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The Effect of Using the Chatgpt Application in Improving Students' Mathematical Communication Skills and Learning Interests

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Abstract: In mathematics education, efforts should enable students to communicate their ideas and understanding. Through mathematical communication, teachers can assess the extent of students' comprehension of a subject matter. Additionally, interest is needed in learning, as interest fundamentally influences learning outcomes. The method used is a quasi-experimental method, also known as a pseudo-experiment. In this study, the experimental group is the group that received instruction using the ChatGPT application, while the control group received conventional instruction. The results obtained are as follows: (1) Paired sample t-test with a significance value (2-tailed) of 0.000 < 0.05, so H0 is rejected and H1 is accepted. Because H0 is rejected and H1 is accepted, it can be concluded that there is a significant difference in the pretest and posttest results in the experimental class in terms of students' mathematical communication abilities. The conclusions drawn from this research are as follows: (1) There is a difference in the mathematical communication abilities and learning interest of students who were taught using the ChatGPT-assisted material compared to conventional instruction, (2) There is an improvement in the learning interest of students who used the technology-based ChatGPT application in the experimental class compared to the control class using conventional instruction, (3) The ChatGPT application demonstrates vital criteria in enhancing students' mathematical communication abilities and learning interest because it allows students to discuss mathematical concepts in everyday language.

Keywords: ChatGPT, Mathematical Communication, Learning Interest.

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A. INTRODUCTION

Mathematics is the basis of all sciences, therefore mathematics has been introduced from an early age, starting from kindergarten education to the college level. The lack of optimal mathematics learning in Indonesia and each student having a different character will undoubtedly be one of the obstacles in efforts to improve the quality of education and the country's progress. So far, mathematics learning, especially in the classroom, still does not involve students optimally. Many teachers still consider that students are only recipients of knowledge. So that the learning process is still teacher-centered. Many teachers still carry out mathematics learning by explaining, giving examples of problems, exercises, and how to solve to students. Five mathematical abilities must be mastered by students in learning mathematics, including: (1) problem solving skills, (2) reasoning and proof skills, (3) mathematical communication skills (communication), (4) mathematical connections (connections) abilities, and (5) mathematical representation skills (representation).

Mathematical communication skills are indispensable for everyone, especially in today's era of globalization and information. Mathematical communication skills are essential for students to master. This is because society needs intellectuals who can solve problems systematically and interpret into spoken and written language that is easy to understand. Teaching and learning activities are The main activities in the educational process at school. The existing teaching and learning process determines success in achieving educational goals. Students who learn are expected to experience changes in both the fields of knowledge, understanding, skills, values and attitudes. Through communication, the teacher as a source conveys information, which in the context of learning and learning is the subject matter, to the recipient, namely students by using symbols both oral, written, and non-verbal language. Instead, students will convey various messages in response to the teacher so that two-way communication occurs to improve communication to achieve learning objectives. So it is undeniable that communication is a tool in the interaction of mathematics learning. In every mathematical problem, the measurement of communication skills in writing is carried out with indicators: the ability to express and illustrate mathematical ideas in mathematical models, namely the form of equations, notation, pictures and graphs, or vice versa.

Interest is needed in the learning process, interest cannot be separated from the human psyche so that the person will try as hard as possible to get what he wants, the efforts made by the person can occur because of the encouragement through the interest he has. Interest is one of the factors that affect learning outcomes. On the contrary, without interest a person is impossible to do something. In teaching and learning situations at school, students interested in a particular subject tend to focus continuously during teaching and learning. Interest is not carried from birth, but acquired later. Efforts to increase student interest are carried out by using learning strategies using various learning elements or elements, such as varying the format of writing, colors, learning models and so on so that it can attract interest and maintain student attention during learning so that learning becomes fun with innovations.

In the era of technological advances like now, students' interest in learning has decreased, students focus more on gadget technology than learning. Therefore, teachers must be able to increase students' interest in learning by using technology. Technology's role in doing math problems is also constructive to make it easier for students to solve these problems. One uses chatbots based on Artificial Intelligence technology, namely ChatGPT (Generative Pre-Trained Tranformer). ChatGPT can provide answers according to the questions we write. The purpose of this study is to find out whether there are differences in the mathematical communication skills of students who are given ChatGPT Application-assisted learning material compared to scientific learning, To find out how students' learning interests after learning mathematics assisted by the ChatGPT Application, and To find out how to improve students' mathematical communication skills after ChatGPT Application-assisted learning compared to scientific learning.

B. METHOD

This study used a quantitative approach. Quantitative research is a process of finding knowledge that uses data in numbers to find information about what we want to know (Margono, 2015). According to Khoiri, the types of research seen in terms of methods are as follows: Historical Research, Philosophical Research, Observational Research, and Experimental Research. (Research & Research, 2015). In this study, researchers used experimental research, which conducted experiments on experimental groups. The method used is a quasi-experimental method or known as pseudo-experimentation. In this study, the experimental group was the group that obtained learning methods using the ChatGPT application while the control was the group that obtained scientific models.

The sample is part of the number and characteristics possessed by the population (Sugiyono 2016). Sampling is done with a simple random sampling technique because in this study it takes randomly from the population without paying attention to the level that exists in that population. So in this study researchers will determine from two classes VIII in MTs Islamiyah Ciomas that will be the subject of research, one experimental class namely VIII A and one control class namely VIII B. In the experimental class using the ChatGPT Application and for the control class using a conventional model.

C. RESULTS AND DISCUSSION

Table 1. N-gain results

No	Test	N-Gain	Criterion	Percentage	Interpretation
1.	Pretest	0,59	Keep	59,20%	Quite Effective
2.	Posttest	0,44	Keep	44,26%	Quite Effective

After the N-Gain test was carried out to determine the difference between the two averages between the experimental and control classes, there were differences in students' mathematical communication skills before and after learning in the experimental and control classes. The control class using conventional learning models experienced differences in problem abilities before and after learning. Likewise, in experimental classes that use a technology-based learning model, the ChatGPT application experiences differences in students' matamatic communication skills before and after learning.

Table 2. Independent sample T-test output results

Class	Sig. (2-tailed)
Experiment	0,001
Control	0.001

Based on the independent sample test output, T-test variance assumed the obtained sig value. (2-tailed) of 0.001 < 0.05, it can be concluded that there is a difference in the average results of the experimental class student questionnaire. While the results of pair 2 obtained sig value. (2-tailed) of 0.001 < 0.05, it can be concluded that the influence of the learning model based on ChatGPT application technology with conventional learning. Based on the

description above, interest in learning can be increased by interaction with advanced technology such as ChatGPT, because using applications can increase student interest and involvement in learning. Students may be more motivated to learn if they can interact with exciting and new technologies. Based on the research hypothesis, the learning model based on ChatGPT application technology can be used against conventional learning. Because in classroom learning using the ChatGPT application-based learning model students are more enthusiastic about learning mathematics, students become more active, encourage students to develop and practice communication skills, and increase student interest in learning.

D. CONCLUSIONS AND SUGGESTIONS

The following conclusions were obtained: (1) There are differences in mathematical communication skills and learning interests of students given ChatGPT Application-assisted material learning compared to scientific learning; (2) After learning assisted by the ChatGPT application, there is an interest in student learning in experimental classes; and (3) The ChatGPT application shows robust criteria in improving students' mathematical communication skills with a percentage of 58.26% or can be interpreted quite effectively

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