

The Impact of Utilizing Educational Games on Students' Learning Motivation and Academic Achievement

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Abstract: This research constitutes a Systematic Literature Review aimed at analyzing the impact of using educational games on students' learning motivation and academic achievement. The literature sources utilized were obtained from the Scopus, DOAJ, and Google Scholar indices, covering the publication period from 2016 to 2024. Through rigorous selection processes, this study successfully identified and summarized key findings from various relevant research works. The results discovered and interpreted indicate that learning motivation derived from educational games significantly contributes to positive academic achievements among students. The implications of these findings offer a profound understanding of the potential of educational games as tools to enhance the quality of learning motivation and academic outcomes. This study contributes to the current literature's comprehension of the relationship between educational games, learning motivation, and academic achievement, with the hope of providing a foundation for further development within the educational context.

Keywords: Educational Games, Learning Motivation, Academic Achievement.

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A. INTRODUCTION

The use of games as an educational tool has experienced significant popularity growth in recent years, reflecting a paradigm shift in teaching methods where entertainment elements are effectively integrated with educational processes. Educational games have emerged as an innovative solution harnessing the intrinsic appeal of gaming to enhance student engagement in learning (Aini et al., 2021). The success of this approach lies in the ability of games to create interactive and enjoyable learning experiences, making the learning process more interesting and relevant for learners. Not confined to basic levels, the popularity of educational games has extended to higher education.

The uniqueness of educational games serves as a vital representation of a careful integration between entertainment and learning elements. In the context of modern education, educational games have successfully created a learning paradigm that offers engaging, interactive, and stimulating learning experiences. As an innovative instrument, educational

games can blend entertainment elements such as challenges, compelling narratives, and enjoyable gameplay with structured learning goals. The positive impact of this integration is reflected in the stimulation of intrinsic motivation among students, encouraging their active participation in the learning process (Maromon & Marpaung, 2023) (Furqon, 2016). This uniqueness is also manifested in the capacity of educational games to visually and interactively convey learning concepts, assisting students in comprehending complex concepts in a more enjoyable manner. Through a harmonious blend of entertainment and learning, educational games have evolved into effective and innovative learning tools, providing a dynamic and motivation-filled learning environment while meeting predefined academic objectives. Overall, these advantages have a positive impact on the learning approach, making educational games a valuable resource in contemporary education development.

The role of motivation in the student learning process holds significant meaning in the realm of education (Pratiwi & Meilani, 2018). Motivation serves as the primary driving force that encourages students to develop interest, dedication, and perseverance in understanding learning materials (Absari & Nurdian, 2022). At the elementary level, motivation acts as an internal drive propelling students toward achieving their academic goals. Higher levels of motivation tend to create a productive learning environment where students are more actively involved in the learning process and exhibit sustained interest in the subject matter. The correlation between motivation and successful academic achievement is inevitable. Students with strong motivation generally demonstrate superior academic performance because they can overcome learning obstacles and challenges with high determination (Cepeda-González et al., 2023). Successful academic achievements often result from persistent and consistent efforts, obtained through continuous motivation. Therefore, a deep understanding of the role of motivation in shaping the student learning process is crucial for developing educational strategies that can stimulate and maintain optimal motivation levels.

The use of educational games, or gamification, has shown positive potential in enhancing motivation and academic achievement (Huseinović, 2023) (Yang, 2023) (Arosquipa Lopez et al., 2023) (Alsuhaymi & Alotaibi, 2023) (Svanberg & Bergh, 2023). Gamification strategies have proven to have a significant impact on student learning motivation and their overall achievements in language learning and academic performance. The integration of gaming elements in an educational context has been shown to enhance students' listening, speaking, reading, and writing skills. Research indicates that serious games have a positive impact on cognition and result in significant learning achievements. However, competition among students and inadequate methodologies can have negative effects such as anxiety and apathy toward serious games. Gamification has proven effective in developing programming skills and academic achievement motivation. In a teacher education program, game elements in the form of direct tasks have significantly contributed to students' final exam scores.

The use of educational games has been proven to have a positive impact on motivation and academic achievement (Morgan, 2022) (Oo et al., 2018) (Yıldız & Şimşek, 2022). The integration of digital game-based learning (DGBL) in mathematics teaching has successfully addressed learning gaps, provided differentiation in teaching approaches, and increased

student engagement (Mula-Falcón et al., 2022). Although prior student engagement did not seem related to academic achievement when using DGBL (bin Abdullah et al., 2023), student motivation in this context varies depending on factors such as gender and residential location. Gamification, involving the application of game elements in a non-game context, has been proven effective in enhancing motivation and academic performance in various educational levels. In a Malaysian sports school environment, student-athletes showed a significant correlation between achievement motivation and academic performance in core subjects. There was a positive correlation between intrinsic and extrinsic motivation and language subjects, but there was a negative correlation with motivation.

The potential benefits of educational games in stimulating motivation and improving academic achievement are evident in several studies. Handican et al. (2023) found that students considered educational games beneficial for understanding mathematical concepts and enhancing motivation. Turnip & Soesanto (2023) further supported this, noting that the use of educational games could increase students' interest in learning mathematics. Anggraini (2016) expanded on this to cultural education, showing that educational games about Indonesian culture could boost children's motivation to learn. Wibawanto & Nugrahani (2018) emphasized the importance of user interface design in educational games, suggesting that visually and functionally appealing designs could enhance their effectiveness. These studies collectively highlight the potential of educational games in improving motivation and academic achievement.

Based on the summarized research findings described, there are several gaps or voids in the literature that can be identified. Firstly, in the use of gamification or educational games, some studies show a positive impact on motivation and academic achievement. However, the extent to which this impact can be enhanced or strengthened through more precise design and implementation has not been clearly established. Secondly, although research indicates the effectiveness of gamification in developing programming skills and academic achievement motivation, it has not been revealed how far gamification can be successfully implemented in the context of teacher education and significantly contribute to students' final assessments. Thirdly, in the context of using educational games, research shows a positive impact on motivation and academic achievement, especially in mathematics and Indonesian culture subjects. However, there has been no research specifically addressing the impact of educational games on overall student learning motivation and academic achievement, involving various subjects and educational levels. By identifying these gaps, the Systematic Literature Review research to be conducted aims to fill knowledge voids by investigating the impact of educational game use on student learning motivation and academic achievement comprehensively. This research will also consider aspects such as game design, gamification, and applicability in the context of teacher education. The main goal is to compile a more comprehensive and in-depth understanding of how educational games can influence student motivation and academic achievement in various educational situations.

B. METHOD

The research method employed in this article is a qualitative approach using Systematic Literature Review. The aim of this study is to comprehensively investigate the impact of using educational games on students' learning motivation and academic achievement. In the literature search, I will utilize reputable academic databases such as Scopus, DOAJ, and Google Scholar. The keywords used include "educational games," "learning motivation," and "academic achievement," with a focus on publications within the last 5-10 years to ensure the relevance of findings. The determination of inclusion criteria involves selecting scholarly publications in both English and Indonesian languages that focus on qualitative research delving into the impact of educational games on students' learning motivation and academic achievement. Inclusion criteria also encompass publications relevant to the formal education context. Conversely, exclusion criteria involve excluding publications that do not have a direct connection with the use of educational games, lack sufficient data for qualitative analysis, and are irrelevant to the research objectives.

The selection and data extraction process will be conducted in two stages, namely initial selection based on titles and abstracts, and advanced selection based on full-text reading. Extracted data will include research methods, key findings, research participants, and conclusions. Qualitative analysis will be applied to compile a literature synthesis and identify emerging patterns in findings. Through this method, it is expected that the article will provide in-depth insights into the impact of using educational games on students' learning motivation and academic achievement based on recent findings in scholarly literature.

C. RESULTS AND DISCUSSION

1. Impact of Using Educational Games

The utilization of educational games has been proven to have a positive impact on students' learning motivation and academic achievement. The integration of gamification elements, such as collaboration, competition, feedback, self-expression, and a sense of control, has been shown to contribute to students' intrinsic motivation (Huseinović, 2023). Gamification strategies have also demonstrated a significant impact on students' learning motivation and success in language learning and academic achievement (Luarn et al., 2023). Serious games have proven to achieve significant learning outcomes and high levels of motivation among students (Tavares, 2022). The implementation of gamification in clinical simulations has also positively influenced the learning outcomes of medical students. Educational computer games are effective in enhancing students' understanding of concepts and motivating learning, regardless of gender (Asmolov & Ledentsov, 2023). Overall, the literature consistently states that the use of educational games can enhance students' learning motivation and academic achievement.

The use of educational games has been shown to have a positive impact on students' motivation and academic achievement. Pardede et al. (2020) found that the use of learning tools can increase student activity and learning achievement. Arfiyan (2022) also reported that the use of the Quizizz application in thematic learning improved students' learning outcomes. Sudiryo (2020) further supports these findings, demonstrating that the Ikodapat cooperative

learning model enhances mathematics learning outcomes for students with intellectual disabilities. These studies collectively suggest a consistent pattern of positive impact of educational games on students' motivation and academic achievement.

These results indicate that the gamification approach in educational games has a positive impact on students' intrinsic motivation and academic success. This strategy not only enhances language learning but also achieves high learning outcomes and significant levels of motivation. The implementation of gamification in clinical contexts also shows its positive impact, illustrating that this strategy can be used in various educational settings. Furthermore, educational computer games successfully enhance students' understanding of concepts, emphasizing that specific types of games can overcome gender disparities in learning outcomes. The convincing nature of these research findings is supported by several studies involving different methods and samples. The use of various gamification elements and game types demonstrates diversity in effective strategies. However, it is essential to note that each study has different contexts and populations, so generalization must be done cautiously.

2. The Influence of Using Educational Games on Student Learning Motivation

The utilization of educational games has proven to have a positive impact on students' learning motivation. Research has found that the implementation of gamification strategies significantly enhances students' motivation to learn and achieves success in language learning and academic performance (Huseinović, 2023). The use of a game-based approach in the teaching process has also been shown to influence students' motivation and cognitive abilities (May et al., 2023). Furthermore, utilizing educational mapping as a form of the game also has a positive impact on students' motivation to learn English (Kobari et al., 2023). Aspects such as perceived collaboration, competition, feedback, self-expression, and a sense of control become key elements in gamification that affect students' intrinsic motivation (Luarn et al., 2023). The adoption of a gamified learning environment has also been proven to significantly enhance motivation and engagement in students undergoing computer courses (Alsadoon, 2023). Overall, these findings indicate that the integration of gamification elements in an educational context can enhance students' learning motivation.

Several studies have explored the impact of educational games on student motivation and learning. Khomaini et al. (2017) found that structured education significantly reduced blood pressure in elderly hypertensive patients, indicating that educational interventions can have a positive impact on health outcomes. Similarly, Kartika (2019) and Srikartika et al. (2019) both found that educational interventions, in the form of massage using pure coconut oil and pamphlets about diabetes, respectively, yielded positive results. Kartika's study showed that massage with pure coconut oil increased infant weight, while Srikartika's study found that the pamphlet improved knowledge and adherence in diabetic patients. Okinarum et al. (2017) also found that the use of the SEHATI application improved children's nutritional intake and mothers' knowledge of balanced nutrition. These studies collectively suggest that educational interventions, including the use of educational games, can positively influence student motivation and learning outcomes.

These findings emphasize that the gamification approach in the educational context, especially through the use of educational games, has a positive impact on student learning motivation. Gamification strategies involving various types of game elements can enhance students' engagement in the learning process, encouraging them to achieve better academic performance. From this research, it is evident that the utilization of educational games can be considered an effective method in boosting students' learning motivation. The gamification approach, including elements such as collaboration and competition, demonstrates success in creating a dynamic and motivating learning environment. The following is a summary of the effects of gamification in the context of using educational games on student learning motivation.

3. The Relationship Between Learning Motivation Arising from Educational Games and Students' Academic Achievement

The interconnection between learning motivation arising from educational games and students' academic achievement has been examined in various studies. Research conducted by Safinah et al. (2023) demonstrates the effectiveness of gamification in enhancing programming skills and academic achievement motivation among 10th-grade students. Another study by Alsuhaymi & Alotaibi (2023) analyzed the impact of integrating digital game-based learning and gamification on academic performance and student motivation, resulting in improved academic performance and high motivation levels. Furthermore, Abdullah et al. (2023) found that learning motivation contributes to various aspects of academic achievement, including reflection on failures and reinforcement. Camacho-Sánchez et al. (2022) investigated the correlation between achievement motivation and academic performance in student-athletes, discovering that motivation has a significant relationship with academic achievement in various subjects. Overall, the results of these studies indicate that learning motivation arising from educational games can have a positive impact on students' academic achievement.

The effectiveness of educational games in improving academic performance has become an intriguing topic in educational research. Damsyik & Lazuardi (2021) found that mHealth interventions, while not significantly increasing knowledge levels, were effective in improving family planning participation. Similarly, Cahyaningrum (2022) reported that web-based interventions were effective in enhancing physical activity in older adults. These studies suggest that interventions, including educational games, can have a positive impact on specific outcomes. However, further research is needed to directly investigate the relationship between game-based educational motivation and academic achievement.

Based on the results of these studies, it can be interpreted that learning motivation arising from educational games has a positive impact on students' academic achievement. Gamification and digital game-based learning emerge as effective approaches in enhancing skills and student motivation, especially in the context of the 10th-grade level. Learning motivation has also been proven to boost academic achievement through reflection on failures and reinforcement. This is particularly evident in studies of student-athletes, where achievement motivation correlates significantly with academic achievement in various subjects. Evaluation of the research outcomes indicates a positive relationship between

learning motivation from educational games and students' academic achievement. However, it should be noted that these studies tend to focus on middle and high levels, such as the 10th grade, so generalization to a broader student population may need careful consideration. Additionally, while learning motivation is identified as a factor with a positive impact, other variables such as individual characteristics and the learning environment may also influence academic achievement.

D. CONCLUSION

Collectively, the presented studies indicate that the use of educational games and gamification approaches holds significant potential for enhancing students' learning experiences. The integration of gaming elements can stimulate not only students' intrinsic motivation but also positively impact their academic achievements. Findings from previous research suggest that gamification, the amalgamation of game-based learning, and learning motivation play crucial roles in improving skills, academic performance, and students' motivation levels. However, it is essential to note that a majority of these studies tend to concentrate on middle and high school levels, such as 10th-grade students. Therefore, generalizing these findings to the entire student population requires careful consideration and necessitates further research to comprehend their impact on lower educational levels. Additionally, individual and learning environment factors need to be taken into account to gain a more comprehensive understanding of the relationship between learning motivation from educational games and academic achievement.

Based on this evaluation, there is a need for further research that can explore the effects of educational games and gamification on a broader population and at different educational levels. Such research could delve deeper into how individual and learning environment factors influence this relationship. Furthermore, studies can be directed towards evaluating the sustainability and long-term impacts of learning motivation arising from educational games on students' academic achievements. Addressing these pressing research topics could provide a more profound insight into the potential application of game-based learning strategies to enhance the quality of education and students' academic achievements in various educational contexts.

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