Romjanah, R., Nurimani, N., Arifannisa, A.
The Influence of the Improve Learning Model on …
DOI 10.37640/ice.02.860
In *Proceeding of International Conference on Education-02*, pages 100-103
ISSN 2964-7479
Copyright © 2023 Romjanah, Nurimani, Arifannisa

The Influence of the Improve Learning Model on the Ability to Understand Mathematical Probability Material

Romjanah*, Nurimani, Arifannisa
Mathematics Education, STKIP Kusuma Negara, Indonesia
*romjanah@stkipkusumanegara.ac.id

Abstract

Based on the discussion of research data regarding the influence of the improved learning model on the ability to understand mathematics on Probability material for class or stories about students' mathematical understanding abilities class XII student at SMK Attaqwa 05 Kebalen. Based on the results of the discussion in CHAPTER IV, the following conclusions can be drawn:1. The average of the experimental class is 76 and the average of the control class is 78. By using Chi Square it is found that the population is normally distributed. 2. There is an influence of the Improve learning model on students' mathematical understanding abilities in class XII of SMK Attaqwa 05 Kebalen for the 2021/2022 academic year.

Keyword: Learning Model, Comprehension Ability, Probability.

1 INTRODUCTION

Education is more than teaching, because teaching is a mere process of transferring knowledge, while education is a process for the younger generation to be able to live their lives and fulfill their life goals more effectively and efficiently. Education is the transformation of values and the formation of personality with all the aspects it covers (Herman et al., 2022).

Mathematics is a tool for developing ways of thinking logically (Kinard & Kozulin, 2006), therefore mathematics is a very important science and is very necessary both in everyday life and in the progress of the development of science and technology (Janah, Suyitno, & Rosyida, 2019; La'ia & Harefa, 2021), so mathematics really needs to be provided to every student from kindergarten to university level (Liwis, 2017; Faruq & Daliman, 2021). Because mathematics makes a good and meaningful contribution to the future.

Improve is a discussion learning model that includes 7 processes, namely: Introducing the new concepts, Metacognitive questioning, Practicing, Reviewing and reducing difficulties, Obtaining mastery, Verification and Enrichment. The Improve model is an innovative learning model in mathematics learning which is designed to help students develop various mathematics skills optimally and increase student activity in learning. What differentiates the Improve model from other models is that students are asked metacognitive questions while studying in groups. In learning with the improve model, students are also put in a situation to study in groups to solve existing problems. The group consists of heterogeneous students. This heterogeneous group learning situation can highlight interactions within the group such as questions and answers, exchanging opinions and debates between students. Apart from that, studying in groups can make students accept other students with different background abilities. This model can motivate students to be able to solve problems guided by the teacher in a step-by-step pattern so that it can improve students' mathematical understanding abilities. Based on the data above, it can

be concluded that the average score obtained by students has decreased. This can be seen from the average score of PH 1 to PH 3. It can be concluded that the students' lack of understanding of learning has experienced a decline.

So in this case, to be able to increase student success in achieving good results, it will be very closely related to the smoothness of the teaching and learning process at school, one of which is the role of a teacher in the classroom, because to be able to create a good and enjoyable learning process that can be liked by Student teachers must be professional and have competence and skills.

2 RESEARCH METHODS

In research methods there are: Research objectives, place and time of research, research methods, population, samples, and data collection techniques, research instruments, data analysis techniques and statistical hypotheses. Where in these sections there are various tests, including validity, reliability, normality tests, homogeneity tests, and hypothesis tests. All of this was calculated and then included in chapter IV and attached along with the conclusions of these calculations which were calculated using Microsoft Excel and manually.

The research method carried out by researchers is the experimental method. Experimental research is a research activity that aims to assess the influence of an educational treatment/action on student behavior or test a hypothesis about whether or not there is an influence of that action when compared with other actions. This experimental research refers to the research variables that the researcher conducted because the researcher will investigate whether there is an influence of the improved learning model on students' mathematical understanding abilities. This research was conducted in class XII at SMK Attaqwa 05 Kebalen, Indonesia.

3 RESULT AND DISCUSSION

Data from the research "The Effect of the Improve Learning Model on Class XII Mathematics Ability at SMK Attaqwa 05 Kebalen" is quantitative research. This research uses two independent variables and a dependent variable, namely an interconnection integration approach based on the Al-Qur'an (X) and mathematical understanding ability (Y).

The sample for this research was taken from the TKJ A class, totaling 32 students. To make it easier to analyze the data at the final stage, all data results were converted into a maximum score of 100 points. So the research data obtained is as follows. Instrument testing is an important first step before carrying out research. This question test was carried out to determine the quality of the instrument items that will be used in the research. A trial test of mathematical understanding ability consisting of 10 essay questions was carried out on students outside the research sample population. The test trial was carried out on class XII students at SMK Attaqwa 05 Kebalen.

After the trial was carried out, the data that had been obtained was then analyzed to find out whether each question item met the criteria to be used in this research. The tests used to analyze the data are validity tests and reliability tests. The validity test is used to determine whether essay test items are valid or not. Invalid essay test items are discarded and not used. The essay questions will be tested using a validity test and a reliability test. Based on the results of trials that have been carried out with the number of trial students, N=32 and a significance level of 5%, the r table is 0.349.

3.1 Data Results from Completing Story Questions for TKJ B class

After completing the validity and reliability test calculations on the essay question data, then proceed with calculating the scores using several formulas such as range, number of classes, class length, mean, median, mode and standard deviation by taking the scores

from the 8 questions that have been distributed to the TKJ B class. (Experimental class) and TKJ C class.

From the descriptive results related to scores in completing story questions in essay questions, it is known that there are 8 data in solving story essay questions that have been entered. The maximum and minimum values show the highest and lowest scores achieved by students, namely 80 and 64 respectively with a range of 15. And the results obtained are an average or mean score of 76, a median of 75, and a mode of 80 with a standard deviation (3.9). So from this data a frequency distribution is presented in Table 1.

Table 1. Frequency Distribution of Variable X

Interval	Midpoint	Frequency	Real boundary
64–66	65	1	63.5–66.5
67–69	68	0	66.5–69.5
70-72	71	8	69.5–72.5
73-75	74	11	72.5–75.5
76-78	77	5	75.5–78.5
79-81	80	13	78.5–81.5

3.2 Data Results Completing Story Questions for TKJ C class

From the descriptive results related to scores in completing story questions in essay questions, it is known that there are 10 data in solving story essay questions that have been entered. The maximum and minimum values show the highest and lowest scores achieved by students, namely 85 and 70 respectively with a range of 15. And the results obtained are an average or mean score of 78, a median of 80, and a mode of 80 with a standard deviation (3.87). So from this data a frequency distribution is presented in Table 2.

Tabel 2. Frequency Distribution of Variable Y

Interval	Midpoint	Frequency	Real boundary
70–72	71	6	69.5–72.5
73–75	74	6	72.5–75.5
76–78	77	5	75.5–78.5
79–81	80	19	78.5–81.5
82–84	83	2	81.5–84.5
85–87	86	1	84.5–87.5

3.3 Data analysis results

Based on analysis of calculation data on the ability to understand mathematics in solving essay or story questions. Next, by comparing F_{count}=1.02 with F_{table}=4.11 and it turns out that F_{count}=1.02<F_{table}=4.11) and has a significance level of 0.000<0.05. This shows that there is a simultaneous influence between the influence of the improved learning model and the ability to understand mathematics in solving essay or story questions for class XII students at SMK Attaqwa 05 Kebalen.

The complete calculation of the normality test data for mathematical understanding ability in solving essay or story questions can be seen in the attachment. There is a summary of the normality test results for each variable with a mean value=75.57, standard deviation=3.9 with sample size=38 students.

So, from the calculation results for data on mathematical understanding ability (XII) for TKJ B class, it was obtained that L_{count}=0.8668, while the significance level was α=0.05 and L_{table}=0.886. Because L_{count}=0.8668<L_{table}=0.886), it can be concluded that the data on mathematical understanding ability comes from a normally distributed population.

Meanwhile, the normality test using the Lilliefors method in TKJ C class is with a mean value=77.6, standard deviation=3.87 with a total sample size=39 students. So, from the calculation results for data on mathematical understanding ability (XII) for TKJ C class, it was obtained that L_{count}=0.8420, while the significance level was α=0.05 and L_{table}=0.886.

Because L_{count}=0.8420<L_{table}=0.886, it can be concluded that the data on mathematical understanding ability comes from a normally distributed population.

4 CONCLUSION

Based on the discussion of research data regarding the influence of the improved learning model on the ability to understand mathematics on Probability material for class or a story about the mathematical understanding abilities of class XII students at SMK Attaqwa 05 Kebalen. Based on the results of the discussion in CHAPTER IV, the following conclusions can be drawn: (a) The average for the experimental class is 76 and for the control class the average is 78, by using Chi Square it is found that the population is normally distributed; (b) There is an influence of the Improve learning model on students' mathematical understanding abilities in class XII of SMK Attaqwa 05 Kebalen for the 2021/2022 academic year.

5 REFERENCES

Faruq, F., & Daliman, D. (2021). Pelatihan Self Regulated Learning untuk Meningkatkan Prestasi Matematika Siswa SMP. *Abdimas Dewantara*, *4*(2), 38-49.

Herman, H., Purba, R., Silalahi, D. E., Sinaga, J. A. B., Sinaga, Y. K., Panjaitan, M. B., & Purba, L. (2022). The Role of Formal Education in Shaping Students' Character at SMK Swasta Teladan Tanah Jawa: A Case on Character Education. *Abdi Dosen: Jurnal Pengabdian Pada Masyarakat*, *6*(3), 772-776.

Janah, S. R., Suyitno, H., & Rosyida, I. (2019, February). Pentingnya literasi matematika dan berpikir kritis matematis dalam menghadapi abad ke-21. In *PRISMA, Prosiding Seminar Nasional Matematika* (Vol. 2, pp. 905-910).

Kinard, J. T., & Kozulin, A. (2006). Creating rigorous mathematical thinking: a dynamic that drives mathematics and science conceptual development. *Transsylvanian Journal of Psychology-Erdély Pszichológiai Szemle, Special issue Vol. Supplement 2006, part*, *2*, 251-266.

La'ia, H. T., & Harefa, D. (2021). Hubungan Kemampuan Pemecahan Masalah Matematis dengan Kemampuan Komunikasi Matematik Siswa. *Aksara: Jurnal Ilmu Pendidikan Nonformal*, *7*(2), 463-474.

Liwis, N. W. N. (2017). Pengaruh Model Pembelajaran Matematika Realistik Terhadap Kemampuan Mengenal Konsep Bilangan Pada Anak Kelompok A Taman Kanak-Kanak Gugus V Kecamatan Buleleng Gugus V Kecamatan Buleleng Tahun Ajaran 2016/2017. *Jurnal Pendidikan Anak Usia Dini Undiksha*, *5*(1), 116-126.