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**PERSPECTIVES OF TENTH GRADE LEARNERS ON GAMIFICATION AS TOOL  
FOR LEARNING PATTERNS AND ALGEBRA**

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**ABSTRACT**

This study explored the tenth-grade learners' perspectives on using Gamification as a teacher's strategy in learning Patterns and Algebra. Utilizing the single case study design, 40 junior high school students were purposively chosen as respondents. Data were obtained through an interview series and analyzed through the lens of Braun and Clarke's six-phase data analysis framework. Thematically analyzed data revealed that Gamification, when utilized as a tool for learning this subject's content knowledge, is perceived by the learners to contribute to making learning fun or enjoyable. The students claimed to be motivated, interested, and engaged because learning becomes experiential. With these, it is thus imperative for teachers to use this strategy.

**Key Words:** Game-based Learning Strategy, Patterns And Algebra, Educational Technology.

**1. INTRODUCTION**

Technology occupies a significant space in the pedagogic processes. Learning facilitators commonly utilize it in creating, designing, and innovating products for instruction, while learners use it as an aid for performing tasks and academic activities as a result of instruction. Technological advancements have created a so-called information super highway that makes all forms of information easily accessible to all without boundaries. Technologies and various social media platforms were crucial in ensuring learning continuity. The presence of technologies at home paved the way for an increased opportunity to create unique and meaningful learning experiences, which, in turn, aided students' collaboration and engagement with the learning materials across content knowledge and grade levels (Glifonea and Mayani, 2010).

Mathematics is pivotal in technological and industrial developments because it enables and paves the way toward a sensible and systematic world. As such, academic institutions must strive to educate and hone the learners' vital mathematical competencies and skills to ensure mathematical skills and subsequently appreciate careers related not just to Math but also in its allied field, including science, technology, and engineering. Unfortunately, however, Filipino learners still lag in mathematics performance in international assessments such as Trends in International Mathematics and Science Study (TIMSS) and even in the local assessment such as the National Achievement Test (NAT) (Arellano, et al., 2019).

Existing literature suggests that students' motivation remained an enduring challenge to educators. Notwithstanding a need to sustain motivation in learning during this time of the pandemic, it is thus imperative to engage learners' in gaming to ensure learning continuity and retain an interest in mathematics. According to Kinzer et al. (2015), game-based learning and

Gamification is becoming gaining momentum in teaching skills across disciplines. The researcher further explained that Gamification is not simply the integration of literal games in the instruction but employs game-based mechanics and thinking in a normally non-game context through technological devices and software. Additionally, Smith (2018) reported that Gamification positively affects engagement and motivation because it compels learners to complete homework, projects, formative assessment, retention, and many others. As such, this study intends to develop helpful material for teaching grade 10 mathematics, specifically Patterns and Algebra.

## 2. REVIEW OF RELATED LITERATURE

Nowadays, people live in the digital information age where digitally produced games occupy a significant space in learning. Digital teaching and learning materials occupy indefinite value in achieving learners' educational goals because these enable the holistic development of the learners. Game-based learning tools are believed to stimulate learners' engagement, which, in turn, aids in learning simple and complex skills and competencies of all disciplines, including mathematics.

Several studies have been conducted about the utilization of games. According to May (2019), the utilization of technology to create gamified or game-based learning fosters an environment that encourages students to collaborate with their peers, engage with content material, and stay motivated to learn. Using leader boards, badges, and other game elements contributes to an enjoyable learning environment for students, making them engaged, self-efficient, and fun to learn. In addition, Sumandal (2002), revealed that games are attractive and novel, which can provide many advantages to the learners, as it creates a better atmosphere and enables learners to focus on the task. It makes learning easier to be processed and more exciting and effective. Furthermore, Chang et al. (2019) insinuated that such games could constitute fun and diverse learning experiences. This is the reason why learners prefer playing digital games. This impact helps learners concentrate for a longer period, which helps them acquire the concepts quickly, engage in active learning, and be enticed with the contents. Also, Sardone and Devlin-Scherer (2009) reported that learners aged 6-12 years old are encouraged to learn difficult subjects, be more interested in problem-solving, become learning facilitators, and are more interested in the subject matter when Gamification is utilized by their teachers. In like manner, the bulk of studies relatively stressed that game-based instruction promotes learning interest and motivation and, as a result, contribute to student learning, not to mention that it can also increase autonomy when it comes to the acquisition of course content (Chun-Hun et al., 2012)

Meanwhile, Hsai et al. (2012) postulated that gaming stimulation could enhance students' learning motivation and achievements based on the experimental research conducted, which revealed that the average score indicates that the experiment group has higher motivation and achievement than the control group. Hence, lectures and other traditional learning methods have become obsolete and ineffective (Freeman et al., 2014), which is contrary to active learning methods. Also, Fullan (2013) found that exposure to effective instructional strategies and practices results in improved student achievement and consistent gains over time. Moreover, the researcher averred that digital games and related that game-based instruction has substantial benefits to learners in four dimensions: learning achievement, development of cognitive competence, learning motivation, and learning engagement.

Finally, Fullan (2000) suggested that digital games' challenging nature and feedback mechanisms can prompt motivation from demotivated learners and reduce students' learning anxiety, encouraging them to identify solutions through trial and error or imitation. This is observed when an immersive experience characterizes the learning stage. Based on the recent studies conducted, it was emphasized that the motivational and engagement function of games are the fundamental elicited characteristics that further influence students' efficacy. The argument is that games for entertainment can motivate learners to stay engaged over long periods through a series of motivational game features. These features include incentive structures, such as stars, points, leader boards, badges, and trophies, as well as game mechanics and activities that learners enjoy or find interesting (Williams, 2000).

### 3. METHODOLOGY

The grade 10 learners' perception of using Gamification as a tool for learning Patterns and Algebra was explored exhaustively using the descriptive survey-case study design. Creswell (2013) said that case studies are a design of inquiry found in many fields, especially evaluation, in which the researcher develops an in-depth analysis of a case, often a program, event, activity, process, or one or more individuals. Data were obtained through interviews involving 40 purposively chosen tenth graders studying in a public secondary school in Tacloban City. The analysis was carried out following Braun & Clarke's (2008) six-phase framework for doing a thematic analysis which includes: data familiarization, codes generation, themes searching, themes review, theme definition, and reporting. Patterns that recurred twice were considered as a theme and, in turn, subjected to specific analysis.

### 4. RESULTS

There is only a single theme that emerged from the analysis of the data made. **Gamification is Fun!** This theme proves that using games for learning Patterns and Algebra is enjoyable for the 10<sup>th</sup> graders when coursed through the gamification process. The participants were able to express their feelings toward the game, divulge particular parts of the game that aroused their interest, benefits gained after playing the game, the challenges incurred, and the participants' perception towards the game whether it served as a drive in the entire lessons recitals. A participant said, *"It makes me feel happy and relaxed to listen and actively participate in the lesson and listen more attentively to the new lesson. [P5]"*

Indeed, according to Chang et al. (2019), games can provide fun and diverse learning experiences, which is why adolescents and children induce several emotions while playing games due to the stimulating nature that playing games can provide. In line with this, the participants conveyed they felt towards the game that they were happy and enjoyed the game. Additionally, Sheingold and Hadley (1990) insinuated that games provide several benefits to the learners as it creates a better learning milieu and enables learners to stay focused, manifested during the conduct of the game.

Considerably, Gamification has several motivational and engagement impacts. According to the learners, most Gamification has a motivating and engaging effect. In addition, the innovation and freshness of the concept in a higher education context are thought to enhance students'

motivation and involvement. The findings of this study also support the finding of the study conducted by Cahyani (2016), which says that 70 percent of a gamified learning session makes the learners happy, 73.33 percent find this activity fascinating, and 83.33 percent that participating in a gamified learning activity makes individuals feel challenged and motivated. Similarly, Fullan (2000) states that Gamification in education increases learners' motivation and engagement in the classroom by using game design ideas.

## 5. CONCLUSION

Findings of this academic undertaking have proven that Gamification can stimulate students' motivation to learn Patterns and Algebra as a mathematics component for grade 10. The results also support Lev Vygotsky's theory of constructivism, which explains that learning is an active process, so a constructivist classroom should reflect learning through social interaction. One of the ways to do this is to engage learners in meaningful educational games in one of the teaching and learning episodes. Furthermore, the theorist agreed that learning involves active participation and collaboration of diverse learners. Therefore, it is thus encouraged that mathematics teachers, not just for Patterns and Algebra, utilize games as tools for understanding concepts and mastering mathematical skills. Finally, as Tiene and Luft (2001) explained, learning in an appropriately designed technology-rich environment could produce positive impacts like patterns of social interaction, alterations in instructional styles, improved teacher effectiveness, and enhanced motivation and academic achievement.

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