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The effectiveness of the tiktok-based treffinger learning model in developing student creativity

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ABSTRACT

This study aims (1) to determine the application of the TikTok-based Treffinger learning model in developing student creativity (2) to determine the effectiveness of the TikTok-based Treffinger learning model in developing student creativity. The approach in this study is a quantitative approach using a quasi-experimental method and the research design is a pretest-posttest control group design. The sample used was SMA NU Al Ma'ruf Kudus class X MIPA 3 as the experimental class and class X MIPA 1 as the control class. The data was taken by observation techniques and student creativity essay tests. The results showed that (1) the application of the TikTok-based Treffinger learning model was carried out very well with a percentage of 86.67%. (2) The TikTok-based Treffinger learning model is effective in developing student creativity. This can be seen from the total average indicator of student creativity in the experimental class, which is 298.03, which is greater than the control class using the Discovery Learning model, which is 256.25. In addition, the results of the hypothesis test show that the value of Sig. (2-tailed) $0.004 < 0.05$ which means H_0 is rejected and H_1 is accepted. So that the TikTok-based Treffinger learning model is effective in developing student creativity in material about changing the environment for class X MIPA at SMA NU Al Ma'ruf Kudus.

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Introduction

The quality of education in Indonesia currently cannot be categorized as good because the ability of Indonesian students is still relatively low. Referring to a survey of student abilities by the Program for International Student Assessment (PISA), Indonesia ranks 72 out of 77 countries ¹. Based on this, the quality of education in Indonesia needs to be improved and improved so that it can compete with other countries. One way to improve the quality of education is that an educator must be able to teach innovatively, creatively and interactively.

When teacher-centered learning makes students passive and quickly bored. Even today there are still some students who think that science subjects, especially biology, are difficult subjects because there is a lot of material and Latin terms that are difficult to understand. Students also consider biology lessons as rote lessons so students don't really like these lessons ². In fact, biology should be a fun lesson because biology is a science that is close to daily routines.

Students in carrying out their daily routines often face various problems. One of the subject matter of biology that is closely related to problems or problems is the material of environmental change. In dealing with problems, students must be able to solve problems by finding solutions and answers. When students are passive, students find it difficult to develop the potential that exists within them. So that they are not able to realize that there are problems in the surrounding environment, they are not even able to solve these problems. In fact, self-awareness or sensitivity to the problems that are around can be seen with the ability to be creative. The word creativity means having creativity, having the ability to create ³. This shows that creativity can develop one's thinking power through ideas generated when solving problems.

Creativity is needed in solving problems in order to develop students' imagination. The more students' creativity develops, the more they are able to compete in all fields. This can be supported by a learning model that is able to trigger students' thinking power, not only limited to channeling knowledge to students. Donal J. Treffinger in 1980 introduced the Treffinger learning model. He is president of the Center of Creative Learning, Inc., Sarasota, Florida. So that the learning model is given the name Treffinger learning model. This learning model is also often called Creative Problem Solving (CPS) because it is designed to invite students to think creatively when faced with a problem ⁴.

The Treffinger learning model is one of various recommended learning models to help foster student creativity, help understand material concepts, and provide opportunities for students to demonstrate their abilities or potential, including skills in solving problems ⁵. The steps or syntax of the Treffinger learning model according to Munandar's research, consists of three stages, namely (1) Basic tools (stage I), including the ability to think divergently and creative techniques. (2) Practice with process (stage II), providing opportunities for students to apply the skills learned at level I. (3) Working with real problems (stage III), students apply the skills they have learned at stage I and II to real world challenges ⁶.

Especially in 21st century learning in the industrial era 4.0 students are required to have knowledge skills and abilities in the field of technology ⁷. The industrial era 4.0 also encourages a teacher to maximize his ability to utilize technology as a medium in teaching and learning activities. In line with what was conveyed by Puspitasari's research that the role of learning media is needed to clarify the messages conveyed by the teacher and facilitate interaction between teachers and students ⁸. To support this, interactive learning media is needed to attract the attention of students. One of the technologies that can be used as learning media is social media.

Of the many types of social media available, TikTok is one of the social media platforms that is currently in great demand by people, especially the Z generation. The application is known as an entertainment medium in the form of creating and sharing video content with fellow Tiktok users ⁹. Based on Andi Ahmad S.'s research data, Indonesia ranks second with the most Tiktok users in the world, reaching 92.2 million users ¹⁰. With this amount, the TikTok application beats other popular applications such as Instagram and Facebook. The popularity of the TikTok can be utilized as a learning medium that can attract students' attention and encourage and develop student creativity when creating content. However, the image of tiktok as a place of entertainment is more prominent than as a broadening of knowledge or learning ¹¹. According to Aji, by looking at TikTok from a different perspective, students can be creative in expressing their ideas even though the video content shown is short, if students are able to package it properly it will attract the attention of the audience and not be boring ¹².

Based on the problems that have been described, it is necessary to conduct research on "The effectiveness of the TikTok-based Treffinger learning model in developing student creativity" to find out (1) how is the application of the TikTok-based Treffinger learning model in developing student creativity? (2) how is the effectiveness of the TikTok-based Treffinger learning model in developing student creativity.

Method

This study uses a quantitative approach with the Quasi Experimental research method. The design used in this study was a pretest-posttest control group design. According to Asmani, this design is the best design used in all types of experiments, because it has a high level of validity, credibility and objectivity compared to other designs¹³. The population of this study was class X MIPA students at SMA NU Al Ma'ruf Kudus, totaling 149 students. The sample in this study were two classes with a total of 76 students. Sampling in this study was carried out using cluster random sampling technique because the population consisted of several groups taken as random samples¹⁴. Through this technique two classes were obtained, namely class X MIPA 3 as the experimental class and X MIPA 1 as the control class.

Data collection techniques in this study included written tests in the form of essay questions in accordance with indicators of creativity, namely fluency, flexibility, originality and elaboration¹⁵. Observation techniques to determine the implementation of learning using the Treffinger learning model and observation of product evaluation or TikTok videos made by students. The data analysis technique used a parametric statistical test which first carried out the prerequisite test, namely the normality test and homogeneity test. Then a hypothesis test was carried out using the Independent Sample T-Test to find out the difference between the TikTok-based Treffinger learning model and the Discovery Learning model using the lecture method.

Results and Discussion

1. Application of the TikTok-based Treffinger learning model

Based on observations using the observation sheet of the implementation of the TikTok-based Treffinger learning model which was carried out in two meetings, a percentage of 86.67% was obtained with a score obtained of 13 while the maximum score was 15. In accordance with the interpretation criteria of the observation sheet, the implementation of the Treffinger learning model is included in the category very good.

Table 1. Criteria for interpreting the observation sheet

Percentage (%)	Criteria
0-20	Very less
21-40	Less
41-60	Quite
61-80	good
81-100	Very good

The application of the TikTok-based Treffinger learning model shows that this approach is able to make learning more meaningful and develop students' creative abilities because students can build concepts independently and become more confident with the ideas produced. This is supported by Retnowati and Murtiyasa's research, who state that the Treffinger model which uses a group work system makes each member work together to

unite various ideas in understanding a problem or learning material presented by the teacher¹⁶. So that with various ideas that exist, students are able to find information to build concepts and respect the ideas or opinions of others.

2. Student creativity

Student creativity can be seen from the products or TikTok videos that have been made by students and the comparison of the average posttest scores for creativity between the experimental class and the control class. Based on the calculation of the TikTok video observation value, according to the criteria for interpreting the level of creativity of the 7 groups, there are 4 groups that have a very good level of creativity, while the other 3 groups have a good level of creativity.

Table 2. Criteria for interpreting the level of creativity

Intervals	Criteria
$80 < value \leq 100$	Very good
$60 < value \leq 80$	Good
$40 < value \leq 60$	Quite
$20 < value \leq 40$	Less
$0 \leq value \leq 20$	Very less

Furthermore, a comparison of the average posttest scores was carried out in terms of the creativity aspect. The average score of the creativity of the experimental class and the control class for each indicator is presented in the following table:

Table 3. Comparison of Student Creativity Aspects in Experiment Class and Control Class

Indicator	Experiment	Control
	$\bar{X}$	$\bar{X}$
Fluency	90,79	83,88
Flexibility	83,55	51,97
Originality	47,37	53,29
Elaboration	76,32	67,11
Total Score	298,03	256,25

Based on the comparison of the average posttest scores for each aspect of the creativity indicator obtained by the experimental class and the control class. The total average indicator of student creativity in the experimental class was 298.03, while in the control class it was 256.25. So that the average comparison of each aspect of student creativity indicators in the experimental class is higher than the control class. Based on the results of the analysis of the test scores of the experimental class and the control class, it can be concluded that the creativity of the experimental class students is superior to that of the control class.

The difference in the level of student creativity between the experimental class and the control class is influenced by the use of learning models. Muhaiminu and Nurhayati state that the Treffinger learning model helps students develop creativity, master concepts and provides opportunities to demonstrate potential or abilities including creative abilities⁵. By applying the Treffinger learning model to environmental change material, students can develop their creativity through solving environmental problems. In addition, the use of the TikTok application learning media also affects the level of creativity between the two classes. Mufidah and Mufidah revealed that the TikTok application can be processed into an

interesting and interactive learning medium, seeing that the various features available in the TikTok application can be used to develop student skills¹⁷. The TikTok application is also considered a place to support creativity in channeling hobbies and getting various information, inspiration and ideas for creating video content¹⁸.

3. The Effectiveness of the TikTok-based Treffinger Learning Model in Developing Student Creativity

Hypothesis testing in this study was carried out by parametric tests using the Independent Sample T-Test. The results of the data hypothesis test in student creativity research can be seen in the following table:

Table 4. The results of the student creativity hypothesis test

Data	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Student creativity	2,995	74	0,004	9,737	3,251

Based on the data in the table above, it is known that the significance value (sig 2-tailed) is 0.004. This value is smaller than the significance level of 0.05 (sig 0.004 < 0.05), so that H_0 is rejected and H_1 is accepted. It can be concluded that there is a difference in the average creativity of students in the experimental class and the control class. Because there are significant differences, the TikTok-based Treffinger learning model is effective in developing student creativity.

This is in line with Nugraheni's research which states that the creativity of students who receive learning with the Treffinger model is better than students who receive learning with conventional models (lectures)¹⁹. Other research also states that the TikTok application can be used as an effective learning medium in issuing interesting ideas so that students can produce creative and innovative videos²⁰. Therefore, student creativity is needed in every learning process, because with creativity students can make various works in the form of ideas, ideas or products such as TikTok videos. Creativity also makes students able to solve or find several answers and provide solutions when faced with a problem.

Conclusion

Based on the research that has been done, conclusions can be drawn, namely: (1) The application of the TikTok-based Treffinger learning model in developing student creativity in material for environmental change in class X MIPA SMA NU Al Ma'ruf Kudus was carried out very well with an acquisition percentage of 86.67%. (2) The TikTok-based Treffinger learning model is effective in developing student creativity. This can be seen from the total average indicator of student creativity in the experimental class, which is 298.03, which is greater than the control class using the Discovery Learning learning model, which is 256.25. In addition, the results of the hypothesis test show that the value of Sig. (2-tailed) 0.004 < 0.05 which means that H_0 is rejected and H_1 is accepted. So that the TikTok-based Treffinger learning model is effective in developing student creativity in material about changing the environment for class X MIPA at SMA NU Al Ma'ruf Kudus.

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