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Implementation of Flipbook-Based Learning in Elementary Schools

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A B S T R A C T

This study aims to improve flipbook-based learning outcomes. Technological advancements have shifted educational approaches from traditional methods to more interactive and digital formats. The methodology used was an experimental study featuring a Nonequivalent Control Group, involving two groups of fifth-grade students at SD Negeri 1 Banda Aceh. The experimental group engaged in flipbook-based learning, while the control group adopted conventional techniques. The results showed that students utilizing flipbooks showed a more significant improvement in learning outcomes compared to students in the control group. The experimental group achieved an average posttest score of 85%, reflecting a 50% increase from the pretest, while the control group only saw a 22% increase from pretest to posttest. Furthermore, the integration of flipbooks increased student engagement, made learning more engaging, and facilitated the understanding of abstract concepts. This study recommends that elementary school educators use flipbooks as a digital learning resource and receive adequate training in its implementation. Therefore, flipbook-based learning provides a viable alternative to improve academic achievement and foster student interest in elementary schools.

1. Introduction

Education is an effort to gain knowledge, either formally through school or informally obtained from within the home and community. Education is an effort to develop human potential and absorption which is influenced by habits which are then perfected with better habits and assisted by media that facilitate the world of education. Education is not only about teachers who provide knowledge, Education is essentially a learning process to think, act, and behave differently to achieve educational goals (Tsoraya et al., 2022). National education aims to develop the abilities of students to become human beings who believe and are devoted to God Almighty, have noble character, are healthy, knowledgeable, creative, independent, and grow into democratic and responsible citizens. Education also involves helping students develop the moral and social values and life skills they need (Indriyani et

al., 2024). Several aspects of life, including education, have been significantly impacted by rapid technological advances. Learning approaches that previously relied solely on lectures and printed books have begun to change to digital-based learning as a result of the development of digital technology (Aisyah et al., 2024). Learning is a process in which individuals acquire knowledge, skills, attitudes, and values through various learning experiences. In the context of formal education, learning involves interactions between teachers and students as moderators as subjects held in a supportive learning environment (Yu et al., 2020). In a broader sense, learning can occur anywhere, anytime, without being realized, both individually and in groups.

According to the Law of the Republic of Indonesia in the perspective of the national education system in 2003, learning is a process of interaction between students and educators and learning resources in a learning environment. This emphasizes that learning is limited to various available learning resources, including books, digital media, the environment, and life experiences, as well as teachers and students. The main goal of learning is to develop possibilities for all students. This includes cognitive (knowledge), emotional (attitudes and values), and psychomotor (skills) aspects. In the long term, learning aims to create humans who have the ability to think independently, think critically, creatively, are able to solve problems, and have superior personality and ethics (Irwan et al., 2024). Learning Objectives Also adjusted to the level of education and needs of students. For example, learning at the elementary school level emphasizes personality formation, introduction of basic knowledge, and positive attitude habits, but at the secondary and post-secondary levels it is more important to develop directed thinking and the use of practical knowledge Mclean & Mclean, (2025).

The goal of this change is not only to improve educational standards but also to accommodate the learning preferences of today's increasingly tech-savvy generation. As an essential component of education, learning is a process in which students interact with their environment to acquire certain knowledge, skills, and attitudes. There are many different ways that learning can occur, including formally in a classroom setting and informally outside the classroom. The once traditional approach to learning has begun to shift towards a digital, more creative, and interactive approach as technology advances Muadi et al., (2023). Flipbook, one of the most preferred digital learning tools, provides a new approach to presenting learning materials in a more engaging and dynamic way.

Flipbook is a type of digital book that looks like a printed book but contains multimedia features including audio, video, animation, and other interactive components. Flipbooks are used in education to improve learning outcomes by making them more engaging, adaptable, and accessible Saparina et al., (2020). It is expected that the use of flipbooks as a teaching tool in elementary schools will increase students' motivation to learn and their understanding of the subject matter. Thus, it is important to examine the use of flipbook-based learning in elementary schools to determine how it affects students' learning outcomes. In addition, flipbooks can also be accessed anytime and anywhere, so students have the flexibility to organize their learning time Aryanti & Arief, (2021). Flipbook-based

learning has many benefits, but it also has its drawbacks, especially when it comes to elementary schools. The readiness of educators and students to use this technology is one of the main obstacles. The skills necessary to create and oversee flipbooks as educational resources. However, despite the educational potential of flipbooks, their use in current learning modules is still below standard Prasasti & Anas, (2023). Many elementary school instructors have not utilized them to their full potential, either due to a lack of technological knowledge or a lack of training on how to use flipbooks to create lesson plans. In addition, the usefulness of implementing flipbooks in improving elementary school children's comprehension and learning interests has not been studied extensively. Through fun learning, flipbooks should help students understand abstract ideas more thoroughly Fitria, (2024). As a result, learning is not only one-way but also more interactive and focuses on student experience. Based on the background of the problem, the purpose of this study is to investigate how flipbook-based learning is used in elementary schools and determine how it affects students' motivation and understanding of the material.

This research is expected to help create more creative and successful teaching methods for elementary schools. In recent years, many studies have been conducted on the use of digital learning materials. However, currently there are only a few studies that explicitly use flipbook-based learning in elementary school science classes. The development of a learning approach that combines flipbooks with successful learning techniques, which can be systematically incorporated into the elementary school curriculum, is what makes this research new. This research is expected to help create more creative and successful teaching methods for elementary schools. In recent years, many studies have been conducted on the use of digital learning materials. However, currently there are only a few studies that explicitly use flipbook-based learning in elementary school science classes. The development of a learning approach that combines flipbooks with successful learning techniques, which can be systematically incorporated into the elementary school curriculum, is what makes this research new.

2. Methodology

This study uses quantitative research methodology with a quasi-experimental design. Quantitative research is characterized by the use of numerical data and statistical techniques to evaluate hypotheses or answer research questions (Hendrayadi et al., 2023). The primary goal of quantitative research is to identify causal relationships, validate theories, and make generalizations based on the sample analyzed. In contrast, quasi-experimental designs attempt to examine causal relationships between independent (intervention) and dependent (outcome) variables without the application of random subject assignment (Yusri, 2020). This approach is specifically used to assess the effectiveness of flipbook-based learning on the interests and learning outcomes of elementary school students. This study uses Nonequivalent Control Group Design, namely experimental and control groups that are not randomly determined (Sugiyono, 2019). This research was conducted in January in the even semester of the 2024/2025 academic year. The

location of the research at SD Negeri 1 Banda Aceh, was selected based on certain criteria, including the availability of information technology resources and teacher readiness in utilizing digital learning media.

The focus of this research was grade V elementary school students. The purpose of this study was to improve students' interest and learning outcomes after implementing flipbook-based learning on the topic "My Region, My Self-Respect" in the Science curriculum for grade V. Participants in this study consisted of two groups, namely the experimental group consisting of grade V-C students who participated in flipbook-based learning, and the control group consisting of grade V-B students who participated in traditional learning without using flipbooks. This research was conducted in several stages. The initial stage included the preparation of a series of flipbook-based learning modules. Furthermore, the researcher identified a research sample consisting of 34 students from grade V-C. During this preparation stage, the necessary research instruments were also developed. The second stage is the implementation stage, which includes giving a pretest to assess students' basic abilities. This stage is followed by the implementation of learning activities that are adjusted to the special treatment given to each group, culminating in a posttest to evaluate changes in student learning outcomes after the intervention. The third stage involves data analysis, which includes various activities aimed at processing pre-test and post-test data. This stage includes the implementation of statistical tests to identify significant differences between the experimental and control groups. The instruments used in this study consisted of pre-test and post-test assessments designed to evaluate learning outcomes before and after the learning period, a learning interest questionnaire to assess the level of student engagement with the flipbook-based teaching module, and observations and interviews to collect additional information regarding student and teacher responses to the implementation of this teaching module.

Data analysis techniques applied in this study include descriptive analysis to summarize the findings from the pre-test, post-test, and student learning interest questionnaires, normality and homogeneity tests to verify that the data meet the prerequisites for parametric statistical tests, independent sample t-tests to compare the average learning outcomes between the experimental and control groups, and N-gain tests to evaluate the increase in student learning outcomes after the intervention.

3. Results and Discussion

Control Learning Outcomes

Class V-B is a control class consisting of 34 students, with 18 male students and 16 female students. The learning process carried out in this class is conventional, namely using the lecture method, questions and answers and discussions without involving media. Before the learning process began, students were given a pretest to measure their initial abilities on the material My Region is My Pride in learning science. The results of the initial test given to all students showed an average score

of only 40%. This score reflects a generally low initial understanding of the material intended for teaching. After several teaching sessions using traditional lecture and discussion techniques, students were then given a final test to assess the extent of their understanding after the learning experience. The results of the final test showed an increase in the average score to 60%, which indicated an increase of 22% from the initial test score. However, despite this increase, the overall increase remained relatively modest. This suggests that the conventional teaching methods used in class V-B were not very effective in facilitating deeper understanding of the material. Several factors may have contributed to the limited improvement in learning outcomes in the control class, including(Suyuti et al., 2023):

a. Uninteresting teaching methods resulting in reduced student participation during lessons.
b. The predominantly theoretical nature of the material, which does not have enough practical activities to help with concrete conceptual understanding.
c. Lack of student interest in learning in general, which stems from inadequate interactive engagement during the teaching process. Absence of visual and interactive resources that can help students understand abstract concepts.

In conclusion, although conventional teaching methods have resulted in some improvements in learning outcomes, their overall effectiveness is still limited when compared to more innovative educational approaches.

Eksperimental Class Learning Outcomes

Class V-C is a control class consisting of 34 students, with 19 male students and 15 female students. Unlike the control class, students in this class received learning using flipbook-based learning modules, a digital-based learning material. Before the implementation of flipbook-based learning, students in class V-C underwent a pre-test to assess their basic understanding of the topic "My Region is My Pride." The results of this pre-test showed that the average score among students was 50%, which was slightly higher than the control class, but still categorized as low. After the flipbook learning intervention, students participated in a post-test to evaluate the extent to which their understanding had improved after engaging with the technology-enhanced learning method. The post-test results revealed a marked improvement, with the average score increasing to 85%, reflecting a 35% increase from the pre-test score. This substantial improvement in learning outcomes, in contrast to the control class, underscores the effectiveness of flipbook-based learning in facilitating student understanding. Several factors that contributed to this significant improvement in the experimental class include(Rachmadhani & Kamalia, 2023):

a. Increased student engagement, as they are given the opportunity to learn and access materials via laptops.
b. More engaging content presentation, with concepts in "My Region is My Pride" explained in detail.
c. Increased student concentration and attention, as the learning process involves interactive engagement with flipbook materials, rather than a one-way lecture format.

Table 1. Comparison of Learning Effectiveness

Class	Number of Students	Pretest (%)	Posttest (%)	Improvement (%)
V-B (Control)	34 (L: 18, P: 16)	40%	60%	22%
V-C (Experiment)	34 (L: 19, P: 15)	50%	85%	50%

The data presented in the table shows that the experimental group using flipbooks achieved a 50% increase in learning outcomes, while the control group using traditional methods only experienced a 22% increase. This evidence suggests that flipbooks are significantly more effective in fostering student understanding than conventional lecture techniques. In addition, observations made during the learning process revealed that students in the experimental group showed greater enthusiasm and motivation to engage in learning activities, in contrast to the control group, whose members appeared more passive and less engaged in the material presented. These observations further strengthen the conclusion that a learning approach that incorporates creative interactions can improve students' interest in learning and their academic performance. A pre-test was administered to assess students' initial competencies before the implementation of a particular educational intervention. Findings from the pre-test revealed that the control group obtained an average initial score of 40%, while the experimental group recorded a higher initial score of 50%. After the implementation of the specified teaching methods in each group, a post-test was conducted to evaluate the improvement in learning outcomes. At this point, the control group showed an increase from 40% to 60%, which is still relatively low, while the experimental group showed a more pronounced increase, increasing from 50% to 85%.

This striking difference can be attributed to the use of flipbook-based teaching modules in the experimental group. The results showed that the learning approach used in the experimental group was significantly more effective in improving student understanding than the method used in the control group. The improvement in learning outcomes was clearly seen from the extent of progress achieved by students after the intervention. The control group only experienced an increase of 22%, in contrast to the experimental group which achieved a significant increase of 50%. This significant difference underlines that the teaching method applied to the experimental group was more effective than the control group. Factors Affecting Learning Effectiveness include Tae et al., (2019):

a. Teaching strategies used by the experimental group using flipbooks to increase student engagement in the educational process.
b. Student Motivation, because students who show higher levels of motivation tend to be more actively involved in their learning, resulting in better academic outcomes.
c. Teaching Quality, the proficiency of educators in conveying information has a significant impact on learning effectiveness. Instructors who can provide clear and engaging explanations facilitate a better understanding of the subject matter for their students.

Figure 1. Flipbook In Crome-book Student Acsess

Elementary school students use Chromebooks to access lessons through these platforms, easily integrating them with digital learning platforms. Flipbooks are easily accessible on Chromebooks for teacher-programmed lessons, allowing students to interact directly with multimedia content. Flipbooks, as interactive digital learning resources, are easily accessible on Chromebooks without the need for additional software installation. Teachers can design and program lessons in flipbook format, embedding text, images, video, audio, animation, and interactive quizzes, which students can then explore directly from their Chromebooks.

Figure 2. Learning Of Conceps on Flipbook

Flipbooks serve not only as digital reading materials but also as powerful conceptual learning tools. They enable elementary school students to move beyond surface learning, which is often limited to rote memorization, to deeper learning that emphasizes understanding, application, and problem-solving. By integrating multimedia elements such as images, animations, audio, and interactive exercises,

flipbooks transform abstract concepts into more concrete, engaging, and accessible learning experiences. When carefully designed and systematically integrated into classroom instruction, flipbooks can significantly enhance students' conceptual mastery across a range of subjects, supporting both independent learning and teacher-guided exploration.

4. Conclusion

The findings of this study indicate that the implementation of flipbook-based learning in elementary education significantly improves learning outcomes and student engagement. Classes that use Wordwall as a learning tool show a more significant improvement in academic performance compared to classes that use traditional teaching methods. This is evidenced by the difference in post-test score improvement, with the experimental group achieving a 50% improvement, compared to a 22% improvement in the control group. These results imply that flipbooks can encourage greater student participation in the educational process, make materials more interesting and understandable, and increase overall learning motivation. Given these findings, it is recommended that elementary school educators incorporate flipbooks more widely into their teaching practices, especially in subjects that involve abstract concepts, such as Science and Social Sciences (IPAS). Furthermore, better training is needed for teachers on the effective use of digital media in education to maximize the benefits of flipbook implementation. Additional research is also recommended to investigate the long-term effects of flipbook use on students' critical thinking skills and creativity.

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