

ICETAR

THE 1st INTERNATIONAL CONFERENCE ON EDUCATIONAL THEORIES,
PRACTICES AND RESEARCH
TARBIYAH AND TEACHER TRAINING FACULTY, STATE ISLAMIC
UNIVERSITY SYEKH ALI HASAN AHMAD ADDARY
PADANGSIDIMPUAN ON 4TH - 5TH JULY, 2023
"Development of Post Pandemic Education to Face the Social Era 5.0"

Students' Perspectives using Maple on Polar Coordinates in Era 5.0

Rizki Harahap¹, Amelia Syakinah Sihombing², Erda Mustika Harahap³

^{1,2,3} State Islamic University Syekh Ali Hasan Ahmad Addary Padangsidimpuan, Indonesia

e-mail: ¹rizkiharahap126@gmail.com, ²ameliasyakinahsihombing@gmail.com,
³erdamustika2002@gmail.com

Abstract

In improving the quality of education, there needs to be renewal in carrying out the learning process. As is the case with using multimedia-based learning media, such as Maple applications. The Maple application is an application developed to solve polar coordinate problems. The polar coordinate system is a two-dimensional coordinate system in which each point in the plane is determined by the distance from the specified point and the angle from the specified direction. This study aims to determine the perspective of using maple applications in polar-coordinate materials. The method used in this study was a qualitative one, with research subjects being students of Mathematics Education at the Faculty of Tarbiyah and Teacher Training at State Islamic University Syekh Ali Hasan Ahmad Addary Padangsidimpuan. Based on the research that has been done, it is known from the obtained data that 93,6% of mathematics education students stated that the application of maple was effective to use, and the remaining 6,4% stated that it was not effective. Insert an abstract no longer than 200 words, giving a brief account of the most relevant aspects of the paper. The abstract of research paper should contain the purposes, method, and findings of the study. Using 11 size Book Antiqua fonts, single-spaced.

Keywords: student perspective; maple; polar coordinate system; software; instructional media

INTRODUCTION

Infectious diseases from the COVID-19 pandemic affect all aspects of human life including business, research, education, health, economy, sports, transportation, worship, social interaction, politics, government and entertainment (Amarulloh et al., 2022). The State of Indonesia is one of the countries that has faced a pandemic which resulted in one of the fields of education in Indonesia having to be carried out remotely, namely by using online distance learning methods to reach students and teachers so that the learning process can take place because learning is offline (face to face). advance) can develop the spread of COVID-19, and now Indonesia is in a post-pandemic period which requires education in Indonesia to be improved because previous education was still insufficient and had to be adapted to the times.

Regarding the development of the times, the Indonesian state must also face the changing times where we are going to the 5.0 era. Technology and artificial intelligence (AI) are things that must be mastered, where it is possible that education in Indonesia must also be integrated with developments in the 5.0 era. The era of the industrial revolution changed the way of thinking and perspective regarding education, such as in learning that is carried out where the use of technology is more widely used (Kurniawan, 2022). Humans inevitably live side by side with technology and similarly education must also be integrated with technology so that education in Indonesia is in line with in accordance with developments, be it elementary/equivalent education, junior high school/equivalent, high school/equivalent and tertiary education/equivalent.

In the current Era of Society 5.0, students are taught to be able to use technology properly and correctly, so that there is harmony for the sake of improving the quality of human life (Damayanti et al., 2023). In improving the quality of education, it is necessary to update the learning material, such as using multimedia-based learning media with a background in today's technology. Computer Algebra System (CAS) based technology has developed a lot with the emergence of mathematical software such as Mathematica, Matlab or Maple (Sari et al., 2017). One of the media that can be used in the present era is maple. Maple is a computer program that enables people to check measurement and calculation results, create complex graphs, and combine their mathematical skills with a text editor. Students having difficulty with math material that is difficult to understand can be overcome with learning media such as maple, and other software related to mathematics. This is because it can help students to solve problems (Auliya & Siswono, 2021) around mathematics, such as the polar coordinate system. Coordinate systems are used to facilitate

description, calculation, and analysis, both geometric and dynamic in nature (Ubaidillah, n.d.). A two-dimensional coordinate system in which each point in a plane is determined by a specified distance from the point and the angle from a predetermined direction is known as a polar coordinate system.

METHOD

This study applies a quantitative (numeric) research method. In this study using a questionnaire with the help of google form. The population comes from students of Tadris Mathematics UIN Syekh Ali Hasan Ahmad Addary and the sample used by researchers is purposive sampling starting from semesters 4 to 8. From the results of the questionnaire distribution there were only 47 respondents who filled out the questionnaire with the help of Google form, consisting of 4 respondents (semester 4), 36 respondents (semester 6), and 7 respondents (semester 8).

RESULT AND DISCUSSION

The data obtained from distributing the Google Form-assisted questionnaire can be presented as follows From:

Table 1. The number of respondents obtained

No.	Semester	Responden	Persentase
1	IV	4	8,51%
2	VI	36	76,60%
3	VIII	7	14,89%
	Result	47	100%

In table 1. Shows the number of respondents obtained from the results of distributing the questionnaire and there were 47 respondents, with 4 respondents (8.51%) from semester 4, 36 respondents (76.60%) from semester 6, and 7 respondents (14, 89%) from semester 8.

Figure 1. The effectiveness of using maple in mathematics

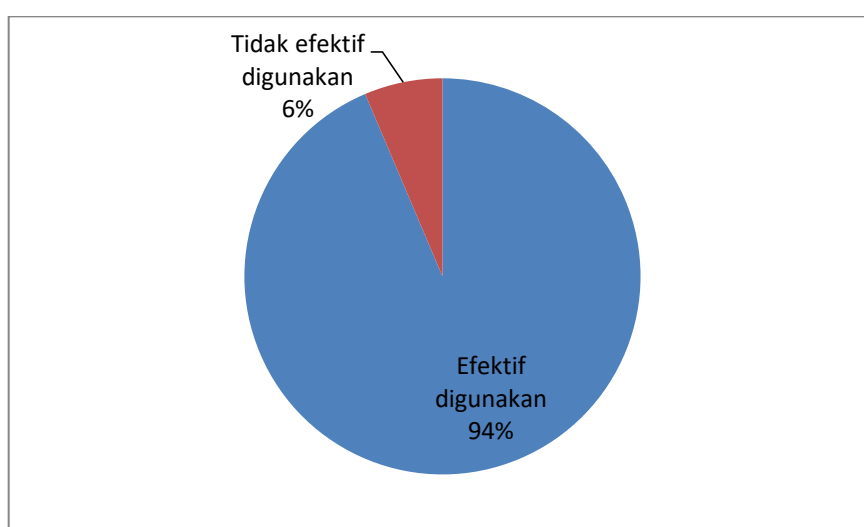


Figure 1 above explains "is it effective to use maple software as a tool for learning mathematics in polar coordinates in the 5.0 era?" and there are 2 categories of answers, namely effective use and ineffective use.

The results of student responses obtained percentages in each category, namely the percentage representing the "effectively used" category was 94% with 44 respondents, and the "not effectively used" category was 6% with 3 respondents.

From the results of the presentation in Figure 1, many students stated that maple software was effectively used as a tool for learning mathematics in polar coordinates in the 5.0 era by obtaining as much as 94%.

Figure 1. An assessment of the use of maple for mathematical problems

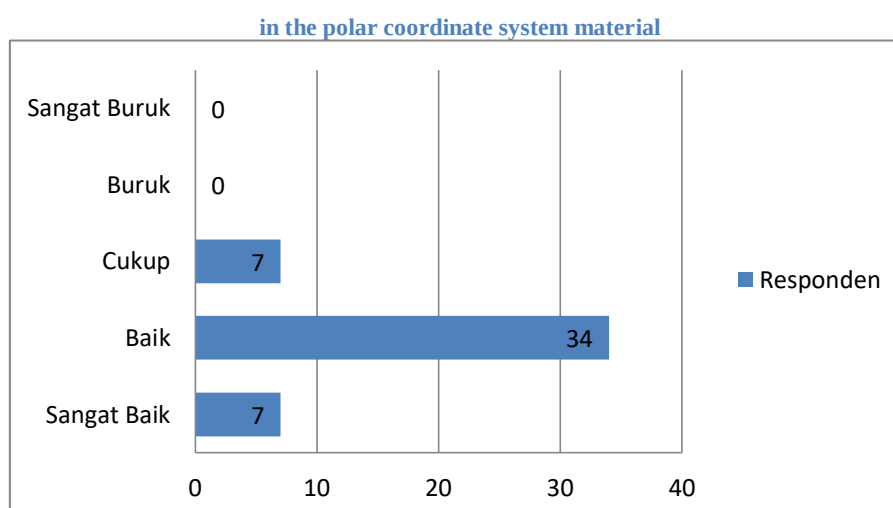
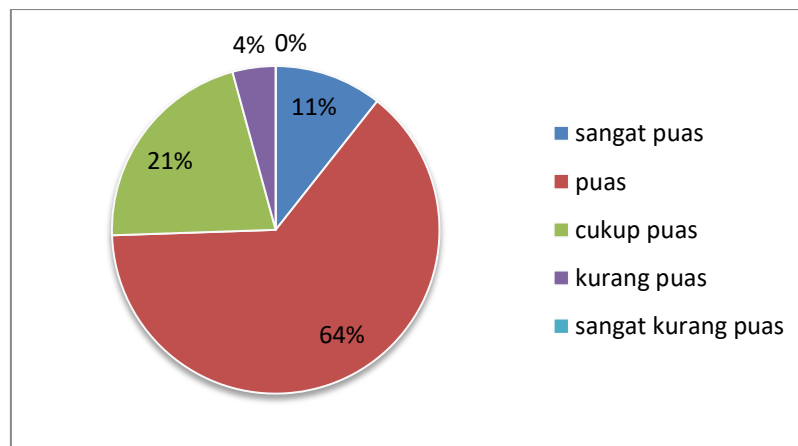


Figure 2 it discusses "student assessments regarding the use of maple for mathematical problems in the polar coordinate system material", and there are 5 categories of answers, namely very good, good, fair, bad, and very bad.

From the results of these responses we can get for the very good category obtained by 7 respondents, the good category was obtained by 34 respondents, the sufficient category was obtained by 7 respondents, and the bad and very bad categories did not get respondents. From these results the good category has many respondents so that the use of maple for mathematical problems in the polar coordinate system material gets a good rating.

**Figure 2. student learning satisfaction by using maple
on polar coordinate system material**



From Figure 3 it discusses "student learning satisfaction using maple on polar coordinate system material", and there are 5 categories of answers, namely very satisfied, satisfied, quite satisfied, not satisfied, and very dissatisfied.

From the results of these responses we can get for the very satisfied category obtained by 5 respondents with a percentage of 10.6%, the satisfied category was obtained by 30 respondents with a percentage of 63.8%, the quite satisfied category was obtained by 10 respondents with a percentage of 21.3%, and the unsatisfied category was obtained by 2 respondents with a percentage of 4.3%, and very bad did not get respondents. From these results the satisfied category has many respondents so that student learning satisfaction by using maple in the polar coordinate system material is categorized as "good".

CONCLUSION

Learning mathematics using effective technology is used to improve the process of learning mathematics and provide an interactive and easily accessible learning experience, such as the use of maple or other software related to mathematics. Students are also satisfied with the use of maple in mathematics material and give a good assessment of the use of maple.

REFERENCES

- Amarulloh, S. I., Sahida, N. M., Apriliani, L., & ... (2022). Perspektif Mahasiswa Pada Pembelajaran Matematika Di Era Pandemi. *Journal of Authentic ...*, 4(1), 66–78. <http://jurnal.unsil.ac.id/index.php/jarme/article/view/3293>
- Auliya, A. S., & Siswono, T. Y. E. (2021). Pengaruh Pembelajaran Creative Problem Solving Berbasis Aplikasi Maple Untuk Meningkatkan Kemampuan Berpikir Kreatif Siswa. *Jurnal Penelitian Pendidikan Matematika Dan Sains*, 5(1), 10. <https://doi.org/10.26740/jppms.v5n1.p10-18>
- Damayanti, E. M., Arsanti, M., & Hasanudin, C. (2023). *Peran Mahasiswa dalam Menghadapi Pendidikan di Era Society 5.0*. 113–120.
- Kurniawan, R. A. (2022). Peran Inovasi Pendidikan dalam Pembelajaran Berbasis Teknologi. *Tugas Mata Kuliah Mahasiswa*, 222–231.
- Sari, C. K., Machromah, I. U., & Safika, K. N. S. (2017). Pemanfaatan Teknologi Dalam Pembelajaran Kalkulus : Mendukung Atau Sia-Sia ? *Jurnal Pengkajian Ilmu Dan Pembelajaran Matematika Dan IPA IKIP Mataram*, September, 59–76.
- Ubaidillah, F. (n.d.). *Generalisasi fungsi genap pada sistem koordinat kutub dan beberapa sifatnya*.