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USING OF MATRIX LABORATORY (MATLAB) APPLICATION IN MATHEMATICS LEARNING TO INCREASE STUDENT'INTEREST AND UNDERSTANDING

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ABSTRACT

There are several computer application programs that can be used as a medium for learning physics, especially kinematics. One of them is the matrix laboratory software or better known as Matlab. Matlab is a software that can help us to perform mathematical calculations, data analysis, develop algorithms, perform simulations and modeling, and present them in graphical form. MatLab Matrix Laboratory mathematics software is a platform with a programming language created with the aim of being a tool for complex calculations or simulating a system that you want to simulate. This literature study aims to find out whether MatLab mathematics software as a learning medium can improve students' computing abilities through a review of related literature studies.

Keywords: *Matrix Labolatory (MATLAB), Stundents' Interest, and Understanding.*

INTRODUCTION

MATLAB is the most efficient software for numerical calculations based on matrices and is widely used in computational mathematics, development and algorithms, programming modeling, simulation and prototyping, data analysis, exploration and visualization, numerical and statistical analysis and development of engineering applications. School accreditation is an effort by the government to guarantee the quality of education and improve school performance, especially in providing educational services to the community.

METHODS

This method is carried out by identifying, studying, evaluate, and interpret all available research. With this method researchers carry out reviews and identify journals in a structured manner for each the process follows predetermined steps (Triandini et al., 2019). Then, researchers conducted an in-depth study of the articles that had been reviewed the. According to (Nurfadilah et al., 2022), the Systematic Literature Review (SLR) technique carried out in five stages, namely:

1. Formulate research questions
2. Map and search for articles that match the research questions
3. Carry out inclusion/classification and exclusion/evaluation by selecting articles that have been collected
4. Presenting and processing data
5. Interpret the findings in the article and end with withdrawal

RESULTS AND DISCUSSION

The results of the study at a significance level of 5% are summarized in table 1 as follows.

Table 1
Summary of research Results

No	Data	Normality Test	Tes t Homogen	Type of Statisti	Research Hypothesis	Conclusio n
1.	Pretest scores of class Eksperimen and control class	The pretest of both classes is not normal (sig =0,000 < a)	(sig, 0,070> a) (uji levence)	Mann-whitney test (sig=0,945 >a)	None differences in initial mathematical communication abilities	Hypotesis is accepted

2.	Post-test scorest of class Experimental and control classes	The post-test of the experimental class was not normal (sig,-0,019 <	Homogen (sig, -0,578> a) (levenc e test)	Mann whitne test (sig =0,000>a)	There is a difference in mathematical communication skills after learning in the experimental class and the	Hypothesis is accepted
3.	Score n-gain Mathematical communicat io n ability	n-gain of the experimental class (sig, 0,134) and the control class (sig, 0,200) is normal (test	(sig,-0,358) (levence test)	Test-t	The improvement of mathematical communication skills of student who receive learning assisted by matlab software is better than student who	Hypothesis is accepted
4.	Interest n-gain score learning	N-gain score interest in class learning The experiment was not normal (sig, =0,004) While the n-gain score of the learning	Homogeneous (sig, 0,394) (leven ce test)	Mann whitney test (sig, =0,004<a)	The increase in learning interest of students who receive learning assisted by Matlab software is better than student who receive diroct learning	Hypotesis accepted
		was normal (sig, =0,200>a) (uji				
5.	Ability scores and learning interest scores of the experimental class			Pearson correlation test (sig,-0,740>a)	There is a significant relationship between students' interest in learning and students' mathematical communication	Hypotesis rejected

6.	Ability scores and learning interest scores of the control class			Pearson correlation test (sig, 0,773>a)	There is a significant relationship between students' learning interest and mathematical communication akills after	Hypotesis rejected

Based on the research results obtained, initial communication skills mathematics in both classes is relatively the same, but after being given treatment the two classes show differences. Communication skills Students' mathematics after learning assisted by Matlab software is better rather than students' mathematical communication abilities after learning direct. The same is true of students' interest in learning after learning assisted by Matlab software is better than students' interest in learning after direct learning. However, between mathematical communication skills and students' learning interest in both classes, there was no significant relationship significant.

CONCLUSION

The results of this research show several conclusions as follows:

1. Increasing students' mathematical communication skills learning assisted by Matlab software is better than students who get direct learning.
2. The quality of improving mathematical communication skills in groups students who receive learning assisted by Matlab software include into the high category, while the group of students who obtained Direct learning is included in the medium category.
3. Increased interest in learning for students who receive assisted learning Matlab software is better than students who get learning direct.
4. The quality of increasing the learning interest of students who receive learning assisted by Matlab software, it is seen based on the average value of learning interest included in the high category, while the group of students who obtaining direct learning is included in the medium category.
5. There is no significant relationship between communication skills mathematics and students' interest in learning, both in students who get learning assisted by Matlab software and students who receive it direct learning.

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Confession

1. Improves understanding of mathematical concepts: MATLAB helps students visualize abstract mathematical concepts, thereby increasing understanding and retention (Journal of Mathematics Education, 2018).
2. Develop analytical skills: Using MATLAB trains students to analyze data and make decisions based on simulation results (Journal of Mathematics Learning, 2020).
3. Increases interest in learning: MATLAB's interactive user interface increases students' interest in learning mathematics (Journal of Educational Technology, 2019).

REFERENCES

Almalki, M. M., & Alharbi, A. A. (2020). The Effect of MATLAB on Students' Understanding of Mathematical Concepts. Journal of Education and Learning, 9(3), 1-8.

Supriyanto, A., & Widyastuti, R. (2018). MATLAB Software Development for Mathematics Learning. Journal of Mathematics Education, 9(2), 147-156.

Hastuti, D., & Sutarto, H. (2019). Use of MATLAB in Improving Students' Analytical Skills. Journal of Mathematics Learning, 7(1), 1-10.

Nasution, A. dkk., (2024). Matlab Mathematics Software as a Learning Media to improve students' computing abilities. Vol.2., No.4 https://journal.arteii.or.id/index.php/Merkurius/article/download/125/190/634

Hendra, K., (2014). Software-Assisted Mathematics Learning Matlab As An Effort To Improve Capability Mathematical Communication And Learning Interest Of High School Students. Mathematics Education- Fkip Unsika