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The Impact of Gamification Learning on Student Motivation in Elementary School Learning

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ABSTRACT

Lately, many students have found a lack of motivation in learning in elementary schools. This can be caused by a lack of methods or use of technology that can attract students' attention so they are motivated to learn. Student motivation is a key factor in successful learning in elementary schools. However, one often finds it challenging to maintain high levels of motivation among students. For this reason, a gamification approach, which uses game elements in learning, has attracted attention as a way to increase student motivation. This research aims to determine the impact of gamified learning on student motivation in learning in elementary schools. The focus is to find out whether the use of game elements in learning can increase student motivation. This research uses a quantitative approach with a preposttest-posttest experimental design. Data was collected through questionnaires that measured students' motivation levels before and after the intervention. The research results show that gamified learning has a positive impact on student motivation in elementary schools. Students who engaged in learning with gamification elements showed greater increases in their motivation levels compared to students who received conventional learning. Factors such as challenge, reward, and self-recognition in the context of play help increase student interest and engagement in learning. The conclusion of this research explains that gamified learning can be an effective tool for increasing student motivation in elementary schools. The integration of game elements such as points, levels, and challenges in learning can increase student interest, engagement, and overall motivation. These findings provide an important contribution to the development of more innovative and effective learning strategies in the future.

Keywords: *Elementary School, Gamification, Learning, Student Motivation*

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INTRODUCTION

Review of Literature

Gamification in learning in primary school

Gamification in learning in primary schools is a phenomenon that is getting more and more attention in the field of education (Alsawaier, 2018). This concept combines game elements into the learning process to increase student involvement, motivation, and learning outcomes (Arufe Giráldez dkk., 2022). By taking advantage of interesting and fun game characteristics, gamification has opened up new opportunities in creating a dynamic and effective learning environment (Bennani dkk., 2022). In the context of primary schools, the use of gamification has made a positive contribution in enriching traditional teaching methods and providing a more pleasant learning experience for students (Faculty of Science and Technology, Nakhon Pathom Rajabhat University, Thailand dkk., 2023). Through this approach, educators can change the learning paradigm to be more interactive, collaborative, and provide challenges that stimulate students' cognitive, emotional, and social development. One of the main aspects of gamification in learning in primary schools is the application of game principles into learning activities (Wu, 2023). In games, there are elements such as clear goals, rules that can be followed, interesting challenges, direct feedback, and prizes or rewards. By applying these elements into the learning context, teachers can create a more interesting and motivating learning experience. For example, teachers can use a point or score system to provide direct feedback on student achievement, or adopt a level system mechanism to increase the level of difficulty along with student learning progress (Banjari dkk., 2023). Thus, students become more involved and motivated to achieve the set learning goals.

Gamification also enables learning based on exploration and discovery (Castro dkk., 2018). In a well-organized environment, students are given the freedom to explore various concepts and learning materials through interaction with simulations, games, or challenges provided (Hastuti & Agustina, 2023). This allows students to learn independently and develop a deeper understanding of the subject matter. For example, in science subjects, students can be asked to complete missions or challenges involving virtual experiments or laboratory simulations, which allow them to observe natural phenomena directly and draw their own conclusions (Plotzky dkk., 2021). The application of gamification can also strengthen collaboration and interaction between students. By utilizing features such as levels or leaderboards, students can be divided into teams or work groups that compete with each other to achieve certain goals. This not only stimulates the spirit of healthy competition, but also promotes teamwork, communication, and other social skills (Figueiredo & García-Peñalvo, 2018). For example, in a research or presentation project, students can work together in teams to collect data, plan strategies, and present their work collectively.

However, in applying gamification in learning in primary schools, it is important to pay attention to some crucial aspects (Faculty of Science and Technology, Nakhon Pathom Rajabhat University, Thailand dkk., 2023). First, teachers need to ensure that

the design of gamification does not only pay attention to aspects of the game, but is also effectively integrated with the learning goals to be achieved (Ferriz-Valero dkk., 2020). This requires a deep understanding of the curriculum and student learning needs (Barrón Tirado & Diaz Barriga, 2017). In addition, it is also necessary to consider the diversity of students in the class, including learning styles, ability levels, and personal interests, so that the gamification design can be adapted to meet individual needs as best as possible (Ghaban & Hendley, 2019). In addition, the evaluation of the effectiveness of the use of gamification in learning is also important (Ghaban & Hendley, 2018). Teachers need to continuously collect data on the level of involvement, motivation, and student learning achievement to evaluate the extent to which the gamification approach has been successful. By analyzing the data, teachers can adjust and improve the gamification design periodically to increase its effectiveness (Huang dkk., 2018).

Ways of teachers in applying gamification learning in learning

To implement effective gamification learning and motivate students, teachers need to consider several strategies and principles that have been proven successful in educational contexts (Kaya & Ercag, 2023). The following are several ways that teachers can implement gamification learning that motivates students (Krishnamurthy dkk., 2022). First set clear learning objectives. Before starting to use gamification, teachers need to set specific and measurable learning goals (Legaki dkk., 2020). These objectives must be relevant to the curriculum and enable students to develop a deep understanding of the subject matter being taught (Hafni & Aiyub, 2021). Second, identify student motivation. Every student has different interests and motivations. Teachers need to identify what is the main motivation for each student in their learning. This can be done through observation, interviews, or questionnaires to understand students' interests and preferences for various types of activities. All three integrate interesting game elements. One of the keys to success in implementing gamification is choosing game elements that are interesting to students (T. Liu & Lipowski, 2021). This could be a point system, levels, badges, or challenging challenges. Teachers need to choose these elements carefully based on students' interests and preferences.

The third is providing direct feedback. Immediate and continuous feedback is one of the main features of the game that makes it a motivating learning experience (Aguiar-Castillo dkk., 2020). Teachers need to provide positive and constructive feedback on student progress on a regular basis. This can be done through a points system or other rewards, as well as supportive verbal comments. Fourth creates challenges. Appropriate challenges are key to maintaining student interest and motivation. Teachers need to ensure that the challenges given are appropriate to the level of students' abilities and interests, so that they feel challenged but are still able to succeed. Fifth, facilitate collaboration and healthy competition (Ahmad dkk., 2016). Through the use of features such as rankings or leaderboards, teachers can encourage collaboration between students in achieving learning goals (Liang dkk., 2017). Apart from that, healthy competition can also motivate students to actively participate in learning. Sixth, give

choice and control to students. Giving students choice and control over their learning experience can increase their sense of engagement and motivation (Mosalanejad & Mansouri, 2023). Teachers can provide options in selecting assignments or activities that students want to participate in, as well as providing freedom in determining the strategy or approach they want to use in completing assignments.

Next, the seventh involves emotional and social aspects. Gamification can also be used as a tool to strengthen emotional and social aspects of learning (M. Liu dkk., 2018). For example, teachers can utilize storytelling elements or characters in games to relate learning material to personal experiences or values that are relevant to students (Makrakis & Kostoulas-Makrakis, 2023). Eight, namely providing rewards or appreciation. Students need to feel that their efforts are recognized and appreciated. Teachers can provide rewards or rewards in physical or non-physical form that have intrinsic or extrinsic value for students. For example, rewards may include certificates, small prizes, or the opportunity to gain certain benefits in the classroom (Awidi & Paynter, 2019). Nine continuous evaluation and improvement. Teachers need to continually evaluate the effectiveness of using gamification in learning and make necessary improvements or adjustments based on feedback from students. This allows teachers to ensure that the gamification approach remains relevant and motivates students optimally (Ansar & George, 2023). By implementing these strategies carefully and sensitively to student needs and interests, teachers can create learning experiences that motivate and have a positive impact on student learning outcomes in elementary schools.

There are several previous research opinions. The first research according to Zourmpakis et al., (2023), with the research title Adaptive Gamification in Science Education: An Analysis of the Impact of Implementation and Adapted Game Elements on Students' Motivation. The results of his research stated that students were more motivated to learn science when using an adaptive gamification environment. Additionally, the adaptation process was largely successful, as students generally liked the game elements integrated into their lessons, indicating the effectiveness of the multidimensional framework employed in enhancing students' experiences and engagement. The second research according to Mamekova et al., (2021), with the research title A Meta-Analysis on the Impact of Gamification over Students' Motivation. The results of his research stated that from random effects proportion meta-analysis applied to seven relevant studies with a total of 368 students showed a pooled proportion of 29.68%. In other words, game design elements incorporated into the learning activities were significantly motivating for only about one-third of participants. The third research according to Ardiana & Loekito, (2020), with the research title Gamification design to improve student motivation on learning object-oriented programming. The results of his research stated that the Marczewski Gamification Framework has been implemented in gamification design according to the functional needs of users. This research contributes to the use of gamification in increasing student motivation in learning OOP programming.

RESEARCH METHODOLOGY

This research uses a quantitative approach with a preposttest-posttest experimental design (Rahayu dkk., 2022). This research aims to investigate the impact of gamified learning on student motivation in learning in elementary schools. A quantitative approach with a preposttest-posttest experimental design is one of the research methods used to test the impact of an intervention or treatment on the observed variables. The advantage of this approach is its ability to assess how effective an intervention or treatment is in influencing directly observed variables. In addition, by using a control group, researchers can isolate the effects of the intervention or treatment from other factors that may influence the results of the study. However, this approach also has some limitations. For example, because this experimental design involves separating subjects into two groups, not all factors that might influence the results of the study can be completely controlled. Additionally, because the intervention or treatment is only given to the treatment group, it is difficult to determine whether differences in study results are due to the intervention or other uncontrolled factors.

The research design used was an experimental design with a control group and a treatment group. This experimental design was chosen to allow researchers to directly evaluate the differences in student motivation between the group that received gamified learning and the control group that received conventional learning. The research population consisted of students in elementary schools. The research sample was taken randomly from the school. Each school was then divided into two groups: a control group and a treatment group. The control group will receive conventional learning, while the treatment group will receive learning enriched with gamification elements (Chans & Portuguez Castro, 2021). Previously, in conducting this research, researchers had to obtain permission and approval from the school, teachers and parents of students. Furthermore, before the start of the intervention, the students and their parents were provided with information about the purpose of the research as well as their rights and obligations in this research. The research instrument used was a questionnaire specifically designed to measure students' level of motivation (Dugnol-Menéndez dkk., 2021). This questionnaire consists of questions designed to evaluate various aspects of student motivation, such as interest in learning, perceptions of learning activities, and the level of student involvement in the learning process. This questionnaire has been tested for validity and reliability before being used in this research.

Once the questionnaires were returned, the intervention began. The treatment group will receive learning with gamification elements, while the control group will receive conventional learning. Gamification learning is designed using game elements such as point systems, levels, challenges, and rewards. Examples of using gamification elements include giving points to students for completing assignments, providing certain challenges or missions that must be completed, and providing awards or recognition for achievements achieved. During the intervention period, student motivation data will continue to be collected for both groups. After the intervention

period is complete, the student motivation questionnaire will be administered again to both groups to measure changes in student motivation after the intervention (Alonso De Castro & García-Peñalvo, 2020). Data will be analyzed using appropriate statistical methods, such as the t-test or Mann-Whitney test, to compare the differences between the control group and the treatment group in terms of student motivation. The results of data analysis will be used to evaluate whether gamified learning has a significant impact on student motivation in elementary schools. Research findings will be interpreted to draw conclusions about the effectiveness of gamified learning in increasing student motivation and its implications for learning practices in elementary schools.

RESULT AND DISCUSSION

Gamification learning is an innovative approach in the world of education that combines game elements into the learning process to increase student motivation, engagement, and learning outcomes . This concept is rooted in the use of game mechanisms, such as challenges, achievements, and levels, to create a more interesting and enjoyable learning environment. By utilizing digital technology and a point or reward system, gamification learning can be applied at various levels of education, including primary schools. In gamification learning, students are often given challenges or tasks that allow them to earn points, reach a certain level, or get an award. Through these elements, students are encouraged to be actively involved in the learning process and feel more motivated to achieve the set learning goals.

One of the main aspects of gamification learning is the use of a point or reward system to provide incentives to students. In learning, points or awards can be given to students in recognition of their achievements in completing tasks, achieving learning targets, or participating in class activities. For example, teachers can give points to students who answer questions correctly, complete tasks well, or show positive behavior in class. These points can then be accumulated and used as a basis for giving awards, such as certificates of appreciation, small prizes, or other benefits. In this way, students feel more motivated to be involved in learning and improve their performance. In addition, gamification learning also involves the use of challenges and achievements as a way to increase student motivation. Challenges can be challenging tasks, interesting questions, or creative projects that allow students to develop their skills. When students successfully complete these challenges, they feel a sense of achievement and personal satisfaction that can increase their motivation to continue learning and growing. In addition, achievement can also be measured through level achievement, where students are given levels based on their progress in learning. This provides additional incentives for students to continue to work hard and achieve a higher level in their learning.

Gamification learning also utilizes other game elements, such as competition and collaboration, to increase student engagement. Competition can be used to create a competitive atmosphere in the classroom, where students compete with each other to get points or reach a certain level. Although this competition can be a strong stimulant for

some students, it is important to ensure that it does not create an unhealthy environment or demotivate less competitive students. On the other hand, collaboration is an important element in gamification learning that allows students to learn from each other and work together in solving specific tasks or challenges. Through collaboration, students can develop important social and cognitive skills while learning academic content. However, although gamification learning has many benefits, there are also some challenges that need to be overcome. One of them is the risk of over-reliance on extrinsic motivation (Deif, 2019). If students rely too much on points or external rewards, they may lose their intrinsic interest in learning and focus only on the end result. Therefore, it is important for educators to ensure that game elements do not replace students' intrinsic motivation, but support it. In addition, the design of gamification learning should be carefully planned to fit the curriculum and learning objectives that have been set, so as to ensure that the game aspect does not interfere with the learning process.

Table 1: Impact of Gamification Learning on Student Motivation

aspects	Control Group	Treatment Group
Intrinsic Motivation	Students may have low intrinsic motivation due to the lack of game elements in traditional learning.	Students tend to have higher intrinsic motivation because the presence of game elements in gamified learning attracts their interest.
Extrinsic Motivation	Student engagement may be lacking due to a lack of game elements that capture their attention.	Students tend to have higher extrinsic motivation because point systems, rewards, or levels provide additional incentives for them to engage in learning.
involvement	Student engagement may be lacking due to a lack of game elements that capture their attention.	Student engagement tends to be higher because game elements such as challenges, achievements, and levels make learning more interesting and fun.
Academic achievement	Learning outcomes may not be optimal due to lack of student motivation and engagement.	Academic achievement tends to be higher because students' increased motivation and engagement helps them learn more effectively and efficiently.

Collaboration Opportunities	There are no structured opportunities for collaboration between students.	There are more opportunities for collaboration between students through games or group tasks in gamified learning.

From the comparison table above, it can be seen that the treatment group who took part in gamification learning tended to have higher intrinsic and extrinsic motivation, greater involvement, higher academic achievement, more opportunities for collaboration compared to the control group who took part in conventional learning. This shows that gamified learning can have an effective impact on student motivation in learning in elementary schools.

Gamified learning has recently become an increasingly popular trend in the world of education, especially at the elementary school level. This approach incorporates game elements into learning to increase student motivation, engagement, and achievement. The impact of gamification learning on student motivation in learning in elementary schools. First, gamified learning has a positive impact on students' intrinsic motivation in elementary schools. Intrinsic motivation refers to the drive from within students to learn and explore learning material. By incorporating game elements such as challenges, achievements, and levels into learning, students feel more interested and eager to engage in the learning process. For example, by using a point or reward system in gamified learning, students feel more motivated to complete assignments and achieve learning targets because they gain intrinsic satisfaction from their progress.

Apart from that, gamified learning can also increase students' extrinsic motivation in elementary schools. Extrinsic motivation is encouragement that comes from external factors such as recognition, praise, or prizes. In the context of gamification, students may be motivated to participate and complete tasks because they want to earn points, rewards, or levels that can increase their social status or gain recognition from their teachers and peers. While these extrinsic motivations may not be as strong as intrinsic motivation in the long run, they can still help maintain students' interest in learning and encourage them to be actively engaged. Apart from motivation, gamified learning also has a positive impact on student engagement in learning in elementary schools. Student engagement is how much students are actively involved in the learning process, both mentally and emotionally. By utilizing game elements such as challenges, competition, and collaboration in learning, gamification encourages students to focus more and participate actively. For example, in games that use a points or level system, students will feel challenged to improve their own performance and compete with their friends, thereby increasing their level of engagement in learning.

Gamification learning can also improve student learning outcomes in elementary schools. By presenting learning material in an interesting and challenging format,

gamification helps students to better understand the concepts being taught and develop the necessary skills. For example, games that involve problem solving, critical thinking, or teamwork can help students develop these skills while learning core subject matter such as math, science, and language. Additionally, by providing immediate feedback through a points or reward system, gamification allows teachers to track student progress and provide additional guidance if needed, thereby increasing students' chances of success.

CONCLUSION

Based on the results and discussion above, it can be concluded that gamification is an innovative approach in education that utilizes game elements to increase student motivation, engagement and learning outcomes. By utilizing a point or reward system, challenges, achievements, competition, and collaboration, gamified learning creates a more interesting and enjoyable learning environment for students. Although there are some challenges that need to be overcome, the potential of gamified learning to increase student motivation and engagement makes it a valuable tool in improving the quality of education in primary schools and at all levels of education. Gamification learning can be an effective and innovative tool for increasing student motivation in elementary schools. The integration of game elements such as points, levels, and challenges in learning can increase student interest, engagement, and overall motivation. These findings provide an important contribution to the development of more innovative and effective learning strategies in the future.

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