



Descriptive Study: Innovation In Digital Learning Media Based On Educational Games In Primary Schools

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ABSTRACT

The rapid development of digital technology has brought significant changes to the field of education, including the learning process in Elementary Schools. One of the widely implemented innovations is the use of educational games as interactive digital learning media that are engaging and capable of increasing students' learning motivation. This study aims to describe the planning, implementation, and effectiveness of using educational games in thematic learning in Elementary Schools. The study employed a descriptive qualitative approach with data collected through in-depth interviews with classroom teachers. Data analysis was carried out using the Miles and Huberman model, which consists of data reduction, data display, and conclusion drawing. The findings indicate that teachers plan the use of educational games by aligning the type of game with the lesson content, students' characteristics, and the available school infrastructure. The use of educational games was proven to enhance students' motivation, focus, activeness, and participation during the learning process. However, several challenges emerged, including limited devices, unstable internet connection, and inadequate reading skills among some students. Teachers play a crucial role as facilitators, media designers, classroom managers, and providers of positive reinforcement. In addition, the combination of digital games and environment-based educational activities offers more concrete and meaningful learning experiences. Overall, the use of educational games contributes positively to supporting thematic learning and is feasible to be further developed as an innovative learning media in Elementary Schools.

Keywords: Educational games, Digital learning media, Thematic learning, Student learning motivation, Teacher digital literacy, Descriptive study



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INTRODUCTION

Rapid advances in digital technology have brought about significant changes in the world of education, including in the learning process at primary schools (Suryawan, 2022). The use of technology is no longer limited to serving as a teaching aid, but has evolved into an innovative and interactive learning medium. These changes require teachers to be able to adapt their teaching methods and learning materials to suit the characteristics and learning needs of pupils in the digital age. One form of innovation in digital learning media that is widely used at primary school level is educational games (Setiawan, 2021). Educational games are designed by combining elements of play with learning content, thereby creating an engaging, interactive,

and enjoyable learning environment. The use of visuals, animations, sound, and challenge systems in educational games encourages pupils to become more actively involved in the learning process (Wulandari & Prasetyo, 2022).

For elementary school students at the concrete operational stage of development, learning through games is considered highly appropriate because it allows students to learn through direct experience (Aulia & Kurniasih, 2021). Educational games help present abstract learning material in a more concrete and understandable way (Rizky & Andayani, 2022). Furthermore, the direct feedback, point systems, levels, and rewards in games can increase student learning motivation and self-confidence. The use of digital learning media based on educational games also offers teachers an alternative to addressing the challenges of conventional learning, which tends to quickly bore students (Halim & Putri, 2021; Santoso, 2022; Wulandari, 2023). With educational games, teachers can create more varied learning experiences and adapt to students' diverse learning styles, including visual, auditory, and kinesthetic. This media also provides opportunities for students to learn at their own pace and abilities, thus making the learning process more inclusive (Setiawan, 2021; Ariyanti, 2022; Ramadhani, 2023).

In addition to increasing interest and motivation in learning, educational games also have the potential to support the development of 21st-century competencies, such as critical thinking, creativity, communication, and problem-solving (Kurniawan, 2020; Handayani, 2021; Suryani, 2023). Through challenges and activities in the game, students are trained to make decisions, try strategies, and learn from their mistakes. Based on this description, it is important to conduct a descriptive study to illustrate how innovative digital learning media based on educational games are implemented in elementary schools, as well as their role and benefits in supporting the learning process (Wijayanti, 2019; Ramadhani, 2021; Fadillah, 2022). This study is expected to provide a comprehensive overview of the use of educational games as digital learning media that are relevant and adaptive to current educational developments.

RESEARCH METHODS

This study uses a descriptive qualitative approach that aims to analyze Descriptive Study: Innovation of Digital Learning Media Based on Educational Games in Elementary Schools. The descriptive study method was chosen because this study aims to describe in depth how innovation of digital learning media based on educational games is implemented in Elementary Schools, without manipulating variables. Descriptive studies are very appropriate to the focus of this study because they allow researchers to see and know in detail the process of planning, implementing, and evaluating the use of educational games in elementary schools, including student responses and challenges faced by teachers. By using descriptive studies, research data were obtained through interviews with teachers. The collected data provide a factual picture of the implementation of educational games in the classroom. Thus, the descriptive study method is very relevant and appropriate to examine this research topic which focuses on the use of educational games in thematic learning in elementary schools.

By using descriptive studies can strengthen the theoretical basis and broaden the understanding of various relevant previous research findings. Descriptive studies include the latest scientific journals, reference books, research reports, and academic publications that discuss Descriptive Studies: Innovation of Digital Learning Media Based on Educational Games in Elementary Schools. Data obtained from interviews and descriptive studies are then analyzed using the Miles & Huberman (1994) technique or descriptive analysis, namely by first reducing data: which describes the answers from teachers how the game is played, what devices are used, student reactions, secondly presenting data: presented in tabular form, and thirdly drawing conclusions: which impact on student motivation. So that it produces a simple

description that supports the development of Innovation of Digital Learning Media Based on Educational Games especially in Elementary Schools.

RESULTS AND DISCUSSION

Results

Interview results indicate that educational game planning involves adapting the game type to thematic material, students' initial abilities, and using engaging visuals for easy understanding. Teachers also prepare alternatives in case of network issues. The use of games has been shown to increase student motivation, as students appear more enthusiastic, focused, and active during learning. Even students who are typically passive become more engaged when learning through games. In utilizing digital technology, teachers possess sufficient literacy and are able to select games relevant to learning objectives, despite the constraints of devices and unstable networks. Teachers also play a key role in developing environment-based game media using simple objects such as leaves and bottle caps. The advantages of educational games include increased engagement and understanding, while limitations relate to facilities. Evaluation of effectiveness is conducted through pretests, posttests, and observations of student learning behavior.

Table 1. Interview Instruments and Teacher Interview Results.

No	Topics	Question	Answer
1.	Planning an Interesting and Interactive Educational Game for Elementary School Students	How do you plan interesting and interactive educational games for elementary school students?	Planning for the use of educational games is done before the learning process begins. The first step is to adapt the game to the thematic material to be taught that day. G1 chooses games that are simple, easy to operate, and have an attractive appearance so students can quickly understand instructions. G1 also adapts the game to the students' initial abilities, especially in the aspects of reading and understanding instructions. G1 prepares alternative games in case of technical difficulties such as unstable internet connection.
2.	The Use of Educational Games on Elementary School Students' Motivation and Learning Outcomes	What do you think, can the use of educational games increase students' motivation to learn?	Yes, the use of educational games can significantly increase students' learning motivation. G1. When games are used in learning, students appear more enthusiastic, active, and less bored. Attractive visual displays and the presence of challenging elements in the game make students more eager to try and complete the assigned tasks. G1, said that most students who are

			usually passive become more involved because they feel learning through games is fun and not boring. G1, also emphasized that educational games help attract students' attention from the beginning of learning so they are more focused on following the material being taught. Games allow students to learn while playing, so their intrinsic motivation increases naturally without having to be forced or pressured, G1. According to G1, educational games have an important role in fostering students' interest and motivation to learn in class.
3.	Utilization of Digital Technology in Educational Game-Based Thematic Learning	How is the use of digital technology based on educational games in thematic learning in your class?	G1, Most teachers have good digital literacy competencies in utilizing educational games for thematic learning in schools, especially in elementary schools. G1, said that they are able to operate digital devices and choose games that are appropriate to the material and learning objectives and always ensure that the games used are easy to understand, not only interesting, but also contain educational elements so that students remain focused on learning. G1, acknowledged that the successful use of educational games is highly dependent on the availability of infrastructure in schools, such as laptops, LCDs, and internet connections that are sometimes unstable so it is necessary to prepare alternative offline games. G1, makes selections based on the relevance of the content to the theme, for example, environmental themes must be linked to games that include activities to maintain cleanliness or the recycling process.

4. The Role of Teachers in Developing and Implementing Educational Game Media in Schools	In your opinion, what is the role of teachers in developing and using educational game media in elementary schools?	G1, explained that the role of teachers is very important in designing and developing educational games based on the surrounding environment because teachers are the main creators who understand students' learning needs. by seeing the surrounding environment as a rich and inexpensive source of media, so that simple objects such as leaves, stones, bottle caps, cardboard, sand, and paper can be processed into educational game media that are interesting and in accordance with learning objectives. G1, gave an example that leaves can be used for botanical classification, bottle caps for numeracy operations, and cardboard for letter puzzles. Teachers also provide motivation through praise, appreciation, and positive reinforcement so that students feel more confident and enthusiastic about participating in activities.
5. Analysis of the Advantages and Limitations of Using Educational Games in Elementary School Learning	What are the advantages and limitations of using educational games in elementary school learning?	a. Excess The ability of educational games to make students more active during the learning process. Students showed increased activeness in following instructions, answering questions, and working together in small groups. Students were more enthusiastic and eager to participate in learning. Students appeared much more active, less bored, and showed a higher interest in the material when presented in the form of games. G1, stated that educational games make the learning atmosphere more enjoyable. Games can

increase student motivation to complete learning activities independently. Students more easily understand abstract lesson concepts. Students remember the material more quickly because it is presented in the form of images, animations, and direct interaction through the games they play.

b. Limitations

Unequal device availability, with not all students having devices like smartphones or tablets, and limited school facilities, teachers struggle to implement games evenly, and students have to share devices, making learning less effective. Furthermore, unstable internet connections and the use of English in some games can cause students to lose focus. Sometimes, some students lose focus and forget about learning objectives, necessitating continued supervision.

6.	Evaluation of the Effectiveness of Educational Gems as an Innovative Learning Media in Elementary Schools	How do you evaluate whether educational games are effective in learning?	G1 began by evaluating student learning outcomes before using the game and conducting a pretest to measure students' initial abilities regarding the material to be taught. According to G1, this initial measurement is important so that the evaluation results are unbiased and can be compared objectively after the learning process has taken place. After the learning activities using the educational game were implemented, the teacher conducted a posttest to see the difference in learning outcomes between before and after using the game media. If student
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scores increased significantly, the game was deemed successful in helping students understand the material. Observing changes in student learning behavior was part of the evaluation of the effectiveness of the educational game media. The teacher also assessed students' ability to complete tasks during and after using the educational game. The evaluation was conducted through direct feedback from students. The questions given and the results of student responses were very important because students were the direct users of the media, so their opinions could be the basis for improving or changing the game in the next meeting.

Discussion

Planning for the use of educational games is carried out before the learning process begins. The first step is to adapt the game to the thematic material to be taught that day. Choosing a game that is simple, easy to operate, and has an attractive appearance allows students to quickly understand instructions. Thus, teachers' steps in adapting the game to the material and student characteristics reflect appropriate pedagogical practices as recommended by contemporary research (Rahmatullah et al., 2021; Fitriani & Wahyudi, 2022). These findings also indicate that teachers have conducted thorough planning before using educational games in the classroom. The results emphasize that the quality of teacher planning is crucial to the success of implementing digital technology in learning.

Recent literature explains that the selection of digital media must consider suitability to student abilities, learning objectives, and the condition of school infrastructure. Recent research also confirms that effective educational games are simple, interactive, and have visual displays that support students' thinking processes (Rahmatullah et al., 2021). Adapting games to student characteristics, such as reading and comprehension skills, also aligns with widely discussed theories of cognitive development in elementary school-aged children. Recent educational experts emphasize that elementary school students are at a developmental stage that requires visual, audio, and hands-on activities, making educational games an appropriate choice if properly planned. Therefore, teachers' selection of games that are easy to operate and visually appealing demonstrates the application of modern pedagogical principles recommended in contemporary research (Fitriani & Wahyudi, 2022).

With a strong planning foundation, the use of educational games has also been shown to significantly increase student learning motivation. This is evident in students' enthusiasm for participating in game activities, increased questioning, and high interest in completing challenges presented in the games (Rahmadani, 2021; Setiawan, 2022; Purwanto, 2023). The use of educational games can significantly increase student learning motivation. Students appear more enthusiastic, active, and less bored when learning activities are presented in the form of digital games. The engaging visual elements and challenges in the games make students

more enthusiastic about completing assignments and following learning instructions (Lestari, 2020; Hartono, 2022; Putra, 2023). These findings align with research explaining that educational games can increase students' intrinsic motivation because they combine elements of entertainment, interactivity, and challenges that encourage students to engage more deeply in the learning process (Rahmatullah et al., 2021). This condition is not only evident in increased motivation but also reflected in changes in student learning behavior throughout the learning process.

In addition to increasing student motivation, the use of educational games also helps students focus better from the start of the lesson. When a game is displayed, students' attention is immediately drawn to the screen, and they tend to follow each instruction well. Interactive media with visual and audio stimuli can strengthen students' focus and concentration, especially in elementary school, which is at the concrete operational development stage (Pratama, 2020; Yuliani, 2021; Susanto, 2023). Experts emphasize that elementary school students need learning experiences that involve visualization and hands-on activities to maintain their attention (Nurmala, 2023). This need for concrete learning experiences also aligns with teacher interviews regarding the benefits of educational games in creating a more natural and enjoyable learning environment for students.

The use of educational games allows students to learn while playing, fostering intrinsic motivation without being forced (Rizqiyah, 2020; Wijayanto, 2022; Ramadhani, 2023). Game-based learning can enhance students' intrinsic motivation by providing them with opportunities to explore, experiment, and learn from mistakes independently. The freedom to experiment in games allows students to feel comfortable and less stressed when facing challenges, allowing the learning process to proceed more naturally (Wardani, 2020; Syahputra, 2021; Lestari, 2023).

Based on interviews, teachers demonstrated strong digital literacy skills, from selecting educational games appropriate to learning objectives to understanding how to facilitate students during gameplay. Teachers were able to operate digital devices, provide clear instructions, and ensure each play activity remained relevant to thematic material (Suryana, 2021). This suggests that teachers' digital literacy is a key factor in the successful implementation of educational games in elementary schools (Susanti, 2022). Experts explain that teachers must possess the competency to select, adapt, and integrate games into pedagogical contexts so that they serve not only as entertainment but also as meaningful learning tools. Research also confirms that teachers with strong digital skills tend to be more effective in creating interactive learning and increasing student participation in class (Rahmatullah et al., 2021).

In line with these findings, devices such as laptops, LCDs, and internet connections are crucial factors in the successful use of educational games. Teachers acknowledge that technical constraints such as slow networks often disrupt the learning process, necessitating the preparation of alternative offline games. The quality of digital infrastructure significantly contributes to the effectiveness of technology-based learning. Even if teachers possess strong digital competencies, learning will not be optimal without adequate infrastructure, such as appropriate devices, stable internet access, and classrooms that support technology use. Poor infrastructure can reduce the effectiveness of game use and lower student motivation (Fitriani & Wahyudi, 2022). In addition to infrastructure availability, the quality of game-based learning is also significantly influenced by teachers' accuracy in selecting games relevant to the curriculum and student needs.

Selecting games that align with core competencies and learning indicators is crucial. The relevance of game content to the theme is a priority so that students not only play but also gain meaningful understanding. Educational game content must be relevant, accurate, and curriculum-aligned to effectively enhance conceptual understanding. Pedagogically relevant games can strengthen the connection between gameplay experiences and learning objectives,

enabling students to construct knowledge based on interactive in-game activities. Conversely, irrelevant games can distract students and reduce learning effectiveness (Nurmala, 2023). In line with the importance of game content relevance in learning, another factor contributing to the successful use of digital technology is the role of parents in assisting students when using devices at home.

Teachers observed that students were more focused, more willing to ask questions, and better able to follow instructions through games. This finding aligns with research from the past five years, which states that educational games can increase motivation due to their interactive and fun design. Experts explain that elements such as engaging visuals, challenges, points, and levels in games can create an internal drive that keeps students motivated without pressure. This intrinsic motivation is important because it encourages students to learn independently and improves retention of understanding (Hidayat & Pramudiani, 2021). However, to ensure optimal benefits, teachers also stated that using educational games requires good time and classroom management to ensure the learning process remains focused. Teachers limit playtime and ensure students reflect after playing to understand the material. Time management is a crucial aspect of game-based learning. Experts emphasize that while games can increase student engagement, without proper control, students can become fixated on the gameplay and lose sight of the learning objectives.

Therefore, teachers must be able to provide clear instructions, maintain student focus, and balance play activities with discussions or explanations of the material (Nurmala, 2023). Therefore, the role of teachers is crucial in the teaching and learning process and serves as facilitators who facilitate student learning. Based on interviews, teachers stated that environmental-based educational games can increase student motivation and participation in learning because they provide learning experiences closer to students' real lives. Students show greater enthusiasm when learning is packaged in the form of games that utilize concrete objects such as leaves, stones, sand, and bottle caps, making the learning process more active and enjoyable. This shows that learning does not always have to rely on digital technology but can be designed through teacher creativity in utilizing surrounding resources. These findings align with recent research confirming that concrete activity-based media can strengthen the engagement and focus of elementary school students because they align with the concrete operational development stage. At this stage, students understand material better through direct experience and manipulation of real objects (Fitriani & Wahyudi, 2022).

In line with this understanding, teachers further emphasized that the process of developing educational games does not have to rely on high technology, but rather requires teacher creativity in designing game rules and developing appropriate learning steps. Teachers can draw game boards, create question cards, or modify traditional games like congklak and snakes and ladders to be relevant to core competencies. This demonstrates the strategic role of teachers as learning designers and innovators. Recent research has found that teachers who are able to develop simple media demonstrate higher learning effectiveness than teachers who rely solely on conventional visual media because self-made media is more flexible and can be adapted to students' needs. This opinion is supported by research confirming that teacher creativity in designing learning media has a significant impact on increasing student motivation and understanding in elementary schools (Rahmatullah et al., 2021). Therefore, in developing technology-based media such as educational games, teachers are not only required to be creative but also must consider various supporting aspects to ensure the media is truly effective in the learning process.

One important aspect to consider is that the use of environment-based educational games must consider safety, age-appropriateness, and limited learning time. Teachers also play a role in explaining game rules, providing examples of how to play, and ensuring students understand the relationship between game activities and the core competencies to be achieved.

The teacher's role as a facilitator involves not only supervising the game but also ensuring students focus not only on the entertainment aspect but also on the academic meaning behind the activity. Research over the past five years has shown that effective implementation of game media requires strong classroom management skills, the ability to provide clear instructions, and optimal supervision. Good management prevents students from losing focus and ensures that the game remains directed towards achieving learning objectives (Sari & Putra, 2020).

Therefore, analyzing the advantages and limitations of educational games is necessary. Research shows that educational games can significantly improve students' knowledge compared to traditional learning methods. Games provide visual, audio, and interactive stimuli that capture students' attention for longer, keeping them focused on the subject matter. Furthermore, games allow students to learn by doing, simultaneously increasing both physical and mental participation. In-game activities encourage students to experiment because mistakes are seen as part of the learning process, not something to be feared. This encourages students to experiment, answer questions, and complete challenges, creating a more active and lively classroom atmosphere (Rahmadani, 2021; Suharto, 2022). Student engagement in educational games occurs not only individually but also socially. Many games are designed for group or collaborative play, allowing students to discuss, share strategies, and work together to achieve specific goals within the game. These activities help students develop communication and interpersonal skills, which are essential for learning. Furthermore, the use of games fosters critical thinking and problem-solving skills because students must analyze situations, identify problems, and find the most appropriate solutions based on the conditions in the game. Thus, educational games increase students' activity not only physically but also cognitively (Widiastuti, 2020; Purwanto, 2023).

Teacher interview findings reinforce the evidence that educational games can encourage students to shift from passive to active learning. Teachers observed significant changes in student learning behavior when games were used, such as increased responsiveness to instructions, increased enthusiasm, and increased participation in various learning activities. These changes demonstrate that educational games are not just entertainment but also learning tools capable of transforming classroom dynamics to become more effective and productive. High interaction between students and the learning media in games makes the learning process more meaningful and student-centered (supported by various recent studies from 2019–2023). Teachers' statements that educational games make the classroom atmosphere more enjoyable are a key point in transforming learning in elementary schools. Teachers emphasized that when games are implemented in class, the learning atmosphere changes drastically from previously monotonous to more lively, interactive, and enthusiastic. This occurs because games contain entertaining elements such as animation, challenges, points, and reward systems that psychologically engage students. In traditional learning, students often lose focus after 15–20 minutes, but games allow them to stay focused for longer. With a fun atmosphere, students feel like they are playing, even though they are actually learning important concepts in the subject matter (Setiawan, 2022).

In line with this more lively classroom atmosphere, research also shows that game elements have a direct impact on increasing student motivation. This finding is consistent with the view that scores, game levels, engaging graphics, and challenges help stimulate students' intrinsic motivation to learn independently without external encouragement. Furthermore, a fun classroom atmosphere can increase dopamine production in students' brains, which plays a role in increasing feelings of pleasure, enthusiasm, and memory. This explains why students grasp material more quickly when presented through visually and emotionally engaging games (Harjono, 2021).

Furthermore, a pleasant learning environment not only impacts students' motivation and emotions but also improves their learning outcomes. When students enjoy the learning process,

their ability to absorb and remember information significantly improves. This suggests that educational games not only provide comfort but also strengthen long-term memory retention. Furthermore, a pleasant learning environment also enhances social interaction among students, especially in games played in groups. This interaction encourages students to be more confident in expressing opinions, discussing, and providing solutions to challenges that arise in the game (Lestari, 2020). When linked more closely to teacher interviews, the explanation that students felt happy and did not get bored quickly suggests that educational games play a crucial role in maintaining students' emotional stability during the learning process. Elementary school children need a variety of activities to prevent boredom, and educational games can provide this variety through a combination of visuals, audio, and direct interaction within the game. Teachers added that a pleasant atmosphere makes students more disciplined because they feel engaged in meaningful activities. Furthermore, a positive classroom atmosphere also makes it easier for teachers to manage the class because students are more focused on learning activities (Nugroho, 2023).

Considering all these findings and research, it can be concluded that educational games are not only a form of entertainment but also an effective learning strategy in creating a conducive and motivating classroom atmosphere. A fun classroom atmosphere is a crucial factor in optimizing the quality of learning, especially for elementary school students who are still in the early stages of cognitive and emotional development. They need media that can stimulate curiosity and provide concrete learning experiences. Therefore, educational games make a significant contribution to the success of elementary school learning (supported by various studies from 2019–2023). Modern research supports this finding, finding that students who learn using educational games show up to a 70% improvement in learning outcomes compared to conventional methods that only use lectures and practice exercises. The reason is that games provide a multisensory learning experience, combining visuals, audio, and interaction, making information easier for students to process and remember. Furthermore, game elements such as simulations, points, and levels help provide a clear structure to the learning process. This allows students to follow the learning flow with greater focus. Thus, the comparison of pretest and posttest scores conducted by teachers is empirical evidence that the use of educational games does have a significant impact on improving learning outcomes (Rahmadani, 2021).

This behavioral change has a strong psychological basis. Educational games create a learning environment that is safe from the fear of making mistakes. In games, every mistake is an opportunity to try again, not something to be avoided. This pressure-free environment encourages students to experiment and try to overcome challenges. As a result, students who are usually passive become more active in discussions, asking questions, and trying various strategies to complete game missions. Teachers also note that the use of games improves student focus, especially in students who previously got bored easily or lacked concentration in conventional learning. Thus, these behavioral changes indicate that educational games not only improve learning outcomes but also change student interaction patterns during the learning process (Suharto, 2022). This opinion aligns with research showing that educational games can improve students' information processing abilities. Games train strategic thinking skills because students must analyze situations, identify problems, and make appropriate decisions in a short time.

This process strengthens higher-order cognitive skills such as critical thinking, problem-solving, and decision-making. Teachers also added that students completed assessment tasks more quickly after playing games because they were already familiar with the structured instructional patterns within the game. The combination of visualization, repeated practice, and immediate feedback makes games effective in improving students' academic task-solving abilities (Widiastuti, 2020). Research confirms that students' perceptions of learning

media significantly determine the success of their implementation. If students feel supported, motivated, and enjoy using the media, their learning quality improves. Furthermore, student satisfaction is also an indicator of successful game design. A good game is not only entertaining but also helps students achieve their learning goals. Teachers can use this feedback to evaluate which parts of the game need improvement, such as whether the instructions are difficult to understand, whether the display is too complex, or whether the game duration is too long. Therefore, student feedback-based evaluation is an important approach to improving the quality of educational game implementation (Lestari, 2020).

According to research, educational games are a learning medium capable of providing comprehensive stimulation across all three domains of student development simultaneously. This occurs because games combine visual, audio, interactive, and experiential elements. Multisensory stimulation helps students understand information more deeply and process it more quickly. This process is not optimally found in conventional learning that relies solely on lectures and textbooks. Therefore, evaluating game effectiveness must include alignment between these three domains to obtain mature and objective results (Purwanto, 2023). The research results also explain that learning media is considered effective if it can simultaneously increase engagement, interaction, and academic performance. Educational games have advantages over traditional media because they can present learning materials in a more concrete, interactive, and enjoyable way. The combination of reward elements, challenges, visualizations, and simulations makes it easier for students to understand abstract material. Therefore, based on interviews and recent research, it can be concluded that educational games are a highly potential medium for improving the quality of learning in elementary schools (Nugroho, 2023).

CONCLUSION

Innovation in digital learning media based on educational games represents a significant breakthrough in improving the quality of learning in elementary schools. Through careful planning, the use of digital technology, and the active role of teachers, educational games can create a more engaging, interactive, and meaningful learning environment. Despite their limitations, educational games have been proven to increase student motivation, engagement, and learning outcomes. Therefore, the application of educational games as an innovative learning medium needs to be continuously developed so that students can learn in a fun way, relevant to current developments, and in accordance with the demands of 21st-century education. Furthermore, educational game development must also align with the applicable curriculum to ensure the material delivered remains relevant and aligns with the targeted learning outcomes.

Teachers play a crucial role in ensuring that games are used as tools, not substitutes for core learning, so that learning activities remain focused and focused on educational goals. With proper guidance, students not only have a fun learning experience but also gain a deeper understanding of concepts through exploration and hands-on practice within the game. Proper integration between games and the curriculum allows the learning process to be more adaptive and responsive to student needs. Furthermore, educational games can create opportunities for students to learn collaboratively and individually. In collaborative mode, students can work together to solve challenges, discuss topics, and develop social skills—such as communication, cooperation, and leadership.

In individual mode, games provide space for students to develop at their own pace. This helps teachers accommodate differences in student abilities and create more inclusive learning. Thus, educational games support the differentiation of learning required by the Independent Curriculum. Furthermore, the direct feedback feature in educational games is an advantage not

found in conventional methods. When students make mistakes, the game usually provides hints or explanations automatically, allowing students to immediately correct themselves without having to wait for teacher correction. This method can accelerate the process of understanding concepts and increase students' confidence in completing assignments. Instant feedback also allows students to learn from mistakes constructively in a stress-free environment. However, challenges in implementing educational games cannot be ignored. Technical constraints such as limited devices, unstable internet connections, and teachers' inability to operate technology often hinder optimal game implementation.

Furthermore, some educational games still use English-language instructions, which can be challenging for elementary school students, especially those in remote areas. Therefore, training and mentoring for teachers, as well as adequate infrastructure, are needed to ensure effective implementation of educational games. Supervision is also crucial when using educational games. Without proper supervision, some students may become overly focused on game elements and lose sight of learning objectives. Teachers must ensure that student activities in the game remain relevant to the competencies to be achieved. Setting playtime, selecting appropriate games, and providing clear instructions are crucial steps in maximizing the benefits of educational games. With proper control, students can experience a more meaningful and focused learning experience.

Ultimately, the success of using educational games in learning is determined not only by the quality of the game itself, but also by how teachers strategically integrate the game into the learning process. Teachers need to design learning scenarios that combine play activities with discussion, reflection, and assessment. Thus, educational games become more than just entertainment, but also effective pedagogical tools for developing students' understanding, creativity, and critical thinking skills. If developed and managed properly, educational games can be an innovative solution for realizing modern, adaptive, and competency-oriented learning.

Conflict of Interest

The authors declare that there are no conflicts of interest related to the research, authorship, or publication of this manuscript.

Generative AI Statement

The authors acknowledge the limited use of generative artificial intelligence tools during the manuscript preparation process. These tools were utilized exclusively to support language editing, improve clarity, and enhance the overall readability of the manuscript. Generative AI was not used to generate, manipulate, or analyze research data, nor was it responsible for the development of the research design, interpretation of results or formulation of the conclusions. All scholarly ideas, research procedures, analyses, interpretations, and substantive content presented in this manuscript remain the responsibility of the authors.

Author Contribution Statement

Theofilus Gaba contributed to the conceptualization, research design, methodology, development of research instruments, data collection, formal analysis, interpretation of findings, and preparation of the original manuscript draft. Yohanes Fransiskus Meo contributed to the conceptualization, methodology, data collection, data curation, and manuscript review and editing. Angela Fridoliani Meo was involved in the literature review, development of research instruments, data collection, and manuscript review. Anna Maria Wilfrida Ndapa contributed to the methodology, data collection, data curation, and interpretation of the research findings. Maria Melania Ahgo contributed to data collection, data validation, literature review, and manuscript review and editing. Valerianus Alpino Poma Susu contributed to research

instrument validation, data analysis, interpretation of findings, and manuscript review. Dek Ngurah Laba Laksana contributed to the conceptualization, research supervision, validation of the methodology, interpretation of findings, manuscript review and editing, and final validation of the manuscript.

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