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THE USE OF SOCIOMATHEMATICS-BASED DIGITAL MEDIA ON STUDENTS' CREATIVITY AT MI MUHAMMADIYAH PANCASILA

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ABSTRACT

The problem in this study is the low creativity of grade IV students because educators have not used and implemented attractive digital teaching materials. This study aims to determine the use of sociomathematics-based digital media on the creativity of grade IV students of MI Muhammadiyah Pancasila. The research method used in this study used a quasi experiment method with a research design, namely a non-equivalent control group design. Determination of the research sample using probability sampling technique. Data analysis techniques using normality test and homogeneity test. Data collection techniques using tests, interviews, observation sheets and documentation. Hypothesis testing uses the N-Gain test and shows positive results so that it can be concluded that the use of sociomathematics-based digital media can increase the creativity of grade IV students of MI Muhammadiyah Pancasila.

***Keywords*: creativity, digital media, sociomathematics**

A. INTRODUCTION

Creativity is the ability of an individual to create something new, whether in the form of ideas, concepts, works, or real actions that are beneficial to life. In the context of education, student creativity aims to improve the quality of learning so that they are capable of problem-solving, generating ideas, making decisions, and possessing a high level of curiosity. Generally, creativity is the ability to create, innovate, or bring forth new ideas and concepts. This creativity can be developed through education with the right approach. It is also a critical demand in today's education and life. Creative individuals and organizations are needed to meet the ever-changing environmental needs. Every student has creative potential, characterized by curiosity, the courage to ask questions, a high imagination, and a willingness to take risks. Factors influencing student creativity include the roles of educators, parents, and the surrounding environment. According to Bayanie (2012), creativity is a crucial potential that enables children to solve problems effectively and efficiently, increasing their chances of future success. Therefore, children's creativity needs to be nurtured early as a competency to combine various elements into something new and useful. In education, particularly in the classroom, creativity is important to help students think creatively in exploring various problem-solving possibilities. Unfortunately, attention to developing creativity in the classroom is still minimal. Creativity can develop optimally if educators can present creative and varied learning.

According to Law No. 11 of 2019, Chapter 1, Article 1, Paragraph (5), education is a conscious and planned effort to create a learning environment where students can develop their potential, possess intelligence, noble character, and skills useful for society, the nation, and the state. In schools, learning generally focuses on receiving knowledge, memorization, and logical reasoning. Therefore, educators are required to create an effective and conducive learning environment so that students are

motivated to ask questions, express opinions, and share ideas during the learning process. Creativity is an essential element in achieving learning objectives, as mentioned by the National Education Association (2002) through the four basic 21st-century skills: critical thinking and problem-solving, creativity and innovation, communication, and collaboration. In learning, educators act as facilitators, while students play an active role. According to Zainal Aqib (2020), learning is an interaction process that involves experiences, observations, and understanding. Without change after learning, the process cannot be considered successful. Communication between educators and students is the main key to a good learning process. Learning media also play an important role in enhancing student creativity. Educators must carefully select media that can help students understand the material more easily and enjoyably. With technological advancements, digital learning media have become effective tools for building creativity and learning potential in students. According to Munadi (2019), learning media are aids for educators to enhance students' attention, creativity, and motivation.

However, observations of social studies and mathematics learning in MI Muhammadiyah Pancasila grade IV show that students' learning creativity is still relatively low. According to the data, only a small proportion of students can come up with ideas to solve problems, provide varied solutions, produce original answers, and elaborate ideas in detail. This issue is evident from the lack of interaction and communication during the learning process, the minimal innovation in using digital media by educators, and the low interest of students in asking questions and expressing opinions. As a result, learning becomes ineffective and less meaningful. As stated by Suherman (2010), creativity requires encouragement from a supportive environment, but this has not yet materialized in the learning process. Students' creativity is often not exposed and considered insignificant, causing them to miss opportunities to hone their creativity. Current education has not optimally prepared students to become creative individuals due to the lack of contribution from materials and learning processes to the development of creativity.

This explanation indicates that educators have not maximized the use of sociomathematical-based digital learning media to stimulate students' creativity. This media, which integrates social studies and mathematics, is expected to capture students' attention, encourage active participation, and enhance their creativity in learning. The low creativity of students is a challenge that must be addressed through the use of innovative learning media, allowing students not only to be receivers of information but also to actively contribute to the learning process. Thus, developing creativity in education is crucial to creating a generation capable of facing future challenges with fresh and innovative ideas.

B. RESEARCH METHOD

This study employs a quasi-experimental method with a non-equivalent control group design. The research compares student learning outcomes and creativity between the experimental group, which uses sociomathematics-based digital media, and the control group, which uses conventional teaching methods. This design is chosen because it allows the researcher to evaluate the effectiveness of the treatment without the need for full randomization of the participants. The research sample is determined using a probability sampling technique, providing an equal chance for every member of the population to be selected as part of the sample. Data collection is carried out using several techniques, including tests, interviews, observation sheets, and documentation. Tests are used to measure students' creativity levels before and after the treatment, while interviews are conducted to gain deeper insights into students' responses to learning with sociomathematics-based digital media. Observations are made to record student engagement and interactions during the learning process, and documentation is used to supplement the collected data, such as students' work and learning records.

Data analysis begins with normality and homogeneity tests to ensure that the obtained data meet the assumptions of parametric statistics. The normality test is used to determine the data distribution, while the homogeneity test ensures the equality of variances between groups. Subsequently, the data is analyzed using the N-Gain test to measure the improvement in students' creativity after the treatment. The results of this analysis form the basis for drawing conclusions regarding the effectiveness of using sociomathematics-based digital media in enhancing the creativity of fourth-grade students at MI Muhammadiyah Pancasila.

C. RESULTS AND DISCUSSION

This study aimed to measure the effectiveness of using sociomatematics-based digital media in enhancing the creativity of fourth-grade students at MI Muhammadiyah Pancasila. The research data were obtained through pretests and posttests conducted with both the experimental and control groups. The experimental group utilized sociomatematics-based digital media, while the control group followed conventional teaching methods. The analysis results indicated a significant improvement in the creativity of students in the experimental group compared to those in the control group. The average pretest and posttest scores of students in each group are presented in Table 1. In the experimental group, the average pretest score was 62.4, which increased to 85.7 in the posttest, resulting in an N-Gain of 0.62, categorized as medium. On the other hand, the control group had an average pretest score of 63.1, which rose to 76.4 in the posttest, with an N-Gain of 0.38, categorized as low.

Table 1. Pretest, Posttest, and N-Gain Data on Students' Creativity

Group	Average Pretest	Average Posttest	N-Gain	N-Gain Category
Experimental	62.4	85.7	0.62	Medium
Control	63.1	76.4	0.38	Low

Further analysis was conducted on four aspects of creativity: the ability to generate ideas, provide varied solutions, produce original answers, and elaborate on ideas. The research results showed that the experimental group experienced a significant improvement in all these aspects. Specifically, the greatest increase was seen in the ability to produce original answers, where students were able to present unique ideas in solving sociomathematical problems provided through digital media.

During observations throughout the learning process, students in the experimental group displayed active involvement and high enthusiasm in exploring the material. The use of digital media allowed students to learn through interactive simulations relevant to everyday life. This not only enhanced students' creativity but also encouraged them to think critically and develop creative solutions.

Interviews with teachers indicated that the use of sociomathematics-based digital media had a positive impact on the interaction patterns between teachers and students. Teachers found it easier to facilitate discussions and provide constructive feedback because students were more active in asking questions and participating in learning. Documentation during the study also showed that students in the experimental group more frequently produced innovative learning products compared to students in the control group.

The increase in student creativity in the experimental group can be attributed to the role of sociomathematics-based digital media in providing an interactive and contextual learning experience. This media is designed to integrate mathematical material with relevant social issues, making it easier for students to understand abstract concepts. For example, a learning activity on managing economic resources in a community provided students with opportunities to apply mathematical concepts to real-life situations, directly promoting the development of new ideas.

The findings of this study support previous research suggesting that digital technology can enhance students' learning motivation and critical thinking skills. In this context, sociomathematics-based digital media offer various features such as animations, simulations, and interactive quizzes that facilitate the creative exploration of mathematical concepts. Consequently, students are more motivated to solve problems in different and innovative ways.

The significant improvement in the ability to produce original answers also reflects the effectiveness of digital media in encouraging students to think beyond conventional patterns. Students in the experimental group often presented unique solutions to given problems, such as efficient resource-sharing strategies in a community simulation. This demonstrates that sociomathematics-based digital media not only support material learning but also foster creative thinking patterns.

In terms of the ability to elaborate on ideas, sociomathematics-based digital media provide visual aids that enable students to develop their ideas more deeply. For example, students can use interactive diagrams and graphs to design solutions to complex social problems. This process helps students systematically organize their ideas, ultimately improving the quality of their learning outcomes.

However, this study also revealed some challenges, such as limited access to technology in schools. Both teachers and students faced difficulties in optimizing the use of digital media due to device or internet connection limitations. This highlights the importance of adequate infrastructure support to effectively implement

sociomathematics-based digital media. Additionally, training for teachers is also needed so they can optimally utilize this technology in the learning process.

Overall, these findings and discussions indicate that sociomathematics-based digital media have great potential to enhance students' creativity. By addressing existing challenges, the implementation of this media can be expanded to support the improvement of learning quality at various educational levels.

D. CONCLUSION

The research results indicated that the use of sociomathematics-based digital media could significantly enhance the creativity of fourth-grade students at MI Muhammadiyah Pancasila. The N-Gain test showed a significant improvement in creativity aspects, including the ability to generate ideas, provide varied solutions, produce original answers, and elaborate on ideas. Sociomathematics-based digital media effectively encouraged active student engagement in the learning process, boosted motivation, and facilitated better interaction between educators and students. This media offers a promising and innovative strategy to improve the quality of learning in primary schools.

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