

THE EFFECTIVENESS OF APPLICATION OF MIND MAPPING LEARNING MODELS ON THE PROBLEM OF THE STORY VIEWED FROM THE MATHEMATIC COMMUNICATION ABILITY OF VOCATIONAL SCHOOL STUDENT

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Abstract

This article presents research on the effectiveness of learning using mind mapping learning models and experimental research methods with a pre-experimental design: one-shot case study design using purposive sampling, for vocational students of class XI in the academic year 2019/2020 on mathematical questions in the form of story questions. the purpose of this study is to describe the effectiveness of students' mathematical communication skills using mind mapping learning models, obtain a number of student problems in the process of communicating the form of mathematical problem problems with the form of story problems. Based on the analysis of the data obtained by the results of research at the destination school shows that the percentage of students who have good mathematical communication skills of students is less than 70%. Thus in the form of story questions, mind mapping learning models are not effective in terms of students' mathematical communication skills

Keywords: Mathematical communication skills, mind mapping learning models

Abstrak

Artikel ini menyajikan riset mengenai keefektifan pembelajaran menggunakan model pembelajaran mind mapping dan metode penelitian eksperimen dengan desain *pre experimental : one-shot case study design menggunakan purposive sampling*, terhadap siswa SMK kelas XI tahun ajaran 2019/2020 pada soal matematika dengan bentuk soal cerita. tujuan dari pada penelitian ini diantaranya untuk menjabarkan tentang keefektifan kemampuan komunikasi matematis siswa menggunakan model pembelajaran mind mapping, memperoleh sejumlah permasalahan siswa dalam proses mengkomunikasikan bentuk soal permasalahan matematik dengan bentuk soal cerita. Berdasarkan analisis data diperoleh hasil penelitian pada sekolah tujuan menunjukkan bahwa persentase siswa yang memiliki kemampuan komunikasi matematis siswa yang baik adalah kurang dari 70%. Dengan demikian pada bentuk soal cerita, model pembelajaran mind mapping tidak efektif di tinjau dari kemampuan komunikasi matematis siswa

Kata kunci : *Kemampuan komunikasi matematis, model pembelajaran mind mapping*

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INTRODUCTION

Mathematical communication skills are very important to be mastered by every student because in every problem there is a direction of our goal to be demanded to understand the problem so that the solution of the problem can be resolved properly in terms of our communication direction in seeing the problem on target and in the direction of the intended goal certainly understood and understood widely and objectively. .

Lestari, E.K (2015) states the ability of mathematical communication is the ability to convey mathematical ideas / ideas, both orally and in writing as well as the ability to understand and accept mathematical ideas / ideas of others in a careful, analytical, critical, and evaluative manner to sharpen understanding

One form of questions that illustrates the mathematical communication skills of students is a matter of stories. Where the story questions become one of the discussion problems that are difficult to be understood by each student so that almost the average student has difficulty answering mathematical problems with the form of story problems.

The results of a preliminary study of the first semester XI grade students of the Karawang Research and Technology Vocational School 2019-2020 stated that the percentage of test results that showed 48% had fulfilled the KKM on the list of teacher scores for each class amounting to ± 38 people, the value of the first semester report cards were on average only meet the kkm standard of 68 and the main problem of which is the reason students only meet the criteria above is a question in the form of story problems where students find it difficult to understand the problems of various materials and difficult to communicate the stages of completion with a solution

Mathematical problem solving ability is one of process standard in learning mathematics [1]. The ability of mathematical problem solving is the heart of mathematics [2]. Given the importance of problem solving ability in learning mathematics, it is necessary to do an effort that aims to determine the extent to which the problem solving ability based on students` answer on geometry. These efforts can help educators to find ways to solve the problems in mathematical problem solving of students. In fact, students` mathematical problem solving ability is still low. The students have difficulties to solve a problem that measures problem solving ability. Based on the research, the students` problem solving ability has low score on aspect of make model that is 23,53% and interpret result obtained that is 32,35% which including very bad qualification [3]. Other research said that, students' problem solving ability is low because students are not familiar to solve problem solving problems (non-routine problem) [4]. If the mathematical problem solving ability compared to other mathematical abilities such as mathematical communication ability, students' problem-solving ability also has lower average score than the average score of mathematical communication skills. This is seen in the results of research, the average score of pretest and postes in the control class and experiment to measure the problem solving ability is lower than the ability of mathematical communication. So that, we should to analyze the ability of mathematical problem solving if we want to improve the student`s ability [5]. Another thing that is important in view of the extent of the problem solving ability of students is see what kind of the students` errors that student made in solving mathematical problems.

So this is what proves that students' mathematical communication skills in solving math problems tend to be low with story problems. Based on the results of research at SMK Research and Technology, also explained the related lack of students in understanding the form of story questions is the inability of students to determine which form of questions in the problem, the inability of students to understand.

Based on the problems in the case above, the researcher offers a solution through a mind mapping learning model. Mind mapping learning model is a learning model that learns concepts or techniques of remembering something with the help of min maps (using concept maps, recording learning material is poured in the form of diagrams containing symbols, codes, images, and colors that are interconnected) so that the two parts of the human brain can used maximally.

The advantage of the mind mapping learning model itself is that each student is able to

present material with a concept that has been made and can better understand mathematical problems created with a concept map in the form of symbols, signs and codes and images that are closely related to each other ... And through This mind mapping learning model is expected to be a mathematical communication ability of students in a matter of stories can develop and achieve the expected criteria

METHOD

This research uses a quantitative descriptive approach as an experimental method. The research design used in this study is pre-experimental design with one-shot case study type. In this design the experimental model can be read as follows: there is a group given treatment / treatment, and then the results are observed (treatment is as an independent variable, and the results are as the dependent variable) (Sugiyono, 2011: 112)

Treatment in this research is mind mapping learning model as an independent variable in the study. Meanwhile, the results observed in this study were students' mathematical communication skills on story questions which were the dependent variable in the study. The research paradigm is described as follows:

X O.

Information :

X = mind mapping learning model

O = Mathematical communication skills

(Sugiyono, 2011: 112)

RESULTS AND DISCUSSION

1. Description of mathematical communication ability data

Based on the results of data analysis mathematical communication skills obtained from the test instrument in the form of a set of daily test questions in the form of story questions on statistical material using the z test for one sample, the value of Zhitung < Ztable is based on the results of the analysis of communication ability test data obtained by 3 students who get grades more than or equal to 68 of 38 students. Thus the percentage of students who have good communication skills is 5.64%, which means H0 is accepted, then the proportion of students who have good communication skills is less than 70%.

Based on the analysis of achievement data indicators of mathematical communication skills of students, it is known that the average achievement of indicators of mathematical communication skills of students who gained an understanding of reading mathematical presentations of the mind mapping learning model on story problems based on the above statistical material is 34.46%. Communication indicators that are best achieved by students are making conjectures, compiling arguments, formulating definitions and generalizations, that is 38.42%. This indicator has the largest percentage compared to other indicators of the mathematical communication ability indicator

Based on the results of analysis and hypothesis testing of students' mathematical communication skills, it is known that the mind mapping learning model is not effective in terms of students' mathematical communication skills in the form of story problems because the percentage of students who have mathematical communication skills well is not more than 70%. So that it can be said that the mathematical communication process of students in the matter of the story by using the mind mapping learning model is very ineffective when viewed from the percentage per indicator of the above research results, where in general students can be said to lack mastering the concept of understanding of the material. Reading with an understanding of a written mathematical presentation that is mainly in the form of story questions based on Statistics material which is used as a source of research above. But it can be said based on the results of the study also that students are actually more familiar with the normal learning process. If accompanied by an explanation that makes students understand the concept of the intended material. Primarily with examples of storytelling questions presented in a clear and targeted manner by the teacher concerned so as to be able to foster the process of students'

imaginary communication. And not necessarily with a particular model as in the research above that uses the concept of mind mapping learning model

Because based on the results of the discussion and the respondent also with one of the students who caused the mind mapping learning model to be ineffective to be applied to the example of the story problem through the communication process. It is the inability of students to try to explain in the future and the process of compiling the results of answers by the teacher concerned even though the teacher concerned has been so friendly and be kind in guiding students forward (see figure 1).

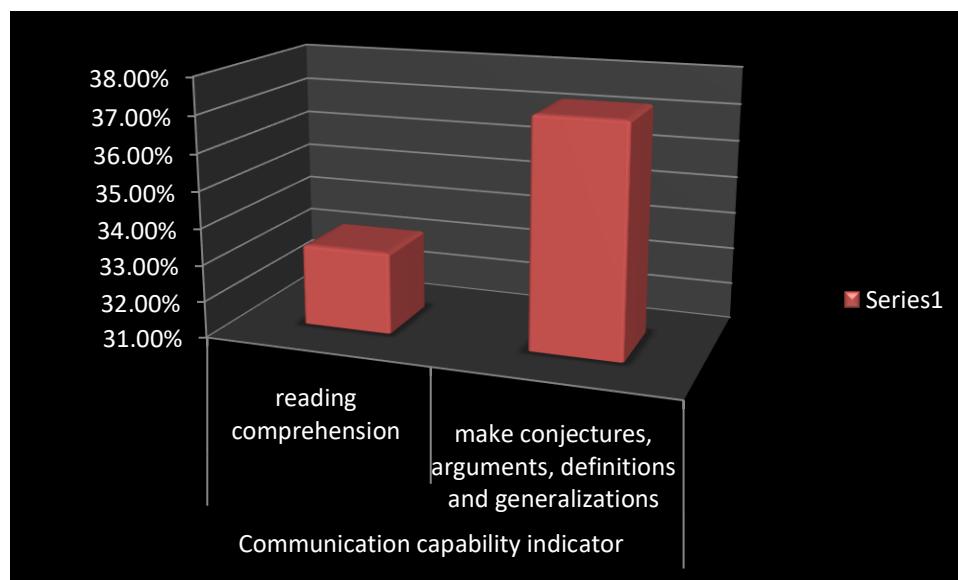


Figure 1. Communication Capability Indicator

2. Problems that cause ineffectiveness of the problem

Based on the results of these research studies indicate that the mind mapping learning model is not effective in improving students' communication skills in the main story matter. In the implementation of learning, students look nervous and less relaxed in explaining and seeing the problem concept map. The teacher has obstacles to guide students to get the right answer, because students do not master the prerequisite material, namely statistical material.

Students also do not understand material that has been studied previously, such as the concepts of space and trigonometry. This can be seen from the inability of students to answer the teacher's questions about the area of construction and circumference of a geometrical structure and trigonometric rules. These constraints also occur when working on textbooks, so that classroom conditions are not conducive because students are busy asking questions and discussing with students from other groups.

Some students also did not seem to help a group of friends work on a textbook, students were busy with themselves and only relied on someone who was considered capable of solving problems. Another obstacle arises during the presentation stage in front of the class, many students or groups are reluctant to advance first and explain the concept of the material using the concept map because they lack mastery of the concept map related to the material being studied. This becomes a problem and learning becomes less effective

As a result, students who have low ability cannot understand the material that has been discussed so that it is difficult to follow the material that will be discussed at the next meeting. This happens because the problem presented with the mind mapping learning model is a problem that requires the ability to think high enough in the imagination, creativity and good communication so that generally those who can follow this learning model well are students who are smart and able to understand

CONCLUSION

Based on the research, it was concluded that the mind mapping learning model in the story problem is not effective in terms of the creative thinking ability of the XI grade students of the

Research and Technology Vocational School 2019/2020. Because the percentage of students who have good mathematical communication skills is 5.64%, the proportion of students who have good communication skills is less than 70%.

Based on the analysis of achievement data for students 'creative thinking ability indicators, it is known that the average achievement indicators for students' mathematical communication abilities that gain understanding of learning with mind mapping learning models on story problems based on statistics above are 34.46%. Communication indicators that are best achieved by students are making conjectures, compiling arguments, formulating definitions and generalizations, that is 38.42%.

Based on the above problems based on the results of the interview also with one of the students who caused this mind mapping to be ineffective to be applied to the example of a story problem through a mathematical communication process. Is the tension or reluctance of students to try forward and the process of extracting answers by the teacher concerned even though the teacher concerned is already so friendly in guiding students forward.

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