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GAME-BASED LEARNING IN AN ONLINE SETUP AND ITS IMPLICATIONS TO LEARNERS MOTIVATION AND ACADEMIC PERFORMANCE: A LITERATURE REVIEW

Erwin M. Taguinod
Teacher II, Camp Crame High School
Quezon City, Metro Manila, Philippines
erwintaguinod@gmail.com

ABSTRACT

Visually appealing learning materials, entertaining discussions flow, and engaging activities in the teaching and learning process are one of the primary goals of many educational institutions. This paper presents various articles reviewed purposely discussing the characteristics of game-based learning and other synonymous terms in improving the learners' motivation and academic performance, particularly in an online setup. Specifically, it aims to determine the implications of integrating game-based learning in an online setup. The principal resources of this paper were excerpted pieces of literature taken from international journals. The review focuses on the findings and conclusions of the articles reviewed. The paper revealed that several implications were affecting to improve the learners' motivation and top-notch academic performance. However, the literature reviewed showed that there are gray areas of game-based learning allowing educational institutions to look for a better panacea.

Keywords: Academic Performance, Game-based Learning, Implications, Learners Motivation, Online Setup

INTRODUCTION

Learners in the context of this paper are those who are studying in various government-subsidized and privately-run schools, and across all grade levels. Specifically, learners where the learning takes place in an online learning modality. Learning in an online setup requires perseverance, courage, and diligence to grasp the ideas and concepts behind the lessons presented. However, perusing multifarious and multitudinous materials uploaded online tends to overwhelm learners and result in lower drives and motives to further continue to strive in their studies. Hence, game-based learning in an online setup is of great help to arouse their fading attention to learn and entice their bright mind to an excellent academic performance.

Gaming in education may be viewed as an interference to learning but its role in education is to increase students' motivation and engagement, to enhance visual skills, to improve students'

interaction and collaboration abilities with their peers and to enable them to apply gaming values in a real-world situation (Zirawaga et al., 2017).

(Houghton et al., 2013) discusses educational games as the utilization of games to support teaching and learning. Games can be used as a support tool to complement traditional teaching methods to improve the learning experience of the learners while also teaching other skills such as following rules, adaptation, problem-solving, interaction, critical thinking skills, creativity, teamwork, and good sportsmanship.

Most but not all teachers find it rigorous to apply a game in their teaching process and sometimes categorically speaking it is just a waste of time to execute such given the limited time allotted in the curriculum to teach a particular learning objective for a subject matter. In effect, learning may compromise and may bring about rote memorization. Teachers can take advantage of the energy and innovative thinking that is provided by using technology in learning to improve student performance (Zirawaga et al., 2017).

Game-based learning is generally considered as an effective means to enable learners to construct knowledge by playing, maintain higher motivation and apply acquired knowledge to solve real-life problems. Therefore, game-based learning becomes a promising method for providing highly motivating learning situations to the learners. Through a combination of engaged playing, problem-solving, situated learning and challenge, game-based learning can support learners to construct knowledge from ambiguity, trial and error [4, 5] (Chang et al., 2009).

In this article, game-based learning and other synonymous terms will be emphasized and understood as the researcher provides the breadth and depth of the studies, particularly in the online learning modality. Taking into consideration its implications to learner's motivation and academic performance, this will help the innovative teachers, game-designers, curriculum crafters, and education leaders to integrate games in the educative process. The review of various articles from international journals will provide a benchmark and springboard for future researchers and the backbone for other studies that pertain to a similar topic.

DISCUSSIONS

Game

A game is a type of play where participants follow defined rules (Zirawaga et al., 2017). Games are something special and unique. They are concentrated chunks ready for our brains to chew on. Since they are abstracted and iconic, they are readily absorbed. Since they are formal systems, they exclude distracting extra details. Usually, our brains have to do hard work to turn messy reality into something as clear as a game is. In other words, games serve as very fundamental and powerful learning tools (Koster 2014). Furthermore, games that fail to exercise the brain become boring. Boredom is the opposite of learning. When a game stops teaching us, we feel bored. Boredom is the brain casting about for new information. It is the feeling you get when there are no new visible patterns to absorb. We shouldn’t underestimate the brain’s desire to learn. If you put a person in a sensory deprivation chamber, he or she will get very unhappy very quickly. The

brain craves stimuli. At all times, the brain is casting about trying to learn something, trying to integrate information into its worldview. It is insatiable in that way. To make games more long-lasting, they need to integrate either math problems we don't know the solutions to, or more variables (and less predictable ones) such as human psychology, physics, and so on. These are elements that arise from outside the game's rules and from outside the "magic circle" (Koster 2014). According to Willis (2008), the effectiveness of games is enhanced when your child helps design them. As a change-of-pace syn-naps, try helping your child modify a game he enjoys by relating it to science or social studies. For example, modify the mystery game Clue by turning facts about states being studied or scientific processes (water cycle, metamorphosis, properties of electric circuits) into clues. Modify the names of the streets on a Monopoly game to the names of places he is studying in social studies. A game can be a great springboard for a learning session or a way to resume a session with positive feelings after a syn-naps. Games can also build patterning skills and improve sequencing ability for all children and are particularly helpful for VSK (Values, Skills, Knowledge) learners who need to practice following procedural steps and remembering sequences. Learning magic tricks, building Lego constructions following increasingly complex instructions, and playing matching games like Concentration using a deck of cards all build memory and patterning skills. Encourage your child to teach you a new game. This sharing of expertise and explaining instructions in a sequence builds confidence and helps your child feel more comfortable speaking up in class discussions.

Games are a more natural way to learn than traditional classrooms. Not only have humans been learning by playing games since the beginning of our species, but intelligent animals have as well. Otters and African grays alike have been seen exhibiting what appears to be game - playing behavior (Aldrich, 2009). Chris Crawford, in his book *The Art of Computer Game Design (1984)*, suggests that games are " the most ancient and time - honored vehicle for education. They are the original educational technology, the natural one, having received the seal of approval of natural selection. There are many opportunities to implement the concept of gaming into education and there are many kinds of games that can be used in the learning process which include problem-solving, drills and practice, simulation, puzzles, and tutorials based games (Zirawaga et al., 2017).

The definition of a good game is, therefore "one that teaches everything it has to offer before the player stops playing." That's what games are, in the end. Teachers. Fun is just another word for learning. Games teach you how aspects of reality work, how to understand yourself, how to understand the actions of others, and how to imagine (Koster 2014).

Gamification

As stated in the book written by Kim et., al (2018), is to change something that is not a game through a game or its elements (van Grove, 2011; Werbach & Hunter, 2012). Gamification can be a means to engage employees in tasks (Reeves & Read, 2009), promote collaboration (McGonigal, 2011), or improve motivation (Zichermann & Linder, 2013). Deterding, Dixon, Khaled, and Nacke (2011) suggested defining "gamification" as "the use of game design elements in non-game contexts" (p. 9). While in the context of learning and education, can be useful for learning and instruction because it can promote learner engagement. The fact that many educators face problems related to student interest and engagement in their classrooms is not new to education. In the past, educators have tried to use a variety of interventions, including the use of motivational strategies. However, the effect of the intervention lasted for only a short

period of time. Due to its fun and playful nature, gamification can be a good solution to help solve learner engagement and participation issues in the classroom. Kim et., al (2018) in their book: *Gamification in Learning and Education Enjoy Learning Like Gaming*, defines "gamification in learning and education" as follows:

Gamification in learning and education is:

- A set of activities and processes
- To solve problems related to learning and education
- By using or applying the game mechanics

The idea of gamification has lit the popular imagination. It has been extremely well received since the publication of Karl Kapp's book The Gamification of Learning and Instruction in 2012. Attempting to provide readers with a quick sense of what gamification is, he cites two examples that revolve around his son. He asserts that gamification takes place when his son times himself to see how quickly he can rattle off the definitions of economic terms as a study technique. And, again, when his son sits down to learn algebra in a first-person game, that too is gamification. Gamification to Learning Domains," reveals Kapp's instructional design qualifications because he positions learning and learning domains firmly within the tenets of Bloom's taxonomy, with its emphasis on the cognitive, affective, and psychomotor domains.

Education is one of the fields where gamification will become a disruptive innovation, mainly in techbased learning (eLearning) and lifelong learning (Largo et.,al 2016). Nowadays, according to Kapp (2012), there are two types of gamification: structural gamification and content gamification. Structural gamification is the application of game elements to propel a learner through content with no alteration or changes to the content itself. The content does not become game-like, only the structure around the content (Pastor et al., 2015). Content gamification is the application of game elements and game thinking to alter content to make it more game-like.

Educational Game

The educational game genre is a game type that was made to support learners in their efforts to acquire knowledge, skills, and attitudes on a topic or field (Dell'Aquila et al., 2017). It focuses more on the educational purposes rather than entertainment. An educational game can be technically any type of game, as long as it meets the educational purposes. Crazy Machines: The Wacky Contraptions Game, Math Doodles, Monster Physics, Montessori Crosswords, Rocket Math, Stack the Countries, and Stack the States are examples of educational games (Kim et., al 2018).

Many different types of educational games are being applied and used in educational institutions, schools and homes. Using games in education mostly focuses on improving critical thinking skills while teaching a particular subject, by allowing students to think outside the box as they follow rules. There are other games that can be used which limit to improving knowledge in a specific subject and the most popular ones are math games (Zirawaga et al., 2017). (Yue, & Zin, 2009) discussed that games like chess cannot be viewed as educational games as these improve logic skills, reasoning, and other traits valued in education but they are not considered educational because they do not deliver content or relay curriculum material. Games that incorporate curriculum content or other educational material are referred to as educational games (Michel, 2016).

George Kalmpourtzis in his book *Educational Game Design Fundamentals A Journey to Creating Intrinsically Motivating Learning Experiences (2019)*, says that "Educational games are powerful learning tools because they manage to captivate players' interest and attention. However, not all games succeed in winning players' interest. A key reason for this is challenge. Challenge plays a very important role in successful games and is also an instrumental factor in why some games may be unsuccessful. The success of educational games lies in the idea that players engage in learning activities, being immersed in intrinsically motivating experiences. It is possible that players can learn consciously or unconsciously in such cases but still, they are having fun. If this criterion does not apply, the offered activities are not viewed as games no matter how they are presented by educators. Successful games are those that manage to appeal to both players and parents or educators. Usually, these games find a good balance between game mechanics and the focus on and presentation of learning objectives. Successful educational games present gaming and learning aspects that are indistinguishable from each other. Concrete and clearly presented guidance before, during, and after gameplay is a great ingredient for the facilitation of a player's learning. Guidance can clear up misconceptions, emphasize a player's weaknesses, and help them to overcome obstacles that would otherwise be difficult or impossible to deal with".

Game-based Learning

Game-based learning is generally considered as an effective means to enable learners to construct knowledge by playing, maintain higher motivation and apply acquired knowledge to solve real-life problems (Chen, & Wang, 2009). Prensky (2001, p. 145) defines game-based learning as the combination of "computer video games with a wide variety of educational content" to achieve outcomes no worse than traditional (content-centric) instruction. Educators and researchers who view games primarily as vehicles for content learning adhere to the layperson's view that the purpose of schooling is to acquire knowledge. In this light, learning is understood to be something quantitative in nature and hence assessable in terms of countable output. Thus, such people speak positively of having accomplished "more learning" when using games (de Freitas 2006).

It is imperative also to note that teachers in the implementation of a game-based learning environment are the source of success. Teachers are worthy of recognition to achieve outcomes that learners fully understood the ideas and concepts of the subject matter presented while they experience the fun of games. Eric Sanchez, a professor at the University of Fribourg, in his article *Perspective,* mentioned that "I think that educators play several and different roles in such experiences, depending on different moments. . . I think that the success of educational games depends a lot on the capacity of teachers to integrate the learning aspect in those practices. Of course, teachers play an important role during the time that a game is presented in the classroom and the game-based learning scenario that the game was part of. We have discussed this aspect a lot with teachers. . . Teachers also play a role in the advancement and climaxing of games. . . Game-based learning is about integration of contextualization and decontextualization of knowledge. During games, students develop implicit knowledge based on the games they play. Hence, it's important that during debriefing, educators make sure that this knowledge is decontextualized, leading to transfer".

While teachers play an important role in different ways and means in presenting game-based learning, it is also indispensable to never lose sight of the learning objectives in the alignment of

game-based designs. Kepple (2015), in his dissertation, emphasized that "…Games are very good at one thing: teaching people how to play them. That means if your game and learning objectives are properly aligned, you can more easily move students closer to the target skill/content using the game's mechanics as leverage. When advising others on how to build their own game-based learning tool, I recommend starting with a UBD design model (i.e., a top-down approach built out of the target learning objectives). Many educational game designers mistakenly neglect the alignment of game and learning objectives, which mean learners aren't being guided to perform the actions or demonstrating the skills we want them to transfer to the real world".

Implications to Learners Motivation and Academic Performance

It is indispensable to note that the intentions of game-based learning primarily are to build enthusiasm amongst learners as a result they will be motivated to participate and engage actively in the class, it helps as well the learners to focus well and grasps the knowledge and skills because the manner of delivery of teaching and learning process radiates eagerness thus it is no longer sound monotonous.

The integration of games, in general:

A. Advantages of using Games in Education

1. Engage students

The major role of applying technology is to engage students and to encourage students to participate. The use of games in education plays an important role in engaging students by encouraging a hands-on approach.

2. Help students remember

The use of games in education aims to help students remember what they have learned as active participation is encouraged. Learning should not mean rote memorization but students can use games to remember the critical points which they can apply in their examinations as well as in real-world situations.

3. Visual and computer literacy

This is something which is vital in light of the fact that we live in a world which is ruled by innovation. By playing games, students gain visual and computer literacy skills which will prepare them for the world of work.

4. Rule following and problem-solving skills

Game drills are based on rule following and students are required to follow rules inorder to achieve a high score and move to the next stage. Students can easily apply this knowledge in real world situations as they are encouraged to think outside the box.

5. Beneficial for students with attention disorders

Using games can help capture students attention as this is considered to be a fun way of learning. Research conducted has discovered that web based games can assist kids who experience attention problems.

6. Teach other skills

Games can also be used to teach other skills such as critical thinking, problem solving, sportsmanship, interaction and collaboration with peers. This helps in creating less stifled individuals who are not limited but can adapt to any real world situation.

B. Disadvantages of using Games in Education

However, gaming in education has setbacks which need to be addressed.

1. Providing a platform for students to play revision games becomes a challenge when teachers or instructors cannot control such an environment. Students can have access to other platforms which are harmful.
2. Students who rely on games are often secluded from real life interaction.
3. Using computers and other electronic devices can cause health hazards such as eye strain and other physical problems.
4. The technologies required for full participation can be quite expensive and this can create a gap between the students who have access to the technologies and those who do not have access.

CONCLUSION AND RECOMMENDATION

Based on the reviewed articles, it showed clearly the signs that the integration of games, gamification, educational games, and game-based learning in the educative process is of great help for the realization of lesson objectives and absorb the required knowledge, skills, values, and attitudes in a fun and engaging activities in an online learning modality. In addition, the studies conducted by the researchers in this paper cite the positive implications of the use of game-based learning to engage students to actively participate, help the students to become visual and computer literate, develop skills to follow rules and apply problem-solving skills in a real-world scenario, scaffold students who experience learning disorders, and acquire other skills vital to handle and resolve dilemmas. However, the reviewed literature reveals that there are gray areas in the implementation of game-based learning such as challenges in platforms, seclusion from real-life interactions in the event of much exposure to the game and a decline in health condition due to excessive use of computers and other electronic gadgets, and the disparity amongst students who have and have not since the access to the technology is a must. Hence, in response to the call for quality education by the government and private sectors learning institutions in this dramatic changing society nowadays and in considerations of innovations on the part of teachers' pedagogies for a better and brighter future for our clientele – the students, it is hereby recommended that there will be auxiliary studies that will mainly focus on the use of the games, gamification, educational games, and game-based learning in an online learning modality and prioritization of the conduct of symposiums, workshops, and pieces of training to the educators to hone their aptitudes, creativeness, and artistry.

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