore, teachers are more likely to implement gamification-based learning because they think it can boost students' self-esteem (Adnan & Mahmud, 2023). Mobile learning integration in the educational system strives to achieve various objectives, including heightened student motivation, the promotion of self-directed learning, and the facilitation of flexible learning. Furthermore, m-learning, as defined by Saedah et al (2012), amalgamates technology-based learning, portability, indirect usage, and meets the needs of students in remote areas. Research conducted at Osmania University in India, titled "Mobile Learning for Education: Benefits and Challenges" by Mehdipour and Zerehkafi (2013), underscores students' preference for mobile learning due to convenient access, immediate communication, flexibility, reduced paper usage, and other advantages. This preference stands in stark contrast to e-learning and aligns with constructive learning principles, allowing students to access information opportunistically (Lavin-Mera et al., 2009). Additionally, a study at the University of Bari in Italy, "Mobile Gaming Experience and Co-Design for Kids: Learn German with Mr. Hut" (Marengo et al., 2016), demonstrates the value of play-based learning in providing students with a meaningful and engaging educational experience.

During the 2021 Covid-19 outbreak in Malaysia, the adoption of mobile learning surged as various tools and devices were employed for virtual education. Extensive research on Malaysian mobile technology, such as the study "M-Learning: A New Era in Learning" (Mahizer, 2016), highlights the country's significant potential in harnessing mobile learning, particularly given the increasing reliance on cell phones among the younger generation. Adnan and Mahmud (2023) advocate for digital learning as a dynamic and cutting-edge approach to teaching, emphasizing continuous innovation in teaching strategies aligned with students' cultural backgrounds, preferences, and skill levels. Digital learning, consistent with current educational trends, enables a student-centered learning environment, allowing students to take ownership of their learning with minimal guidance. Moreover, as noted by Zenawi (2012), engaging students in knowledge-seeking activities through digital learning significantly enhances their intellectual growth. Digital games, rooted in fundamental learning theories such as behaviorism, embody key aspects of reinforcement, response, and stimuli. These games actively encourage players to seek out information, providing valuable feedback that enhances understanding. The resulting heightened motivation facilitates a more effective teaching and learning journey (Skinner & Belmont, 1993), aiding students in comprehending subject matter and grasping core concepts more effortlessly.

The Ministry of Education Malaysia (MOE) strongly encourages the active engagement of both teachers and students in various technology-based learning platforms. Aligned with the seventh shift of the Malaysian Education Development Plan (PPPM) 2013-2025, which prioritizes the incorporation of ICT to enhance learning, the MOE collaborates with multiple agencies to explore diverse technological learning methods for student enhancement. Mobile games have demonstrated high effectiveness in achieving educational objectives. For instance, a study on the use of mobile games to teach math skills (Muhammad et al., 2020) illustrates their efficacy. The positive response from both parents and students to the mobile math game "Sifir Run," designed to teach multiplication concepts to elementary school students (Ishak & Abdul Rahman, 2021), further underscores the value of incorporating gamification techniques into the learning process. This integration not only fosters active student engagement but also encourages participation in classroom activities due to the ready availability of these mobile games.

Methodology

This study adopts a cross-sectional survey design employing a qualitative research approach to explore the dual perspective of student and teacher understanding within the gamification context of the economics subject. The utilization of a cross-sectional survey with a qualitative approach proves essential in thoroughly examining the dual perspective of student and teacher understanding in the gamification in economics. This research design facilitates a comprehensive exploration of current attitudes, experiences, and obstacles faced by students and teachers in real-time, providing a holistic snapshot of their insights. Through qualitative methods such as interviews, the study delves deep into the complex elements of incorporating gamification in the Economics classroom, allowing for the collection of in-depth, context-specific data and a nuanced understanding of the dynamics at play.

Sample and Data Collection

For this research, a purposive sampling method is employed, as suggested by Creswell & Guetterman (2018) for qualitative methods like interviews. The selected sample comprises individuals with relevant information and experiences. This phase involves participants meeting specific criteria: i) Teachers and schools with Bring Your Own Devices (BYOD) programs, and ii) Schools with a low achievement in Economic subject based on the National Examination. The construction of the questionnaire protocol is guided by the ASSURE model, leading to the subsequent initiation of the field study.

Analyzing of Data

The methodology employed for thematic analysis in this study draws upon the recommendations proposed by Merriam (2001). Initially, the audio recordings of the interviews undergo transformation into verbatim transcripts. Subsequent to this, the verbatim texts undergo a meticulous data cleansing process, involving the elimination of superfluous elements such as filler words ("aaa," "oh," etc.). To gain a profound understanding of the contextual data within qualitative studies, the researcher iteratively reviews the verbatim transcripts on multiple occasions (Zuraini et al., 2022). The foundation for the deductive process of identifying initial themes is laid upon the outcomes of the preliminary literature review. Following this deductive phase, the inductive process ensues, aimed at identifying emergent themes that may surface from the interview data. The themes identified through this comprehensive process are subsequently employed to systematically organize and analyze the data. It is imperative to note that the preservation of the integrity of cited sources is maintained throughout this analytical procedure.

Findings

The informant profile is as indicated in Table 1.

Table 1

Informant profile

Informant	Gender	Status
Informant 1	Female	10 years teaching
Informant 2	Female	8 years teaching
Informant 3	Male	Secondary student (17 yrs)
Informant 4	Male	Secondary student (17 yrs)
Informant 5	Male	Secondary student (17 yrs)
Informant 6	Female	Secondary student (17 yrs)

The Current Learning Environment of the Economics Subject

It is essential to look at the learning environment when studying economics. This includes the strategies and procedures educators employ to teach economics in the classroom. Interesting insights have been discovered through interviews. First, it was discovered that the teaching and learning methodology is conventional, with instructors mainly depending on lectures and in-class activities to reinforce student understanding.

“Seldom are there any exercises in class. Usually, teacher just uses the whiteboard.” (Sp/Kon/I3)

“Exercises are always carried out by the teacher using the module” (Sp/Kon/I5)

In addition to using technology in the classroom, teachers frequently create PowerPoint slides. Although using slides for teaching and learning is not new, students find exercises such as these to be too commonplace.

“Although the students may view my use of slides in the teaching and learning process as commonplace, I still utilize them.” (Sp/Sld/I1)

Participants were asked about the current method of teaching economics via mobile games after providing feedback on the learning environment. It was found by the majority that such teaching is lacking.

“There aren't any mobile economics games available right now, but teachers can use them to send out important notes and complete Google Form quizzes.” (Sp/T/I5)

Teachers report that there aren't many game apps available for economics classes, and they also report not being very skilled at making their own. Educators broadly acknowledge and support these claims.

“Our Telegram group connects economics educators in Malaysia. Despite the large number of question applications, our group has not yet introduced any economics-specific games. Regretfully, I'm not skilled enough to make my own games.” (Sp/T/I2)

This interview clearly demonstrates that educators use a conventional method to guarantee that their students have a thorough understanding of economics.

Challenges in the Study of Economics Topics

Students must have a solid understanding of economic theories to succeed in the economics subject. While the Form 4 topic dives into macroeconomics, covering subjects like government policies and their effects on the economy, the Form 5 curriculum places a great deal of emphasis on a variety of microeconomic concepts. All of the participants in the interview agreed that it can be challenging for both students and teachers to understand the idea of price elasticity.

"The topic of demand and supply elasticity is one of the obstacles." (Ts/Kh/I1)

"Elasticity is the topic I have the most trouble understanding because I have trouble understanding it in general." (Ts/Kh/I3)

One of the challenges this topic presents is the large amount of curve placement and memorization. Every curve that is shown in the field of economics has important implications and must be understood in relation to its application. For instance, the downward slope of the demand curve needs to be inclined, which can be confusing for students attempting to understand this idea.

"This subject is challenging for me because of the numerous curves." (Ts/Kh/Sk/I5)

Even though this topic only requires simple calculations, students frequently struggle to understand it because of its computational nature. Since the majority of students in this level of learning are not yet proficient in the subject of economics, this is a common problem among students in a typical class.

"Since elasticity is associated with mathematics and computations, I believe it to be the most challenging topic to learn." (Ts/Kh/Pg/I4)

This situation is known to the educators overseeing the subject. The final year examination's Main Specification Table (MST) makes it abundantly evident that the students' results are much below average. This only serves to highlight how urgent it is to give this subject more time and attention to ensure that the students understand it completely.

"If we look at the recent examination, there was a calculation involving elasticity in section B. Almost 90% of the students answered that question incorrectly. Nearly 8 marks were lost." (Ts/Kh/I2)

As a result, the concept of price elasticity presents the biggest learning obstacle for students. Teachers who concur that this is a tough subject for students to understand also lend support to this conclusion.

Gamification in Economics Subject

When the interview came to an end, the participants were asked to recommend features that should be included in any mobile economics game that was created. Every participant offered a few recommendations. The idea that the game should have eye-catching graphics was one that was frequently made and accepted.

"The visual representation of the game should be visually appealing, steering clear of the traditional aesthetic that is defined by grid-like patterns." (Cp/G/I6)

As per the informants, the game must have visually appealing graphics to conform to current trends.

“They stressed that in order to create the impression that the game is on par with those already available in the modern gaming landscape, the graphics should be realistic and current.” (Cp/G/I2)

The second proposal is to add a leader board to the game that would function as a scoreboard to determine who is the best at understanding economics. This idea of a leader board corresponds with the language used in online gaming contexts.

“.....In online gaming, the presence of a leader board is considered essential. It is through this scoreboard that we can ascertain who has achieved the highest scores or performance rankings.” (Cp/Ppn/I4)

With the help of the suggested scoreboard, teachers hope to inspire students to keep going after they hit obstacles in the game.

“A scoreboard of this kind would entice students to play the game more frequently, with the goal of reaching the highest ranks, akin to the competitive dynamics seen in games such as Mobile Legends.” (Cp/Ppn/I6)

Apart from leaderboards, the game ought to include prizes for students who reach the highest levels of skill in the gameplay.

“Pupils show a preference for being recognized for their accomplishments, such as getting the highest scores, and they look forward to game rewards as a way of getting recognized for their efforts.” (Cp/Sh/I2)

Additionally, informants suggested that the game should be available for mobile devices in addition to computers.

“Playing video games on computers alone presents difficulties because of restricted access. It is recommended that students play on their phones since they can easily carry over their game play at home.” (Cp/Tlfn/I2)

Furthermore, a few informants proposed the use of a game that records students' learning progress (PBD) so that teachers can quickly and easily evaluate their progress. In the context of PBD, this feature is thought to be crucial in helping teachers improve the general performance of their students.

“It would be ideal if the game could be created based on PBD proficiency levels, tracking and continuously recording students' accomplishments along the way.” (Cp/PBD/I3)

Finally, a thorough grasp of the topic has been made possible by the insights gleaned from the conducted interviews. Five broad themes have been revealed by the questions posed, providing insight into the dual viewpoints of educators and students regarding gamification in economics education. These themes cover a wide range of topics, such as the advice and preferences of both informants, the importance of visually appealing graphics, leader boards,

rewards, and platform adaptability. The information obtained from these interviews offers useful implications for the creation and enhancement of instructional strategies in the field of economics in addition to adding to the current conversation about gamification in this field.

Discussion

During the interview, a number of important themes that corresponded with the goals of this study surfaced. First, the current learning environment of the economics subject emerged as a theme. Teachers still use traditional methods of instruction, such as exercises from textbooks, slide shows, and explanations written on whiteboards. In the modern setting, slide shows are observed to be less engaging, which may hinder students' acquisition of fundamental knowledge (Junaidah et al., 2020). It is undeniable that conventional methods, such as explanatory lectures, are effective in the teaching and learning process; however, if not articulated effectively, instruction may lose its significance (Sibir et al., 2012). Explanatory lectures, as an example of traditional teacher-centred learning, often make students passive because they only take in information without actively participating in it (Sitompul, 2020). When such traditional approaches are used, students become less motivated to learn, which in turn causes a decline in their performance. Therefore, there is a pressing need for innovative methods and approaches in the teaching process to enhance student performance in the current educational landscape (Yaakob et al., 2023). Diversifying the learning methods through technology can also enhance students' comprehension in the learning process (Zhang et al., 2017). To diversify and support both teachers and students in the learning process, this includes incorporating modern technologies in accordance with the current circumstances (Wakhungu & Benjamin, 2013).

The interview yielded a second theme that concerns the challenges in the study of economics topics. Understanding elasticity topics is one of the main obstacles to learning economics, according to the interviews. Price elasticity of supply and price elasticity of demand are two essential elements of this topic. In this field, there are several formulas that students must learn to comprehend in addition to differentiating between curve movements. Students' basic understanding is weakened because of the procedural complexity of these computations (Noor Erma & Leong, 2014). Students frequently cite this topic's difficulty in drawing elasticity curves and performing these calculations as one of the reasons they find it challenging. This observation is consistent with the body of literature that describes economics as difficult because it combines theoretical ideas with real-world applications (Mazdalifa, 2019). Furthermore, knowing which steps to take in certain elasticity scenarios requires application expertise. Students' interest in continuing their study of economics is frequently lowered because of the challenges associated with understanding these ideas. Since a sincere interest in the subject matter is frequently correlated with positive influences on subject knowledge, interest plays a crucial role in the learning process (Ainley et al., 2002). If student do not master this topic, the student's achievement in the national examination will be compromised as report by According to the Malaysian Examination Board (2022), students find it difficult to master this subject when they lack interest. This has a negative impact on students' performance in the national exams. Based on the conducted interviews, the examination specification schedule from the study also shows that approximately 95% of students found it difficult to respond to questions on this subject.

The theme that concludes is gamification in the economics subject. From the standpoint of online games or gamification, numerous standards have been proposed. Students are more interested in digital game formats because they belong to a generation that is continuously

surrounded by technology. Games with mission-oriented components, rewards, and scoreboards especially appeal to them. This tendency is consistent with the characteristics of gamification as described by Diana (2020). It has been suggested that gamification can improve students' comprehension of the economics curriculum. The utilization of technologies like gamification is posited to create a conducive and engaging learning environment, capturing students' interest in the process (Gabarre et al., 2014). According to Marlina & Aisyah (2022), gamification has the potential to boost students' engagement with a subject matter and improve their performance in mastering particular topics. Student motivation to excel in a given subject can be fostered through gamification (Talib et al., 2017). Gamification is also anticipated to increase students' creativity, particularly in situations requiring them to solve problems (Nik Nurasyikin & Hazrati, 2022). When gamified learning is implemented, both teachers and students have the necessary equipment (Fong Peng & Zahwah Jamaludin, 2022). The results and previous research indicate that gamification innovation in the economics learning process is clearly needed. This is due to the fact that gamification has the ability to raise students' motivation, accomplishments, and level of interest in economics.

Conclusion

As a conclusion, from the findings of this research interest, this article highlighted several considerations regarding the necessity of digital games for economics education have been identified. These insights have been elucidated through three themes: (1) The most challenging topics in economics, (2) The existing learning environment within classrooms, and (3) The compelling criteria for effective economics education, along with the enticing features of digital games in the economics subject. Derived from these themes, several recommendations are proposed

1. The Ministry of Education Malaysia (MOE) should extend the Bring Your Own Device (BYOD) program to all schools, aiming to provide students with broader access to digital resources for educational purposes.
2. All educators should be exposed to and trained in the development skills required for constructing digital games. This would empower teachers to incorporate innovative digital learning tools effectively into their pedagogical practices.
3. Specific digital games addressing the intricacies of the Price Elasticity topic in Economics should be developed. Tailoring digital games to challenging subject matter can significantly enhance students' understanding and engagement with complex economic concepts.

The results of this study have shown that using digital games to teach economics has a number of benefits. Students regularly use smartphones in their daily lives in this digital age. Considering how widely used smartphones are, it is important to highlight smartphone-based education methods. Using digital games to enhance learning is one such strategy. While quizzes are a common format for digital games, educational games follow a structured learning approach. As a result, using digital games to tackle difficult subjects during the learning process is a solution.

Furthermore, the advent of digital games does not mean that traditional teaching strategies should be dropped. To pique students' interest in academic learning, digital gaming and traditional teaching must be integrated. These computer games can function as creative teaching and learning aids or tools. If this integration is maintained, it should lead to engaging learning opportunities and eventually close the achievement gap between students at

different proficiency levels. A promising path toward creating a more inclusive and dynamic learning environment for economics is the fusion of traditional teaching methods and digital gaming.

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