

The Influence of Media-Based Learning Analog Clocks to Improve Understanding of Time Concept Students in Grade 2 of NU Metro Elementary School

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Abstract

This study aims to describe the effects of the use of analog clock-based educational learning media in improving the understanding of the concept of time in class II C students at SD NU Metro. This study shows that students' understanding of the concept of time, such as reading the clock and distinguishing between types of morning, afternoon, evening, and night, is still relatively low. This study uses a qualitative descriptive approach with data collection methods that include observation, interviews, and documentation studies. The subjects in this study include class teachers and 28 students from class II C. The study proves that the use of analog clock media helps students understand the concept of time in a more concrete way. Learning activities become more interactive, and students show high interest and enthusiasm in participating in learning. Teachers also feel helped in delivering material through the media. Thus, analog clock-based learning media has a good impact in helping students understand the concept of time optimally.

INTRODUCTION

Mathematics education at the elementary level, especially in the second grade, plays a critical role in developing students' basic understanding of more complex mathematical concepts later on. One aspect that often becomes an obstacle for children is the understanding of time. This concept, which is abstract, is often a challenge for young children to understand. Thus, an innovative and fun learning approach is needed so that students can more easily understand this concept (Santoso & Kusuma, 2023).

Learning media is any form of means used to convey learning materials, with the aim of arousing the attention, interest, thoughts, and feelings of students in learning activities to achieve certain learning goals. Learning media can activate the achievement of learning goals in the teaching and learning process. The use of media in teaching is not limited to the use of verbal symbols alone, but aims to provide a more meaningful learning experience for students. (Dita, 2022). Facts on the ground show that students have less understanding and are less interested in the material being delivered if the method of delivering the material does not utilize appropriate means and is of interest to them.

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Previous research related to this topic indicates that the use of educational learning media based on analog clocks has a positive impact on improving students' understanding of the concept of time, especially at the elementary school level. One study conducted by Rahmawati stated that visual media such as analog clocks help students understand the relationship between units of time and daily activities more concretely. (Rahmawati, 2021). **The results of the study.** This shows that the use of analog clock-based learning media contributes significantly to improving students' learning achievements, especially in the aspects of knowing the time accurately and reading the clock correctly. Initial observation findings in class II C SD NU Metro showed that the use of conventional learning media was still not effective in optimizing students' understanding of the concept of time. Thus, the use of analog clock-based learning media is considered relevant and potential to be applied in an effort to improve students' understanding of the concept of time in that class.

Mathematics education in the second grade of elementary school "Has a crucial role in building the foundation for improving students' thinking power in understanding more complex mathematical concepts, including the concept of time which is abstract and often a challenge for early age students to understand. Therefore, the use of educational and interesting learning media is an urgent need in the learning process. Learning media, such as analog clock boards, are able to stimulate students' interest, attention, and understanding because they present material in a concrete and visual way.

METHODS

Descriptive qualitative research is an approach used to describe and understand phenomena in depth based on data obtained from the field. This method focuses on collecting descriptive data that is narrative in nature, not numbers, with the aim of understanding the meaning behind behavior, experiences, and social interactions in a natural context. In the context of this study, a descriptive qualitative approach is used to comprehensively examine how educational learning media based on analog clocks can influence the understanding of the concept of time of class II C students at SD NU Metro (Putri & Basir, 2020).

The main characteristic of this method is that the research is conducted in natural conditions without any manipulation of variables. This research is conducted by observing the interaction between students and teachers during the learning process that takes place routinely in the classroom, so that the data obtained describes the actual conditions. The

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learning process is observed as it occurs naturally, including how students respond to analog clock media, how they interact with each other and the role of teachers in guiding the learning process. The researcher acts as the main instrument, observing, interviewing, and documenting the learning process. (Wijaya & Surabaya, 2019).

The validity of data in descriptive qualitative research is maintained through triangulation techniques, namely combining various sources and data collection techniques to ensure consistency of information. Researchers also conduct member checks by confirming the interpretation results to the interviewed subjects to avoid misunderstandings. In this way, the data produced is more accurate and worthy of being used as a reference to describe the influence of learning media on understanding the concept of time.

The descriptive qualitative method is considered appropriate for this study because it is able to describe the learning process in depth and comprehensively. Through this approach, researchers not only see the final results of learning, but also understand the dynamics and interactions that occur during the learning process. This approach provides space for a more complete understanding of how the use of concrete media in the form of analog clocks can help students understand the concept of time better and more deeply through direct and meaningful learning experiences.

FINDINGS AND DISCUSSION

This study uses a descriptive qualitative approach with the aim of providing a detailed, in-depth and comprehensive description of how analog clock-based educational learning media plays a role in improving the understanding of the concept of time in class II C students at SD NU Metro. This approach was chosen because it is able to reveal phenomena in a naturalistic and relevant manner adjusted to the situation and reality that occurs in the actual environment. To obtain valid and comprehensive data, data was collected through direct observation of classroom learning activities, in-depth interviews with teachers and students, and recording related documents, such as lesson plans, student worksheets, and learning evaluation results (Taufiq, 2023). Through this method, it is hoped that a complete and in-depth understanding will be created regarding the effectiveness of analog clock-based media in making it easier for students to grasp the meaning of the concept of time in a real and applicable way.

The data successfully collected by the author includes:

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1. Observation of Learning Activities

During the learning process, the teacher uses educational analog clock media that can be moved manually. Observations show that:

- a. Students appear enthusiastic and focused while participating in the learning.
- b. Students find it easier to understand changes in time from hours to minutes because they can see the movement of the clock hands directly.
- c. Many students who previously made mistakes in reading time began to show a more accurate understanding after using this media.

2. Interview with Teacher

The class II C teacher said that the use of analog clock media can:

- a. Help students understand the difference between the short hand and the long hand.
- b. Make it easier for students to understand story problems related to time intervals.
- c. Minimize student errors in converting time units (for example from minutes to hours)

3. Interview with students

Some students stated:

- a. "The clock can be turned around, so I understand why when the hand is at 6 it's half past nine."
- b. "If I just look at it in a book, I'm often confused about where the clock hands are pointing. But if I use a toy clock, I can try it myself."

4. Documentation

Documentation in the form of photos of learning activities shows students working in groups using analog clocks as aids. Notes on student work results show an increase in understanding from the beginning to the end of learning, although not measured quantitatively (Aisyah, 2023).

In the process of learning mathematics at the early elementary school level, especially in the material on the concept of time, various obstacles are often encountered in students' understanding. This is due to the abstract nature of the concept of time. This requires a visual display that is arranged clearly so that it can be easily understood by students. Children in the age range of 7-8 years, such as students in grade II C, in general, children are still at the stage of concrete operational cognitive development, as explained in the theory of cognitive development by Jean Piaget. At this stage, children are only able to understand concepts that they can see, touch, or manipulate directly. They still have

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difficulty using logic to understand abstract concepts without the help of concrete objects as intermediary media (Agung, 2019). Thus, a learning approach that prioritizes concrete elements, is relevant to the context of students' lives, and is supported by appropriate visual media is important to be implemented so that students are able to develop a deeper understanding of the concept of time in the process of learning mathematics.

Educational analog clock learning media is very suitable for the characteristics of concrete learning in children, because this tool is able to provide a real and direct representation of the concept of time, which previously could only be imagined abstractly or depicted symbolically through illustrations in books. With the visual and interactive form of the analog clock, students can see the relationship between the movement of the clock hands and changes in time in real terms, so that their understanding of the concept of time becomes easier, more meaningful, and contextual in everyday life.



Picture 1.
Observation Activities in Class II C

From the observation results in class II C, students appear to show greater participation and direct involvement in learning activities. They are not only recipients of information from the teacher, but also experiment themselves using an analog clock as a tool. This approach is in line with the theory of constructivism, which emphasizes that students build their own understanding based on the experiences they have had and the process of active thinking through learning experiences (Pebriyanti et al., 2020). Examples of activities carried out by teachers include:

1. Give each small group an analog clock.
2. Ask students to indicate a specific time, for example 7:30 or 9:45.
3. Assign students to find the time interval between two events

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With this activity, students not only learn to recognize time, but also develop logical thinking, collaboration, and problem-solving skills. (Erlina et al., 2024). Based on interviews with teachers, before using this analog clock media, several students experienced several things, including:

1. Confused about differentiating between short and long needles.
2. Does not understand the meaning of the terms "half past eight", "quarter past eight", or "five minutes past five".
3. Miscalculating time intervals, such as from 10:15 to 11:00

However, after several meetings using analog clock media, the teacher saw several changes, including:

1. Students' confidence when answering questions about time
2. Students' answers were more accurate when given story questions related to daily activities.
3. Students' ability to connect time with real activities increases

Meaningful changes do not occur simply through memorization, but rather are the result of direct learning experiences that involve active interaction with visual aids, which can stimulate deeper understanding, strengthen long-term memory, and form critical thinking patterns more effectively.

Learning motivation is also an essential part that contributes greatly to determining the success of the educational process, especially at the elementary school level, when students are still in the early stages of developing their thinking and emotional abilities. The results of observations and interviews that have been conducted show that students show high enthusiasm and interest in learning when learning activities involve interesting and interactive learning media, such as the use of analog clocks as learning aids (Pratiwi, 2023). The media not only helps students understand the concept of time concretely, but also encourages their active participation in the teaching and learning process. Some of the students' assumptions about learning using analog clock media include:

1. More interesting than reading textbooks.
2. Providing opportunities for "play and learn"
3. Make it easier for them to understand the material.

The teacher also said that the use of this media helps to create a more dynamic and interactive learning atmosphere in the classroom, not monotonous, and reduces boredom. This is important because in learning mathematics, a pleasant atmosphere often determines

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the level of student understanding and acceptance of the material presented (Peserta et al., 2025)

The results of this study reveal that the use of educational learning media based on analog clocks provides benefits beyond just helping students logically understand the concept of time, but also supports various other aspects of learning. (Putri & Basir, 2020).

The support is such as:

1. Increased class participation.
2. Strengthening social skills (group work).
3. Application of knowledge to real situations

Thus, teachers are expected to make this kind of media a routine part of the learning process. Its use is not only focused on delivering material about the concept of time, but is also developed to cover various other learning topics that are visual and concrete, such as recognizing shapes, colors, objects in the surrounding environment, and natural events, so that the learning process becomes more enjoyable, relevant to real life, and easier for students to understand.

CONCLUSION

The results obtained through observation, interviews and documentation indicate that:

1. The use of educational learning media using analog clocks has a positive impact on improving students' understanding of the concept of time in class II C students at SD NU Metro. This media helps students understand the relationship between clock hands and time units (hours and minutes) in a concrete and visual way.
2. Analog clock media provides an opportunity for students to be involved in the learning process actively, interactively, and enjoyably, which can ultimately increase their interest and motivation in learning about time material that was previously considered difficult.
3. Students show significant developments in understanding, such as the ability to distinguish between long and short clock hands, read time correctly, and calculate time intervals in everyday life.
4. From a pedagogical perspective, this media supports a constructivist approach to learning, where students construct their own understanding through direct experience using real tools

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In general, analog clock learning media not only functions as a visual aid to understand the concept of time concretely, but also plays an important role in developing various aspects of student abilities, such as the ability to think logically through reading and calculating time activities, social skills through group work in completing tasks together, as well as forming a disciplined attitude in managing and using time wisely in daily activities.

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