

THE IMPACT OF VISUAL CARTOONS ON STUDENT LEARNING OUTCOMES IN SCIENCE EDUCATION

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ABSTRACT

The issue addressed in this study pertains to the substandard academic performance of students at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, as evidenced by a 74% failure rate to meet the Minimum Criteria for Mastery (KKM). The research aims to explore the impact of employing visual media cartoons on student learning outcomes in the subject of Changing Earth and Sky Appearances for fourth-grade students. The study employs a quasi-experimental design, dividing students into experimental and control groups (IV A and IV B, totaling 30 students each) to assess the efficacy of visual media cartoons. Data is collected through pre and post-tests consisting of 20 multiple-choice questions. Analysis methods include tests for data normality, homogeneity, hypothesis, and N-Gain. The pre-test averages were 50.17 and 51.67 for the experimental and control groups, respectively. Post-test averages were notably higher for the experimental group (78.17) compared to the control group (66.83), indicating a positive influence of visual media cartoons on student learning outcomes. Statistical analysis confirmed the significance of this influence ($t\text{-value} = 5.70 > t\text{-critical} = 2.00$), thereby supporting the alternative hypothesis (H_a). In summary, the study provides evidence that the integration of visual media cartoons enhances science learning outcomes for fourth-grade students at SD Negeri 2 Mekarwangi, Lebakwangi District, Kuningan Regency.

Keywords: Visual Media Cartoons; Student Learning Outcomes; Science Education

INTRODUCTION

Based on observations and interviews with fourth-grade teachers at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency, it was found that students' learning outcomes in this class are still low, particularly evident in their daily test scores on the topic of changes in the appearance of the earth. The inadequacy of student learning outcomes is attributed to ineffective teaching methods and inappropriate use of instructional media. According to Sardiman (2008:72), "learning outcomes are the values obtained after completing an activity, whether done individually or in groups, resulting in positive behavioral changes." Hamalik (2001:43) defines "visual cartoon media" as anything visually expressed in two dimensions as an expression of feelings or thoughts, stimulating students to understand lesson materials.

Based on the aforementioned background, the researcher formulates the following research questions: Does the use of visual cartoon media influence student learning outcomes in the subject of Changes in the Appearance of the Earth and Sky in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency? Is there a difference (gain) between students who receive visual cartoon media and those who use conventional teaching methods in the subject of Changes in the Appearance of the Earth and Sky in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency?

The objectives of this research are as follows: To describe the influence of visual cartoon media on student learning outcomes in the subject of Changes in the Appearance of the Earth and Sky in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency. To

describe the difference (gain) between students who receive visual cartoon media and those who use conventional teaching methods in the subject of Changes in the Appearance of the Earth and Sky in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency.

Hamalik (2001:43) defines "visual cartoon media" as anything expressed visually in two dimensions as an expression of feelings or thoughts, stimulating students to understand lesson materials. Similarly, Sardiman (2008:10) suggests that "visual cartoon media" serves as a graphic means to convey messages from a source to recipients, primarily appealing to the sense of sight. According to Ali (2005:8), visual cartoon media has several characteristics: emphasis on visual aids in learning processes, facilitation of communication and interaction between teachers and students, applicability to various group sizes, and the ability to simplify complex subject matter. Additionally, Arsyad (2005:145) highlights the main function of visual cartoon media, which includes overcoming differences in students' personal experiences, spatial and classroom limitations, sensory limitations, natural events, simplifying material complexity, facilitating direct contact with society or the environment, providing learning experiences, and fostering positive influences in classroom learning.

According to Darsono (2000:5), learning is a process wherein an organism changes its behavior as a result of experiences. Hamalik (2001:28) further explains learning as a growth or change in an individual's behavior expressed in new ways due to experiences and practice. Based on these perspectives, the researcher concludes that learning is an individual's effort to achieve overall behavioral changes through personal experiences within their environment. Sardiman (2008:30) outlines principles of learning, emphasizing the importance of providing opportunities for student participation, guidance in completing learning tasks, evaluating comprehension levels, setting clear objectives, motivating students, and aligning lesson content with student needs.

The teaching-learning process involves interaction between two human elements: students as learners and teachers as instructors. According to Sardiman (2008:30), the characteristics of learning include setting goals, content/messages, active participation of learners, teaching by instructors, methods to achieve goals, conducive learning environments, and evaluation of outcomes. Sukmadinata (2005:157) identifies seven main elements in the learning process: goals, readiness, situation, interpretation, response, consequences, and reactions to failure. Sardiman (2008:30) also highlights the components involved in the learning process, including students, teachers, objectives, lesson content, methods, media, and evaluation.

Regarding learning outcomes, Suhartadi (2003:67) equates them with the attainment of predefined learning goals by students. Sardiman (2008:39-40) categorizes factors influencing learning outcomes into internal (psychological and biological) and external (family, school, and community) factors.

Rismala (2004:37) explains that Natural Sciences (IPA) focus on the study of nature and its contents, involving causal relationships between natural phenomena. IPA activities often require experimentation, skills, and diligence. IPA is not just about knowledge of objects or living things but also involves understanding processes, problem-solving methods, and critical thinking. IPA curriculum for primary schools includes the study of living organisms and their interactions with the environment, energy and its transformations, properties and uses of materials (liquids, solids, gases), the earth and the universe (land, weather, celestial bodies).

Sujana defines a hypothesis as a temporary formulation aiming to explain a phenomenon and guide further research. In this study, the hypothesis is stated as H_0 (no influence of visual cartoon media on student learning outcomes in the subject of Changes in

the Appearance of the Earth and Sky in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency) and Ha (there is an influence of visual cartoon media on student learning outcomes in the subject of Changes in the Appearance of the Earth and Sky in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency).

RESEARCH METHOD

This study aims to investigate the influence of visual cartoon media on student learning outcomes in the subject of Science in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency, utilizing a quantitative research approach. According to Nasir (2003:63), "Quantitative approach is an approach that can be measured and calculated through statistical testing." The purpose of this quantitative approach is to systematically, factually, and accurately describe, depict, or portray facts, characteristics, and relationships between investigated phenomena. The experimental method is employed to measure the impact of visual cartoon media on student learning outcomes regarding the topic of Changes in the Appearance of the Earth and Sky. Arikunto (2006:124) defines the experiment used in this research as quasi-experiment with the "Control group pretest-posttest design" design. The research will be conducted at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency. The subjects of the study are fourth-grade students from classes IV A and IV B. Sugiyono (2010:53) states that "Population is the generalization area consisting of objects/subjects with certain quantities and characteristics applied by researchers for study and subsequent conclusions," while Sugiyono (2010:118) explains that "Sample is the selection of a portion of the population to represent the entire population." The sampling technique employed in this research is total sampling, where the researcher selects the entire population as the research sample, resulting in 30 students from class IV A and 30 students from class IV B at SD Negeri 2 Mekarwangi, Lebakwangi Subdistrict, Kuningan Regency.

In this study, a rapid reading test is conducted twice: the Pre-Test (an initial test before the experiment is conducted on the research sample and serves as the first step in equalizing the experimental group conditions) and the Post-Test (a final test after the experiment is conducted to determine the progress of students' abilities after using visual cartoon media in the experimental class). Data collection techniques include observation, interviews, and tests (pre-test and post-test). The research instrument is validated for question validity, reliability, difficulty level, and item discrimination. Additionally, data analysis techniques involve tests for normality, homogeneity, hypothesis, and N-Gain.

RESULTS AND DISCUSSION

Based on the calculation of the difficulty level of the questions, it was found that there were 5 easy questions (20%), 17 moderate questions (68%), and 3 difficult questions (12%). In terms of item discrimination, 1 question was replaced (4%), 4 questions were revised (16%), and 20 questions were retained (80%). Regarding question validity, out of the 25 test items, 17 questions (68%) were rated as excellent, 3 questions (12%) as good, 4 questions (16%) as fair, and 1 question (4%) as poor. Consequently, 5 questions needed to be discarded (numbers 5, 8, 11, 19, and 22) due to their low validity, leaving only 20 questions for the final test, and the reliability coefficient obtained using the Spearman-Brown formula was 0.80, indicating very high instrument reliability.

During the teaching process, the researcher followed a three-stage approach: introduction, core activities, and conclusion. The introduction involved greetings, student

conditioning, and pre-reading activities. In the core activities, before starting the lesson, students observed visual cartoon media presented by the teacher. The teacher then explained the material, formed student discussion groups, provided worksheets, guided the students, facilitated group discussions, corrected misconceptions, and summarized the lesson. The conclusion stage involved reviewing the lesson, informing students about the next lesson, and concluding the current lesson.

Interviews with fourth-grade teachers regarding the use of visual cartoon media in teaching Science, specifically the topic of Changes in the Appearance of the Earth and Sky, yielded positive feedback. Analysis of the interviews indicated that the use of visual media other than pictures had been limited, which had resulted in a lack of motivation among students to study and understand the subject. Consequently, the majority of students scored below the minimum passing grade.

The analysis of the average post-test scores between the experimental and control groups showed a significant difference at a confidence level (α) of 0.05. This indicates that the use of visual cartoon media in the experimental class improved student learning outcomes, while conventional teaching methods in the control class did not. The experimental class's post-test scores ranged from 65 to 95, with an average of 78.17 and a standard deviation of 8.53, surpassing the minimum passing grade (68). In contrast, the control class's post-test scores ranged from 60 to 80, with an average of 66.83 and a standard deviation of 6.80, falling below the minimum passing grade.

The normality test results for both the pre-test and post-test data of student learning outcomes showed normal distribution at a confidence level (α) of 0.05. The homogeneity test results indicated that the variance of pre-test scores between the experimental and control groups was homogeneous.

The hypothesis testing results showed that $t_{hit} (5.70) > t_{daf} (2.00)$, indicating that visual cartoon media significantly influenced student learning outcomes in Science in fourth-grade classes. Furthermore, the $t_{hit} > t_{daf} (2.08 > 2.00)$ demonstrated a difference (gain) between students who received visual cartoon media and those who received conventional teaching methods.

In conclusion, the analysis indicated a significant difference between students who received visual cartoon media and those who received conventional teaching methods in Science in fourth-grade classes, with a confidence level of 95%.

CONCLUSION

Based on the data analysis and discussion regarding the influence of visual cartoon media on student learning outcomes in Science in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi District, Kuningan Regency, the following conclusions can be drawn:

1. There is a significant influence of visual cartoon media on student learning outcomes in Science in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi District, Kuningan Regency. This is evidenced by the hypothesis testing results, where $t_{hit} (5.70) > t_{daf} (2.00)$, indicating acceptance of the alternative hypothesis (H_a).
2. There is a difference (gain) between students who received visual cartoon media and those who received conventional teaching methods in Science in fourth-grade classes at SD Negeri 2 Mekarwangi, Lebakwangi District, Kuningan Regency. This is evidenced by the hypothesis testing results, where $t_{hit} > t_{daf} (2.08 > 2.00)$. The null hypothesis (H_o) is rejected, while the alternative hypothesis (H_a) is accepted.

In summary, the use of visual cartoon media significantly improves student learning outcomes in Science, and there is a notable difference between students who received visual cartoon media and those who received conventional teaching methods.

RECOMMENDATION

In this study, the author suggests that teachers should use visual cartoon media by motivating students to engage with the lesson, enhancing students' focus and enthusiasm in observing or listening, and encouraging student participation in asking and answering questions. Therefore, teachers should incorporate visual cartoon media into lessons on Changes in Earth and Sky Appearances.

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