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Dream: Digital Media Transformation as an Optimization of Deep Learning Implementation

Cahyo Apri Setiaji[1*], Ike Yunia Pasa[2], Astri Srigustini[3], Tengku Maaidah bin Tengku A Razak[4]
[1]Economic Education, Muhammadiyah University of Purworejo, Indonesia
[2]Information Technology, Muhammadiyah University of Purworejo, Indonesia
[3]Economic Education, Siliwangi University, Indonesia
[4]Education and Islamic Entrepreneurship, Universiti Teknoligi Mara, Malaysia
Author Corresponding: cahyosetiaji@umpwr.ac.id*

ABSTRACT

The background of the research is the low effectiveness of the implementation of elementary school students' deep thinking skills that have not facilitated the development of deep thinking skills. The aim of the research is to increase the effectiveness of deep learning implementation for students. The type of research and development (R&D) adopts the Borg and Gall approach. The subjects of the study were 33 elementary school students. Data collection used observation, validators, tests and questionnaires. Data analysis used descriptive, t-test, and N-Gain. The results of the data analysis showed that the Dream media was able to improve deep thinking skills through the t-test Sig. (2-tailed) 0.000 <0.05, meaning there was a significant difference between the pretest and posttest scores. The results of the N-Gain effectiveness test showed a score of 0.81> 0.7, including the high category. The hypothesis test showed a significant increase in the average score from 66 to 82 so it was concluded that Dream was able to develop deep thinking skills. The implication of this research is that learning media based on Articulate Storyline is a solution to increase learning participation, cooperation, and develop deep thinking skills.

Keywords: Digital Learning Media; Articulate Storyline; Deep Learning; Critical Thinking.

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1. INTRODUCTION

The concept of immersive learning is a learning approach that aims to provide a sense of comfort and individual appreciation for students. In the process, immersive learning emphasizes the realization of a conscious, meaningful, and joyful learning atmosphere through a comprehensive and integrated process of thought, heart, and body. Providing a sense of comfort is manifested in the realization of a learning process that honors with the embodiment of an attitude of mutual respect and honor to develop potential, talents, and humanity. The meaningful learning process implies students are aware of the activities they undertake with intrinsic motivation to achieve the desired learning goals. The meaningful process of immersive learning requires learning activities that can make students feel the benefits and relevance to life and reconstruct new knowledge based on what they know to be implemented in real life. Meanwhile, the joyful learning process is a conducive, challenging, and motivating atmosphere due to student

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involvement and contribution in learning.

Empirical problems that result in the effectiveness of the implementation of in-depth learning not being effective due to the characteristics of elementary school students that have not been accommodated in learning activities. Upper elementary school students are between the ages of 6 and 12. During this period, children experience rapid increases in their abilities and skills. This rapid improvement is evident in their cognitive, affective, and social aspects (Tohri et al., 2022). Cognitively, elementary school children are in the concrete operational stage. They are beginning to be able to think logically, but this is still limited to things that are tangible and can be directly observed (Sakti et al., 2024). At this stage, children are in the concrete operational phase where they are able to think logically but are still limited to real things that can be observed directly (Diana et al., 2021). They begin to be able to group, compare, and understand simple cause-and-effect relationships. Their strong curiosity encourages them to ask questions, experiment, and explore their surroundings. However, elementary school students' deep thinking skills still have a number of limitations (Aningsih et al., 2022). They are not yet accustomed to abstract or theoretical thinking, so they often experience difficulties when dealing with complex concepts (Pate et al., 2019). Furthermore, their relatively short attention span makes it easier for them to grasp lessons when presented through real-life experiences, concrete examples, or hands-on activities. Therefore, teachers need to stimulate students with open-ended questions, simple discussions, and the use of concrete media to encourage children to think more critically and reflectively (Suri & Chandra, 2021). Critical thinking is an important component in developing deep learning skills because students face broader problems than previous generations, but learning approaches still predominantly use traditional strategies (Fatima et al., 2025). Students are accustomed to prioritizing learning outcomes over the thinking processes they undertake (Akour et al., 2020; Martha et al., 2021). Apart from that, the tendency to choose instant information results in the ability to think deeply being rarely trained (Mulyani et al., 2020), (Kuhail et al., 2023). As a result, the ability to carry out analysis is very low because there is no desire to verify, question, criticize, or even construct arguments based on the logic that has been built (Seo et al., 2021). Another impact is a very high tendency to be passive in learning. The research background is based on various problems in elementary school students' learning activities that do not facilitate the development of deep thinking skills. The learning problems in question are primarily related to the suboptimal use of learning media.

The various learning problems mentioned above demonstrate that the concept of deep learning has not yet been implemented. The habit of memorizing a concept and then testing it to get a grade is completely at odds with the concept of deep learning (Elharrouss et al., 2024; Vinayakumar et al., 2019). Rob Randal said that deep learning is not actually a new concept but is a learning approach technique that focuses on understanding real concepts comprehensively, connecting them with other knowledge, and being able to implement them in real life (Randal, 2021). Modern learning strategies must focus on deep learning to prepare a generation that is able to think critically, creatively, adaptively, and collaboratively according to the needs of the 4C skills (Hernández-Blanco et al., 2019). Integration of deep thinking skills can help students develop the 4C skills (critical thinking, creativity, collaboration, and communication) needed in the 21st century. The implementation of deep learning in Indonesia requires the right strategy, especially regarding teacher readiness in utilizing technology access and its application in learning (Baniata et al., 2024; Tsai et al., 2020).

Learning media is an integral part of efforts to realize learning objectives formulated in learning outcomes (Hernández-Blanco et al., 2019). Learning media must be able to support the development of deep thinking skills. Learning media should meet the characteristics of being interactive, contextual, collaborative, and reflective. These four characteristics aim to support the development of elementary school students' learning techniques, namely participatory, correlated with the environment, and collaborative. The media called "Deep Learning Responsive E-Media Articulate Storyline," hereinafter referred to as Dream, is a digital-based media that has the advantage of supporting students in building knowledge through their own experiences. In addition, the media facilitates opportunities for teamwork, sharing opinions, connecting with real contexts, and reflecting and improving understanding (Khreshe, 2022; Reiser et al., 2021). In terms of content, digital learning media can display engaging animation- and annotation-based content, thereby fostering internal motivation to learn. This media supports the creation of quizzes, simulations, and branching scenarios to enhance critical thinking skills. This digital media can also dynamically combine text, images, audio, video, and animation and integrate with a Learning Management System (LMS).

The problem-solving approach in this study employed collaborative techniques between lecturers (proposers), students, elementary school students, and classroom teachers, implementing media that explored thinking skills. Research and Development (R&D) was chosen as the method for developing the learning media and measuring its effectiveness. The research location was Muhammadiyah Elementary School in Purworejo Regency.

This state-of-the-art approach utilizes a digital platform based on Articulate Storyline integrated with a deep learning approach. Articulate Storyline has been widely applied in digital-based learning (Daryanes et al., 2023; Donnellan, 2021; Ratnaningsih et al., 2024). The Industrial Revolution 5.0 emphasizes the importance of utilizing digital technology as the main foundation, because through this technology, synergy is created between artificial intelligence (AI), big data, the Internet of Things (IoT), and student activities (Giang et al., 2021; Oke & Fernandes, 2020). Through the use of digital technology, teachers are required to provide learning that is oriented towards mindful, meaningful learning, and joyful learning (Wang & Tang, 2020). Through the use of technology, students can easily access various sources of information quickly without being limited by space and time (Geng et al., 2019). The learning process also becomes more interactive and interesting because it is supported by media such as videos, animations, and simulations which help clarify concepts (Ansari & Khan, 2020). In addition, digital technology allows teachers to adapt materials to students' needs and abilities, making learning more personal and effective (Rawashdeh et al., 2021). Collaboration between students and between teachers and students is becoming easier through various digital platforms. E-Media is a learning medium that focuses on student learning activities through three main stages: understanding, applying, and reflecting (Hillmayr et al., 2020). Through these three stages, students will be trained to develop critical and in-depth thinking skills and find problem-solving solutions.

Several related studies have been conducted specifically examining the implementation of Articulate Storyline in learning (Heliawati et al., 2022; Kamińska et al., 2023). Meanwhile, the development of technology in learning has been carried out by researchers (Falloon, 2020; Mhlanga, 2020). These studies have yet to implement Articulate Storyline for developing deep learning in elementary school students. This research provides a novel innovation in designing adaptive digital media specifically for elementary school students to support deep learning development in accordance with their age-appropriate characteristics.

2. METHODS

The research was conducted at Muhammadiyah Elementary School in Purworejo Regency, Central Java Province, Indonesia. The subjects were 33 fifth-grade students. The background to the selection of the location and subjects was the limited implementation of digital-based learning

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media and the ineffective implementation of deep learning, making the subjects relevant to the research objectives. This research method included Research and Development (R&D). R&D research is a technique for validating and testing products, adopting the approach used by Borg and Gall (Sugiyono, 2010). The Borg and Gall model is known as one of the most comprehensive approaches to educational research and development. Its development stages are systematically structured and supported by empirical data, enabling researchers to produce educational products that are effective, valid, and suitable for application in real-world learning contexts (Purba, 2024). Borg and Gall's ten stages will be simplified into four stages without compromising the essence of each. These four stages are analysis, development and testing, revision, and product testing.

The operational explanation in this research starts from the first stage, namely needs analysis. The first stage is needs analysis. The purpose of this stage is to analyze learning needs, learning problems, and mapping the characteristics of research subjects as well as analyzing environmental factors that may influence the learning of Natural and Social Sciences (IPAS) material in Elementary Schools. This stage uses observation methods, structured interviews, and analysis of learning documents. Data collected through this structured approach will be used as the basis for developing digital learning media relevant to learning needs. The second stage is product design development and trials. This stage is the initial step in creating a draft of learning media based on the results of observation data. After the media prototype design is completed, a validation test will be conducted by validators who are relevant and competent in their fields. Material validation will be carried out by fifth-grade teachers, the principal, and lecturers from Elementary Education. Media validators will be carried out by experts from the teacher and lecturer elements who have competence in learning strategies and media. Meanwhile, language validators will be carried out by fifth-grade teachers and lecturers who have expertise in language or literature. Next, two product trials will be conducted, consisting of a limited trial with 15 students and a broad trial with 33 students. The third stage is product revision, which involves refining the media based on evaluations of the small-scale trial and suggestions from the validators. The fourth stage is product dissemination. This stage involves product testing to measure the success and effectiveness of the learning media.

Data collection techniques used observation methods, structured interviews, deep learning ability questionnaires, documentation studies, and High Order Thinking (HOTS)-based test questions. Data analysis techniques were carried out using qualitative and quantitative analysis. Qualitative data from interviews, comments, and suggestions from respondents were analyzed using the triangulation method. Quantitative data from questionnaires and tests were analyzed using quantitative methods to determine the level of success and effectiveness of the media. Quantitative data analysis used the Multivariate t-test formula and the N-Gain Test using SPSS. The indicator of the success of the effectiveness of the implementation of in-depth learning is the increase in classical learning outcomes exceeding the Learning Objective Achievement Criteria (KKTP) that has been set, namely 75, obtained by at least 70 percent of students. Quantitative data were analyzed using a multivariate t-test to determine whether there was a difference in the effectiveness of deep learning skills before and after the intervention. Decision making if Sig. (2-tailed) ≤ 0.05, there are also differences in the effectiveness of deep learning implementation among elementary school students before and after using Dream Media.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \tag{1}$$

The effectiveness measurement uses the N-Gain Test formula, which aims to determine whether the application of Dream learning media is effective in improving the effectiveness of deep learning implementation in elementary schools.

$$\text{N-Gain} = \frac{\text{Posttest Score-Pretest Score}}{\text{Ideal Score-Pretest Score}} \tag{2}$$

The results of the N-Gain test are consulted with the effectiveness determination table for decision-making based on Table 1 of the N-Gain Score division categories.

Table 1. Interpretation of N-Gain Score

N-Gain Score	Category
g > 0.7	High
0.3 ≤ g ≤ 0.7	Average
g < 0.3	Low

3. RESULT AND DISCUSSION

3.1 Observation Result

Observational data collection used observation, interviews, and document analysis methods. Observations were conducted during the fifth-grade students' learning process in the classroom. These observations used a checklist observation sheet instrument to measure the quality of the learning process in supporting the implementation of deep learning. The results of the observations indicated that the learning process was still textual, unable to support the optimal implementation of deep learning. Learning still tended to emphasize memorization and simple understanding, so students were not stimulated to think critically, analyze in depth, and relate concepts to real contexts. Interviews with fifth-grade teachers and the principal concluded that the learning process was conducted primarily in a classical manner and lectures, resulting in students easily bored and losing focus. These learning obstacles included teachers' limited skills in developing digital-based learning media despite the school having a representative computer laboratory. Document analysis of the teaching modules used revealed that teachers limited their use of lectures, discussions, and assignments. These methods were not innovative and monotonous because they did not support the implementation of deep learning, as learning tended to be one-way and teacher-centered. This condition limited students' active involvement in critical thinking, in-depth concept exploration, and the development of analytical and reflective skills.

From the overall observation stage, it can be concluded that classroom learning does not fully support the implementation of deep learning. The learning process is still dominated by a textual approach and teacher-centered lecture methods, so that learning emphasizes memorization and basic understanding. As a result, active student engagement remains low, they easily become bored, and they are not encouraged to develop critical thinking skills, in-depth analysis, reflection, and linking material to real-life contexts. The lack of innovation in learning media has resulted in limited student access to up-to-date information. The learning process becomes less varied and

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tends to be monotonous, resulting in students experiencing obstacles in developing reasoning, collaboration, and critical thinking skills (Rawashdeh et al., 2021). Another impact caused by the lack of innovation in learning media is negative student attitudes, which are indicated by low learning motivation (Ahmed et al., 2024). In addition, the limited competence of teachers in developing digital learning media is an inhibiting factor, even though schools have adequate supporting facilities.

3.2 Product Design Development

Product design development was based on the data and information collected to support the research. During the product development process, researchers utilized several digital platforms, such as Canva and Adobe Photoshop, to create flyers. Supporting learning videos were created using CapCut, YouTube, and other relevant platforms, as shown in Figure 1.

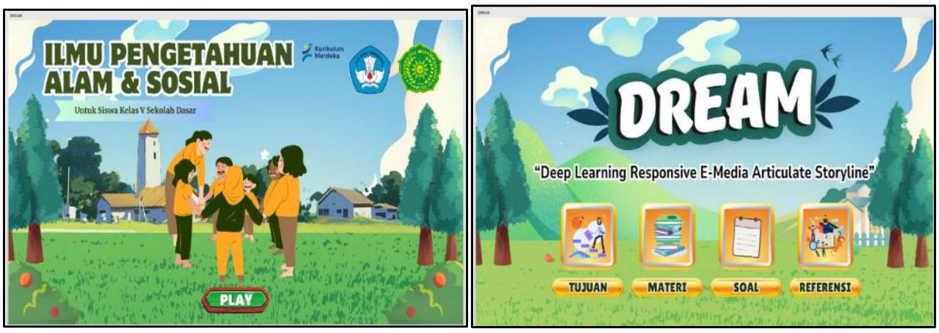

Figure 1. Dream Media Opening Page and Menu

Conceptually, the media design is structured with reference to the characteristics of deep learning, namely emphasizing active student involvement, conceptual understanding, interconnectedness between concepts, and application of the material in everyday life contexts. Therefore, the content in the prototype not only contains the presentation of material, but is also designed to invite students to explore, observe, analyze, and reflect on science concepts through interactive activities. The initial structure of the Dream media prototype consists of several main components: the opening page, learning objectives, presentation of science material, interactive activities, practice questions, and feedback. On the opening page, students are introduced to an attractive and contextual visual display to build learning motivation. Next, the learning objectives are presented clearly so that students understand the competencies to be achieved. The presentation of science material is packaged in the form of short text, images, simple animations, and supporting videos that are integrated with each other to help students understand the concepts gradually and in depth, as shown in Figure 2.

Figure 2. Stimulation Questions on Dream Media

To support the deep learning process, the media prototype is equipped with interactive activities such as trigger questions, simple simulations, and exploratory tasks that encourage students to think critically and relate the material to real-world experiences. The practice questions are designed not only for memorization but also for understanding, application, and analysis, so students are trained to think deeply. Each activity and exercise is accompanied by automatic feedback that provides reinforcement and helps students reflect on their learning outcomes.

3.3 Validation Result

The validation stages were carried out on the main components of the learning media, namely material validation, media validation, and language validation. Material validation aims to ensure that the developed learning materials are in accordance with the established competencies, scientifically accurate, systematic in presentation, easy to understand by students, and suitable for use to support the achievement of learning objectives. Media validation aims to improve the visualization and operation of Dream media so that it is more effective in supporting the implementation of deep learning in elementary schools. Language validation aims to ensure that the use of words, terms, and sentences is in accordance with good and correct language rules, easy to understand, and appropriate to the developmental level of fifth grade elementary school students. The scoring technique provided by the validator uses a 4-point scale with guidelines of 4 = very appropriate, 3 = appropriate, 2 = inappropriate, 1 = very inappropriate. The validation results are summarized as follows Table 2.

Table 2. Summary of Validation Results

No	Validation Aspect	Validation Results	Criteria	Conclusion
1	Material Validation	96 %	Very Valid	Used a few revisions
2	Media Validation	91 %	Very Valid	Used a few revisions
3	Language Validation	92 %	Very Valid	Used a few revisions
	Average	93 %	Very Valid	Used a few revisions

Table 2 shows that the average expert validation result was 93%, indicating that the Dream media was deemed highly valid for use in research with minor improvements. However, the experts provided suggestions for improving the media. These suggestions included adapting learning materials, media operationalization, and media visualization to the available learning time.

3.4 Product Testing

After undergoing a series of validity tests by material experts, media experts, and language experts, the media will be piloted in two stages: a limited trial and a broad trial. Each stage uses HOTS-based test instruments. The tests are used to measure students' critical thinking skills.

a. Small Trial

A small trial was conducted to obtain an overview of the results of the implementation of the learning media when applied to a limited group. This trial phase involved 15 students as research subjects. Students' critical thinking skills were measured using a test instrument with HOTS-based questions on the topic "My Indonesia is Rich in Nature." The following is a bar chart of the results of the measurement of students' critical thinking skills during the limited trial phase, as shown in Figure 3.

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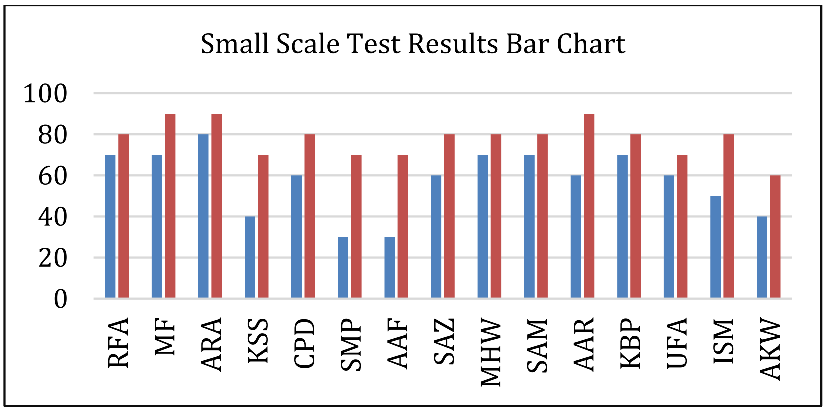

Figure 3. Small Trial Result Bar Chart

Based on the pretest and posttest data, there was an improvement in learning outcomes after implementing the Dream learning media. The pretest scores indicated students' initial abilities before participating in the learning process, while the posttest scores indicated students' abilities after the learning process was implemented. Overall, there was an improvement in scores for most students. The average pretest score was 57, increasing to 78 in the posttest. This improvement indicates that the learning process using the Dream media was able to help students understand the material better than before.

Based on the achievement of the Learning Objectives Achievement Criteria (KKTP), which was 73, most students have achieved learning mastery. Of the 15 students, 13 were declared to have met the KKTP, while the other 2 students still did not meet the criteria. However, on average, the class post-test score was above the KKTP. These results indicate that the implementation of learning with the Dream media has a positive influence on improving student learning outcomes. This approach helps students be more active in understanding concepts, so that most students are able to achieve the established mastery standards.

b. Big Trial

A large-scale trial was conducted with 33 students in one class. This activity aimed to determine the results of implementing the Dream media on a larger scale. Taking into account the shortcomings of the small-group trial, several improvements were made to the media and learning strategies. At this stage, the researcher first presented the material briefly through a lecture method, then students listened and studied the material further using the developed learning media. The results of this large-scale trial are presented in the following diagram, as shown in Figure 4.

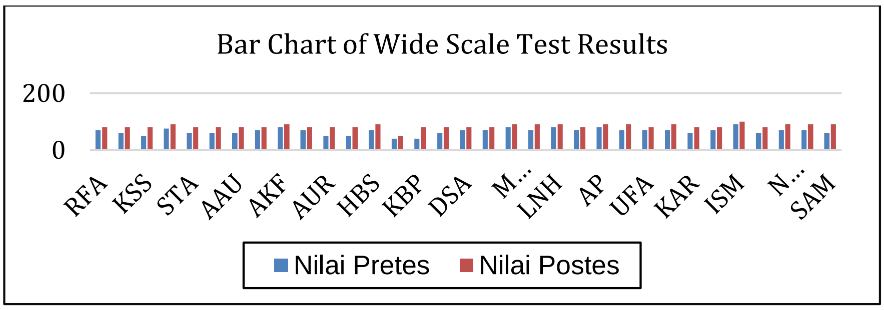

Figure 4. Large Trial Results Bar Chart

Based on the pretest and posttest results, there is an increase in student learning outcomes after implementing the Dream learning media. The pretest score reflects students' initial abilities before participating in the learning process, while the posttest score indicates students' abilities after the learning process is implemented. In general, most students experienced an increase in scores. The average pretest score was 66, then increased to 83 in the posttest. This increase indicates that the learning process using the Dream media is able to help students understand the material more deeply and improve their thinking skills.

Based on the achievement of the Learning Objectives Achievement Criteria (KKTP), which is 73, almost all students have achieved learning mastery. Of the 33 students, 32 students were declared to have met the KKTP, while only 1 student did not meet the criteria. Furthermore, the average class post-test score also exceeded the KKTP limit. Thus, these results indicate that the implementation of Dream media has a positive impact on improving student learning outcomes. This approach encourages active student involvement in the learning process, resulting in better understanding of the material and the achievement of learning mastery in a classical manner.

c. Difference Test and Effectiveness Test

Data analysis shows the results of the paired sample t-test used to determine whether there is a significant difference between students' pretest and posttest scores after using Dream media. The results of the t-test statistical test using SPSS showed a calculated t value of -7.228 with df = 32 and a Sig. (2-tailed) value of 0.000. Because the significance value of 0.000 <0.05, it is concluded that there is a significant difference between students' pretest and posttest scores. Based on these results, it can be stated that the use of Dream Media has a significant influence on improving student learning outcomes or abilities after the learning process is carried out. Thus, it is concluded that the implementation of deep learning in science subjects is higher after using Dream media.

The effectiveness test used the N-Gain formula to see the increase in scores from pretest to posttest. This test aims to determine whether the application of Dream media is effective in supporting the implementation of deep learning, especially in improving the critical thinking skills of elementary school students. The results of the N-Gain calculation in this study were analyzed using SPSS. In the small-scale test, the average (mean) N-Gain value was 71.17% with a standard deviation of 14.64. This value indicates that the effectiveness of Dream media is in the moderately effective category. The 95% confidence interval is in the range of 39.07% to 55.28%, which means the average increase in student learning outcomes is estimated to be in that range. The minimum N-Gain value is 25%, while the maximum value reaches 75%, with a value range of 50. The data also shows a skewness value of 0.236 which indicates that the data distribution tends to be close to normal. Meanwhile, in the large-scale test, the average N-Gain was 81.96% with a standard deviation of 16.46. This value indicates that the effectiveness of Dream media is in the effective category. The 95% confidence interval ranges from 46.13% to 57.81%, indicating that the improvement in student abilities is relatively better. The minimum value recorded was 16.67% and the maximum value was 100%, with a range of 83.33. Overall, the results of the N-Gain analysis indicate that the implementation of Dream media is able to improve student learning outcomes in both small-scale and large-scale tests. It is concluded that the implementation of Dream media is effective in improving the implementation of deep learning in elementary school students.

3.5 Discussion

The implementation of deep learning in elementary schools still faces several complex challenges. One major obstacle is teachers' uneven understanding of the concept of deep learning. The fundamental problem with implementing deep learning in elementary schools lies in the mismatch between the ideal concept of deep learning and the reality of practical application (Dolmans & Loyens, 2016). Conceptually, deep learning emphasizes meaningful understanding, critical thinking skills, reflection, and the connection of material to real life (Casolaro et al., 2023). In fact, some teachers are still focused on delivering material and achieving curriculum targets, so the learning process tends to emphasize memorization over strengthening conceptual understanding and critical reasoning. This situation results in less than optimal efforts to explore the deeper meaning of learning (Zuo et al., 2022). Furthermore, limited pedagogical competency also poses a challenge. In-depth learning requires teachers to design activities that encourage exploration, discussion, reflection, and contextual problem-solving (Putri et al., 2024). However, not all teachers are accustomed to using student-centered learning models such as problem-based or project-based learning. As a result, the learning process is still dominated by lectures and routine assignments, which don't provide enough space for students to think critically.

Another issue relates to the characteristics of elementary school students, who are still at the concrete cognitive development stage. If in-depth learning isn't tailored to their developmental level, the material can feel too abstract and difficult to understand. Differences in literacy and numeracy skills among students also affect their readiness to participate in learning that requires analysis and reflection (Halomoan, 2026). On the other hand, time constraints and curriculum burdens often force teachers to focus more on completing material than on deepening concepts. The deep learning process requires sufficient time for discussion, exploration, and feedback, while the allocated class hours are relatively limited. Evaluation systems that are still oriented towards written tests also do not fully support the measurement of higher-order thinking skills that are characteristic of deep learning. Overall, implementing deep learning in elementary schools requires teacher preparedness, the support of an authentic assessment system, and a conducive learning environment (Lin & Nuha, 2023). Without such support, the learning objectives of building meaningful understanding and critical thinking skills in students will be difficult to achieve optimally.

The development of learning media design begins with an analysis of student needs as the basis for the design. The main objective of developing this media is to increase the effectiveness of deep learning implementation by strengthening the critical thinking skills of elementary school students. In order for the media developed to optimally support deep learning, several criteria must be met, namely: (1) having a neat, attractive appearance and being well-made; (2) being in accordance with the learning objectives and materials; (3) being practical, flexible and durable; (4) considering student characteristics; and (5) adapting to the number of users or targets who will utilize it. In the design process, there are several stages that must be considered, including: (1) identifying learning needs and problems; (2) formulating objectives, competencies (KI), and basic competencies (KD); (3) adapting to learning needs; (4) analyzing the abilities and characteristics of students as media users; (5) compiling the media design; and (6) evaluating the implementation of the media in learning activities.

The changing paradigm of 21st-century education emphasizes the importance of mastering and utilizing technology in the learning process. Technology integration is a form of adaptation to the demands of improving teacher competency. Teachers play a central role in determining and selecting appropriate technology-based learning media for use in the classroom, thus requiring adequate technological capacity and literacy (Human-hendricks, 2023). Research conducted by Mhlongo et al. (2023) This demonstrates that the application of technology in learning can drive a transformation of the educational paradigm toward a more modern direction and support students in understanding concepts from simple to complex levels. Furthermore, Gligorea et al. (2023) explains that technology integration also enables personalization of learning experiences, increases student engagement in building knowledge, and contributes to improving overall educational outcomes and quality.

The application of digital-based media in learning is an effort to utilize technology to improve the quality, effectiveness, and appeal of the learning process. Digital media encompasses various forms, such as instructional videos, interactive presentations, educational applications, learning management systems (LMS), and Articulate Storyline-based media and interactive multimedia. The use of these media aims to create a more contextual and engaging learning experience and encourage active student engagement (Setiana et al., 2021). In practice, implementing digital media begins with careful planning. Teachers need to adapt the media to the learning objectives, student characteristics, and the material to be taught (Attard & Holmes, 2022). Media was chosen not solely because it was technology-based, but because it was relevant and able to help students understand concepts more deeply. During the implementation phase, digital media was used to present material through a combination of text, images, audio, animation, and simulations, making learning more varied and less monotonous.

Furthermore, digital media also plays a role in encouraging interactive, student-centered learning. Through online quizzes, virtual discussions, technology-based projects, or digital simulations, students can be actively involved in constructing knowledge (Nurmalisa et al., 2023). Teachers serve as facilitators, providing guidance, feedback, and ensuring that technology remains focused on achieving learning objectives. In addition to supporting material delivery, digital media also streamlines the evaluation process. Assessments can be automated or project-based, allowing teachers to quickly and accurately obtain data on student learning outcomes. This data can be used for reflection and improvement of subsequent instruction. In general, the application of digital media in learning not only increases student motivation and interest in learning but also develops 21st-century skills such as digital literacy, critical thinking, creativity, and collaboration. However, its success depends heavily on teacher preparedness, the availability of infrastructure, and systematic planning to ensure that technology truly becomes a meaningful learning tool (Daryanes et al., 2023).

Dream learning media is a digital technology-based media designed to support interactive learning processes. This media has undergone an effectiveness test phase in developing deep thinking skills (deep learning) in elementary school students. Based on the results of the testing phase involving 33 elementary school students, it was concluded that the media is classified as highly effective. This is evidenced by the results of the N-Gain test with a score of 81.96%. Furthermore, the N-Gain value in percentage form reached 81.96%, exceeding the limit of 76%, indicating that Dream media is effective in improving deep thinking skills in elementary school students.

This finding is in line with research conducted by Demircioglu et al. (2023) which concluded that the Articulate Storyline-based Dream media was able to improve students' comprehensive comprehension skills. Thus, the effectiveness of Dream media reinforces the findings of previous research regarding the contribution of digital technology in developing in-depth skills. In the context of learning, teachers are required to continuously improve their capacity through the use of technology to support the achievement of learning outcomes. The technology in question includes the use of various devices and software to optimize the learning process and outcomes. The use of technology not only changes the way students learn but also influences how teachers conduct evaluations, provide feedback, and build interactions in teaching and learning activities (Tuma, 2021). Technology-based interactions are considered more effective than purely verbal interactions, and technological advances even enable interactive learning in large groups more efficiently (Abdulrahaman et al., 2020).

4. CONCLUSSION

The Dream media was developed through a series of validity tests and trials, and was declared feasible and effective for use in developing elementary school students' deep thinking skills. The results of the t-test statistical test using SPSS showed a calculated t value of -7.228 with df = 32 and a Sig. (2-tailed) value of 0.000. Because the significance value of 0.000 <0.05, it was concluded that there was a significant difference between students' pretest and posttest scores. The results of the effectiveness test using N-Gain showed a score of 0.81 which was higher than 0.7, so it was included in the high category. Meanwhile, the average N-Gain percentage of 81.96% which exceeded the 76% limit also indicated that the Dream media was effective in improving students' critical thinking skills. The results of the hypothesis test showed a significant increase in the average score. At the pretest stage, the average score was 66, after the application of the learning media, the number increased to 82. Thus, there was an increase in the average score indicating that the Dream learning media was significantly able to develop elementary school students' deep thinking skills. Student responses to the Dream learning media through questionnaire results indicated that the media was very well received by students, with an average score of 83%. The highest aspect was its ability to increase learning motivation by 90%. Meanwhile, teachers' responses indicated that the Dream learning media received a positive response of 90%. This means that the media is considered effective for both students and teachers in developing deep thinking skills. The theoretical implication of this research is that Dream media demonstrates that immersive learning can be more effective when supported by technology. This media helps students learn actively, think critically, and understand concepts, rather than simply memorizing. These findings also reinforce the fact that interactive digital media can increase student engagement and understanding. As for practical implications for teachers, Dream media facilitates the delivery of material in an engaging and interactive manner. Teachers can also act as facilitators, not just presenters. For students, learning becomes more enjoyable, easier to understand, and encourages critical thinking.

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