Engaging Students in The Learning Process with Game-Based Learning

Phan Thanh Tuan¹ ✉ Nguyen Thi Ha Phuong² and Nguyen Thanh Nam³

¹Faculty of Foreign Languages, Dong Nai Technology University, Bien Hoa City, Vietnam
²Faculty of Foreign Languages, Dong Nai University, Bien Hoa City, Vietnam
³Faculty of Foreign Languages & Information Technology, Ho Chi Minh City College of Technology, Thu Duc City, Vietnam

Corresponding Author: Phan Thanh Tuan, E-mail: phanthantuan@dntu.edu.vn

ABSTRACT
Recently, a novel method of instruction—the use of educational games—has gained traction, particularly in the teaching of English. The method of teaching English using educational games to non-native speakers who use the language as a second or foreign language has shown remarkable results. An inventive framework for implementing the educational games learning strategy at universities is offered by this research. This is done to provide pupils with chances for interdisciplinary learning and lifetime learning. In order to address gaming and learning, the research presents social skills and knowledge training. It explains the desired learning point as well as the part that game aspects play in student engagement and the interplay between educational gaming material and students. The fundamental building blocks for developing social and cognitive abilities are the collaborative learning concepts, which are further discussed in the research. Further research links game-based learning’s benefits to the development and enhancement of attitude. The research also looks at three theories: engagement theory, problem-solving theory, and narrative-centered learning theory. These ideas are crucial to the creation of the game-based learning strategy. The study goes on to discuss instructors’ opinions on the game-based learning technique after giving its theoretical foundation. There is also a discussion of the benefits and drawbacks of game-based learning.

KEYWORDS
Learning Process; Game-Based Learning; instruction; cognitive abilities; narrative-centered learning theory

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1. Introduction
Using digital and non-digital games, game-based learning is a way to acquire new knowledge and abilities (Grace, 2019). The use of games in the classroom has been shown to significantly enhance student learning and academic performance (Kula, 2021; Syafii, 2021). Doctor (2013) states that there are two parts to the game-based learning approach’s process of supporting learning: Two ways that games may help students learn are by first encouraging them to integrate information from many disciplines and use it in their decision-making processes and by allowing them to assess how their choices and decisions affect the game’s conclusion. Additionally, it enables students to converse with other players and deliberate about maneuvers connected to the game; this enhances coordination, which in turn advances social connection abilities.

The greatest way to develop problem-solving abilities is via game-based learning; Han (2015) discovered, for example, that learning through interactive sessions increases students’ learning and enhances their cognitive capacities for problem-solving. Problem-solving skills are crucial for adapting to society. By integrating several capacities into the learning process, game-based learning is also seen to have the potential to raise student engagement. Furthermore, compared to pupils who do not play educational games, those who do exhibit greater educational gains in a variety of topics, including language comprehension (Doctor, 2013). As a result,
combining education with a game-based approach may be a useful way to balance the interests of instructors and pupils. To put it simply, learning via games enhances students’ creativity, coordination, and engagement.

1.1 Games and Learning

The goal of game-based learning is to combine theoretical knowledge with game-based learning. According to Chen et al. (2018), game-based learning gives students the opportunity to investigate challenging topics and learning settings as well as specific learning goals. This approach works particularly well when used in conjunction with an English-language learning environment (Mozelius & Hettiarachchi, 2017). In order to prevent pupils from becoming bored, games should be made so that they may repeat cycles inside the game setting. Furthermore, a successful educational game should cause students to exhibit desired behaviors throughout these periods of repetition; this may be done by encouraging certain emotional and cognitive responses to the game’s feedback and interactions (Boctor, 2013). A debriefing procedure and an evaluation of the learning objectives have to be used in between games (Mozelius & Hettiarachchi, 2017). During post-game debriefings, the instructor might draw a link between the game and the real world. Additionally, it forges a link between in-game events and real-world ones, tying students’ comprehension of the game to their education (Bundick et al., 2014).

Programs for learning via games should enable students to participate in their education and to consider, comprehend, and apply the information they have learned to real-world situations (Boctor, 2013). In this sense, using an adventure style in instructional games might be beneficial. The goal of educational adventure games is to provide “edutainment,” which is a combination of enjoyment and instruction. These games are often sophisticated and include obvious examples of deterministic issues (Bundick et al., 2014). For example, issues are often present in adventure games, and players must solve these challenges in order to progress through the game. As a result, choices made by players during gameplay may directly affect how the game develops, giving the user power over the experience. Adventure game riddles may be challenging to complete, but trying various approaches won’t be too hard (Bundick et al., 2014). Crucially, Boctor (2013) pointed out that the process of learning connected to adventure games might enhance players’ overall aptitude for problem-solving.

A game’s eligibility as educational relies on a number of factors. While some, like Boctor (2013), offer a more precise definition, arguing that dynamic visuals, rules, objectives, and interaction features are what distinguish educational games, Plass et al. (2015) contend that an educational game’s qualities are primarily defined by its interactivity elements. Hwang et al. (2016) went on to say that the elements of imagination, curiosity, challenge, and control serve as the foundation for instructional computer games. In this case, the settings where the games are situated are represented by fantasy. Students’ curiosity is piqued, and their learning efficiency is increased by the fantasy element (Hwang et al., 2016). In terms of curiosity, the constant addition of fresh data may keep students engaged in the game in addition to the non-deterministic results of the games. In terms of difficulty, the games have to be timed and restricted. Lastly, in order to maintain control, just as in real life, players must abide by a set of rules, whether they be procedural rules pertaining to conceivable actions or system rules defining the game environment. This is how players of instructional games experience second-order reality.

According to Pho and Dinscore (2015), game-based learning has more potential to boost motivation and pique students’ interest in the subject matter than it does to be a better educational strategy than other learning techniques. In contrast, other researchers have found that, depending on the subject matter, students are better able to retain knowledge learned through game-based approaches than that learned through other learning approaches; interdisciplinary topics requiring skills like debating, critical thinking, and interpersonal communication are those associated with the greatest game-based learning advantage (Kucher, 2021).

1.2 Games and Collaborative Learning

As to the findings of Dichev and Dicheva (2017), game-based education is the most efficient way to guarantee collaborative learning among students. Collaborative learning is an established aspect of the learning process. In collaborative learning, students share information with the class community to gain knowledge, and it is well-known that using technology in the classroom encourages students to participate more actively and be less passive. A constructivist learning environment is another benefit of game-based learning, where students use their prior knowledge to solve issues related to the topic being studied. Additionally, game-based learning may assist students in processing and decoding crucial information needed to comprehend course materials. As a result, game-based learning gives students the tools and chances they need to participate more actively in their education. Students may share knowledge and ideas, work together to complete easy tasks and overcome obstacles via game-based learning. Furthermore, Boctor (2013) noted that, in contrast to the conventional approach of conveying a storehouse of knowledge to passive students who are often bored and inattentive, game-based learning transforms instructors into participants and teachers of the learning process.
1.3 Games and Growth Mindset
According to Kühn et al. (2019), perseverance, ingenuity, and problem-solving abilities are essential for success in video games. When players start playing a game, they fully anticipate that they will make some errors and that it will take patience to go through challenging stages. They may even need to replay certain levels in order to successfully advance beyond them. One gets the impression that in video games, there is no such thing as failure because of the option to restart levels (Schaaf & Mohan, 2016). It is noteworthy that students need to have the same level of commitment to learn how to tackle class-based difficulties when comparing this to basic classroom instruction. The cornerstones of a progressive mentality, which is predicated on cognitive flexibility, problem-solving, and pattern detection, might include determinedness and persistence.

Wu (2015) found that outside of the classroom, the majority of young people play video games, whether digital or not. Wu (2015) also found that 7–15 hours a week are anticipated to be spent playing video games by 94% of adolescent females and 99% of teenage guys. Due to the widespread appeal of these games among kids and teenagers, game-based learning has been suggested as a method of teaching youngsters and fostering a development mentality in them (Boctor, 2013). When students who have failed are motivated to keep trying and improve, a growth mindset takes root (Dostál, 2015). Because of this, students who have a growth mindset are prepared to try a task more than once until they get the desired result. These advantages of game-based learning encourage the use of digital and/or non-digital game components in educational settings outside of the classroom.

Games, as opposed to learning, are mainly meant to be entertaining and to motivate users to keep playing. Many games have an interchanging framework whereby triumph and disappointment are the main elements. Because of this, game-based learning may be a useful strategy for cultivating a growth mindset. Since playing games is enjoyable, students are more likely to stick with the activities and become more committed, even when they don’t succeed (Rowe et al., 2011; Taub et al., 2017). Although they can see the progress they have made in the game, students are encouraged to try again in an effort to better their performance even if they don’t instantly reach their ultimate intended target.

The games must be used and organized properly when incorporating game-based learning into the classroom; otherwise, the desired outcome will not be achieved. Some games, for instance, may include computational elements but may not always be instructional (Pho & Dinscore, 2015). It is the duty of the instructor to choose games that are appropriate for the students and include the right ideas; for example, games used to assist students in solving mathematical issues need to be sufficiently accurate in terms of calculation results. Additionally, instructors must choose simple, easy-to-follow games for their students in order for game-based learning to have the desired learning effects (Li, 2017). According to the author, the widespread belief that playing video games may need several tries to finish a level suggests that failure in game-based learning is not viewed with the same contempt that comes with failing exams in the classroom. Students may learn from the games that they can overcome any obstacle.

2. Theoretical Underpinnings
Three theories are essential to the development of a game-based learning approach model: narrative-centered learning theory, problem-solving theory, and engagement theory.

2.1 Narrative-Centered Learning Theory
According to Rowe et al. (2015), the ideology—which deals with the mental processes involved in the construction of narratives—determines the viability of the game-based teaching method. The integration process is the main idea, where pupils are transported to a new place and era in a way that is so realistic that it seems genuine. After that, the pupils act out the story. Students actively draw conclusions and experience passionate engagement via their interactions with the narrative text by acting out the roles of the game’s characters (Kühn et al., 2019). Gamers may use a variety of views to better understand and engage with the game and succeed in it, much as readers use several perspectives to interpret a book or other reading material. Learning environments that allow for active interaction between the characters and the story are known as narrative-centered learning games (Lester et al., 2014). When it comes to students’ exploration of the structure and learning processes, as well as the development of meaning, the narrative may serve as a dynamic instrument for game-based teaching. According to the narrative-centered paradigm, educational games may aid in giving students’ a personal, meaningful context for the disciplinary material of situations.

2.2 Problem-Solving Theory
The ability to solve problems is crucial in today’s fast-paced world. Possessing problem-solving abilities makes a person more valuable to employers, giving them an edge in the job market. Dostál (2015) asserts that addressing issues with correct structure is a linear process that consists of two steps: 1) creating a problem and 2) coming up with a solution by working inside the problematic area. But it’s simpler to solve difficulties in a well-organized environment than it is to solve problems that could arise in everyday life. For example, issues encountered on the job are often vague and difficult to resolve using methods learned in a classroom. Therefore, fostering an atmosphere where students may work through unstructured challenges can improve their capacity to address problems in the real world once they graduate from college and start working. The goal of educational games
is to close the gap between issues in the classroom and real-world difficulties. By offering students a variety of options for solving problems, testing their problem-solving skills with vague challenges, and ultimately letting them collaborate to find solutions, the game-based learning approach fosters the development of problem-solving skills.

2.3 Engagement Theory
According to engagement theory, giving students more opportunities to participate in the process would help them remember the material better. According to Whitton (2011), engagement pertains to a student’s drive and interest in a topic, as well as their knowledge of its aspects. As a consequence of being encouraged to choose assignments according to their skills and taking the initiative when given the opportunity, students fully participate in completing the tasks that are given to them. The dynamic, behavioral, and/or cognitive engagement features that students display may be used to determine the level of student involvement, depending on the educational gaming variables at play. As a result, game-based learning has the potential to raise student interest in the curriculum. Whitton (2011) states that engagement theory puts forward three ideas to guarantee that students are effectively engaged in the learning process: The first thing that has to be emphasized in the learning process is how pupils work together. Secondly, project-based activities and tasks should be included in the learning process. Third, in order to promote successful student participation, assignments outside of the classroom should be genuine, relevant, and meaningful.

2.4 Teacher’s Perceptions of Game-Based Learning
The primary goal of implementing learning-supportive technology is to enhance and assist the academic performance of pupils. As a result, it’s critical to combine conventional and technological approaches—such as game-based learning—to increase students’ willingness to interact with the curriculum (Wu, 2015). The growing availability of technology and the amount of time students spend playing video games make it easier to implement the game-based educational method. This has created a gaming culture that the education sector should take advantage of (Wu, 2015).

Wu (2015) claims that when kids learn in an interactive way that makes full use of their cognitive problem-solving skills, their levels of satisfaction rise. This suggests that the best way to achieve classroom satisfaction is to use technology. However, most educators are not up to date on gaming-based teaching methods, and as a result, they do not fully see the potential of this technique. Many educators are reluctant to employ games in the classroom, and when they do, they often don’t fully comprehend the principles of game-based learning. However, after a lot of studies showing how gamification in learning may boost academic achievement, things are starting to get better. Wu (2015) asserts that educators are actively involved in putting game-based learning strategies into practice. Consequently, it is vital to comprehend the perspectives of educators about the gamification of education.

The main issue that instructors have with the use of technology is that it may be disruptive. Some teachers have found this to be problematic when attempting to include certain game elements in their lessons (Li, 2017). Furthermore, a number of educators lack previous gaming expertise, which makes it difficult for them to modify gaming for instructional reasons. Reactions to the use of instructional games in college-level English instruction are divided because of these two concerns. Wu (2015) asserts that a person’s attitude, which is a reflection of their own perspective, may affect the attitudes of other people they come into contact with. So, figuring out how instructors feel about technology-based learning is crucial to figuring out whether or not they will embrace and use gamification in the classroom. Examining how widely these technologies are accepted in schools is necessary to comprehend these views (Marti-Parreno et al., 2016).

The management of the school has a direct say in whether or not gamification is used in the classroom; thus, instructors are not to fault if the policy forbids it. Furthermore, a teacher’s attitude toward learning and gamification may be influenced by their sexual orientation. According to Marti-Parreno et al. (2016), male instructors are more likely than female teachers to have favorable views toward game-based learning strategies. Another element that may influence instructors’ attitudes toward the gamification of learning is their age. Li (2017) reports that although younger teachers are often excited about the use of games in the classroom, older teachers show reluctance. When Can and Cagiltay (2006) looked at Turkish instructors’ opinions about game-based learning, they found that the majority of them believed that gamification improved students’ cognitive skills. Additionally, the study found that students showed more enthusiasm for research using games. This suggests that educators try to include gamification in the majority of their classes. Even still, the majority of instructors choose to utilize the games as an additional teaching strategy rather than as their primary model, despite their generally favorable sentiments (Wu, 2015). However, every participant in Wu’s (2015) study felt that gamification enhances student engagement and learning outcomes. Meanwhile, certain video games might incite violent acts in children owing to the satisfaction philosophy among players, even when they improve literacy in the classroom. Kühn et al. (2019) claim that violent video games are to blame for the rise in homicides and school shootings. Therefore, determining whether video games are appropriate for educational reasons is the responsibility of parents and instructors.
2.5 Advantages and Disadvantages of Digital Game-Based Learning

The use of board games, Lego, and card games were the foundation of game-based learning in the past; however, technological improvements have led to the use of digital games in classrooms globally, which has had an impact on students' learning that is both beneficial and bad (Lester et al., 2017). Teachers overseeing digital game-based learning should use best practices in order to maximize the benefits and minimize the drawbacks of this approach. Bundick et al. (2014) state that research has shown the numerous benefits of digital game-based learning despite the fact that many people in today's culture consider video games to be idle pastimes. Schaaf and Mohan (2016) also found that when it comes to fostering students' sociocultural, cognitive, and physical development, digital play is just as important as physical play. But there are also negative consequences, particularly when it comes to playing video games virtually. It is recommended that educators work to balance the benefits and minimize the drawbacks.

2.5.1 Advantages

1) Student Motivation and Engagement
The strongest justifications for using digital games in the classroom are probably those that stem from student motivation and involvement. The games are designed to capture players' full attention and employ graphics, noises, and colors to encourage player reactions.

2) Teamwork
Over the last several decades, the use of personal computers has increased. These days, almost every student can afford to use a laptop or tablet in the classroom, which makes it possible to implement extensive digital game-based learning (Dichev & Dicheva, 2017). The integration of electronics in educational settings has been made possible by the development of Internet technology, giving instructors remote control over students' devices. This has made it possible for professors to give challenging games to groups of pupils, where the students collaborate online to solve the riddles and challenges at hand. Students who play online must use cooperation abilities like bargaining and communication to come up with the best answer to a problem.

3) Quick Feedback and Progress Record
According to Schaaf and Mohan (2017), the technology employed in the classroom may provide valuable information for student progress reports. For example, a language game like Duolingo may track your progress and score while you play. Students may revisit finished stages to get better scores or outcomes, and these games provide them with fast feedback and progress data.

4) Creativity and Lateral Thinking
Li (2017) asserts that, in spite of the widespread perception held by parents and guardians that adolescent gaming is a waste of time, young people engage in a great deal of creative decision-making while playing current games. Sandbox games, in which the player controls an avatar with unrestricted access to explore a virtual environment and make choices, are the greatest illustration of games that encourage this kind of decision-making (Hwang et al., 2015). Because these games provide the player autonomy and a feeling of adventure, players may learn from their mistakes and keep from making the same ones again. Tutors might establish rules for students to follow while playing these games in order to encourage creativity and ingenuity.

5) Risk-taking and Experimentation
Students may see how certain decisions, concepts, and organizational schemes could work in the actual world by using computer-simulated environments to teach them. For example, users may design homes, bridges, and other buildings using computer simulation software. Since there is little chance of suffering serious consequences, these settings encourage students to take chances while creating these virtual buildings. The learner just has to reset the design or utilize the "undo" option if their choice does not turn out as planned. This lets the learner try new things and take chances; it also lets them learn from their errors (Martí-Parreno et al., 2016). It is necessary for educators to maintain a balance between computer simulations and reality in order to prevent students' perceptions of authentic and unrealistic parts from being distorted.

6) Preparation for Future Jobs
Computer literacy and expertise are now becoming prerequisites for many positions. Students need to be taught how to use technology if they are to be effective in these professions (Li, 2017). Furthermore, the chance of future technology growth may be positively impacted by equipping pupils with solid technical understanding. Giving students access to technology will enable them to work, learn, and do research whenever necessary. Excellent materials are now accessible to anybody with the knowledge and skills to use them, thanks to the Internet. This may support students in keeping up their interest in technology-related concepts as they move from educational institutions to colleges and, eventually, the workforce.
2.5.2 Disadvantages

1) Hindrance of Physical Play
Digital game-based learning has been criticized for perhaps contributing to a lack of physical activity. Digital games such as Adipat, Lakana, Busayanon, Asawasowon, & Adipat 550 can provide a variety of cerebral activities, but they are not sufficient for physical training. Unlike physical play, playing video games is mostly a passive activity (Li, 2017). As a result, parents and instructors need to restrict their children’s video game playing time to no more than one or two hours per day. Additionally, they should make sure that sports and physical play continue to be the key components of students’ extracurricular activities (Boctor, 2013); over time, this may help avoid health issues linked to a lack of physical exercise.

2) High Equipment Costs
Even if the cost of digital technology has decreased recently, it is still quite expensive. A school’s financial resources determine whether or not it may purchase digital technology. This may lead to a “digital divide,” wherein some students attending less wealthy universities may not have access to the same technology resources as those attending more affluent ones. This might lead to a growing disparity in technical proficiency between students from various universities. As a result, students from wealthier schools, such as those in developing countries, maybe more equipped than students from poorer institutions for careers using technology in the future. It is possible for pupils in the same classroom to experience this digital gap.

3. Conclusion
The benefits of incorporating game-based learning into the classroom are clearly more than the drawbacks, which is entirely consistent with the findings of Marti-Parreno et al. (2016). Games must highlight hypothetical models in order to be educational and helpful to students. As such, they should be created by academics and instructors and adhere to sound academic ideals. Additionally, educators need to keep an eye on game-based learning programs and make sure that students who lose in a game or level are not discouraged but rather motivated to try harder in the future. Additionally, instructors have a responsibility to instill in their pupils the idea that winning games is not the final aim and that they shouldn't belittle their opponents who lose. In addition to motivating and engaging pupils, the instructor should make sure that game-based learning fosters a development mentality in them.

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