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The Effect of the CORE Learning Model on Students' Mathematical Connection Ability in terms of Their Preliminary Knowledge in Mathematics

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Calista Rahmadhani[1], Syamsuri Syamsuri[2*], Cecep Anwar Hadi Firdos Santosa[3]

[1,2,3]Department of Mathematics Education, Faculty of Teacher Training and Education,

Universitas Sultan Ageng Tirtayasa, Serang, Indonesia

Correspondence Email: *syamsuri@untirta.ac.id

Abstract

This study aimed to explain the effect of CORE (connecting, organizing, reflecting, and expanding) learning with a metacognitive approach on students' mathematical connections in terms of preliminary knowledge in mathematics (PKM). The method in this study used a quasi-experimental with a posttest-only control group design. The population in this study consisted of all students at one of junior high schools in Indonesia. The sample was divided into two types: class VIII A as an experimental class with 13 students and class VIII B as a control class with 14 students. The instruments used in this study were essay tests to measure students' mathematical connection abilities and interview guidelines. Data analysis was performed by analysis of covariance. This study's results indicate a linear relationship between PKM and mathematical connection abilities. There is an effect of PKM on students' mathematical connection abilities. There is a simultaneous effect between PKM and the learning model; in other words, there is an interaction between PKM and the learning model. The CORE learning model with a metacognitive approach is more suitable for high PKM, and the scientific model is more suitable for low PKM.

Keywords: CORE learning model, Preliminary knowledge in mathematics, Mathematical connection

INTRODUCTION

Mathematical connection ability is an aspect that needs to be developed by students in learning school mathematics. This is because this ability plays a role in connecting mathematical concepts in everyday life. Rosdiana (2021) states that in his research, students with low mathematical connection skills will need help recognizing and applying mathematics to contexts outside of mathematics, namely its application in everyday life. Mathematical connection skills for students associating mathematical concepts related to mathematics and everyday life.

Based on the findings from the preliminary study at the school where the research was carried out, it was also shown that there was the low level of mathematical connection ability in solving problems at SMP Global Indonesia. For example, in answering the following question: "*The perimeter of a square is 32 cm. Find the length of its diagonal*", some students answered incorrectly. The problem is related to the ability to make mathematical connections because, to solve this problem, students must connect two mathematical concepts, namely the concept of the circumference of a square and the concept of the Pythagorean theorem. Therefore, there is a need for learning innovations to practice this mathematical connection ability. One of them is through the CORE learning model.

The CORE (Connecting, Organizing, Reflecting, Extending) learning model is an alternative learning model for students' thinking skills that can assist students in connecting, organizing, exploring, managing, and developing the information obtained. This model emphasizes thinking activities for students, especially in linking mathematical concepts. According to Calfee et al (2010), the CORE learning model combines four essential elements in increasing understanding of connecting mathematical topics and between mathematical topics with other science topics or in everyday life, providing opportunities for students to be able to reflect on their knowledge, as well as providing opportunities for participants to develop and broaden their knowledge.

The connecting phase is the stage of connecting newly acquired knowledge with previously acquired knowledge. In this phase, the discussion activity is the first step that determines the connection to learning. To participate in the discussion, students will remember information and use previously acquired knowledge to connect, construct, or organize an idea (Ary et al., 2017).

The organizing phase is the stage where students organize the knowledge or information they obtain (Fisher et al.., 2017). This stage is carried out by gathering facts and organizing old information and knowledge into a new form of understanding. Students can discuss this activity (Bruning et al., 2011).

The reflecting phase is the stage where students think more deeply about the concept being studied. In this case, metacognition and self-evaluation are needed, which are the core of all phases in the CORE learning model. The reflecting phase is the most prominent in the CORE learning model. This stage will be the last opportunity for students to re-examine mistakes and confirm the answers that have been determined (Miller & Calfee, 2004).

In the extending phase, it is the stage for students to expand the knowledge they have acquired during the learning process (Fisher et al., 2017). In this stage, students will actively communicate ideas, opinions, and responses so that they become new ideas for them.

According to Nurvita et al (2019), learning mathematics should be something that makes students active so that it is no longer a boring subject. Students must be able to realize their cognitive structures related to procedural. The awareness of students related to their procedural knowledge is a component of metacognition knowledge.

Metacognition is a term introduced by Flavell in 1976. According to Özsoy & Ataman (2017), metacognition is a person's awareness of the thought process and ability to control that process. According to Flavell (1929), metacognition includes two dimensions: (1) metacognitive knowledge and (2) metacognitive experience or regulation. Metacognitive knowledge refers to the knowledge of everyone to learn and process information and individual knowledge about their learning process.

This is supported by Rivai (2018), which states that teachers must be able to raise students' awareness when carrying out learning activities so that students do not only do something but must also understand why the activity is carried out, namely by using a metacognitive approach. The metacognitive approach helps students to be able to design, monitor, and evaluate learning activities so that more meaningful learning can occur. This aligns with the opinion of Meyer et al (2002) that more active learning is needed by using metacognitive procedures for learning.

Some of the results of research on the CORE learning model with metacognitive skills include the research by Ningsih et al (2021), where the CORE learning model with a metacognitive skills approach to learning mathematics has an effect. Furthermore, research from Sa'adah et al (2017) states that learning outcomes using the CORE model through a practical metacognitive approach.

Other factors can affect the ability of mathematical connections, one of which is the mathematical initial ability (PKM). According to Caillies et al (2002), not a few students understand lessons depending on initial abilities that provide memories for students to find the information they need and when they need it. Students with good initial mathematical abilities are predicted to have sufficient knowledge to strengthen the mathematical concepts to be studied because, in their learning, mathematics is interrelated with one another. Purnamasari & Setiawan (2019) state that students with good initial abilities will also acquire good new knowledge.

METHOD

This study used a quantitative approach and the research method used in this study is quasi-experimental. In the experimental group, the CORE learning model was applied with a metacognitive approach; in the control group, a scientific learning model was applied with the same number of study hours. Furthermore, the same learning outcomes test was carried out in the two class groups. The test results of the two groups were tested statistically to see if differences occurred because of the treatment, namely the CORE learning model with a metacognitive approach.

In this study, the formation of new classes was not carried out, which would likely cause lesson schedules to change and disrupt learning at school. Therefore, in this class, the researcher was divided into two groups, each randomly selected. During the study, the first group was given treatment, and the second group was not given treatment. The group that was given the treatment was used as the experimental group and the group that was not given the treatment was used as the control group.

The population in this study were all students at a Junior High School in Indonesia for the 2022–2023 academic year. The sample is part of, or representative of the population being studied. The sample in this study was selected from two classes with the same initial ability as two classes VIII by purposive sampling; the sampling technique was carried out according to the desired. This is based on school rules and approval to conduct research in class VIII. The selection of the experimental and control classes is done by choosing randomly from the existing classes. This is because the researcher cannot form a new class so the sample units are chosen based on the class. The two classes were chosen as the experimental and control classes, with 13 students for the experimental and 14 students for the control classes. Students' initial mathematical abilities are obtained based on their mid-semester scores in mathematics.

To support the purposes of analyzing this research data, researchers need several supporting data that come from inside and outside class VIII SMP Global Indonesia. The data collection technique is adjusted to the type of data taken as a document study; the test method is the mathematical connection ability test instrument.

Before data analysis, prerequisite analysis tests were first carried out: the normality test, the homogeneity test, the linear regression coefficient homogeneity test, and the Ancova test. The purpose of Ancova is to determine the effect of treatment on the response variable by controlling for other quantitative variables. In this case, the CORE learning model uses a metacognitive approach as the independent variable, mathematical connection ability as the dependent variable, and PKM as the control variable.

RESULTS AND DISCUSSION

In this study, students' PKM is the ability possessed by students before the research is carried out. PKM is obtained based on the results of mid-semester scores in mathematics. Table 1 presents descriptive statistics on the overall PKM.

Table 1. Descriptive Statistics PKM

Data	Experimental Class PKM	Control Class PKM
Number of Students	13	14
Average	70.69	71.50
Smallest Score	58	52
Highest Score	85	85
Standar Deviation	9.06	9.44

Before testing the hypothesis, the normality and homogeneity tests were carried out, and the t-test or non-parametric test was carried out. The statistical analysis results for PKM's normality test are shown in Table 2.

Table 2. Normality Test of PKM

Class	Kolmogorov Smirnov		
	Statistics	df	Sig.
PKM Experimental class	0.15	13	0.20
PKM Control class	0.13	14	0.20

The result of the homogeneity test is shown in Table 3.

Table 3. The Homogeneity Test

Levene Statistic	df1	df2	Sig.	Description
0.001	1	25	0.97	H_0 accepted

Based on Table 1 and Table 3, it shows that the PKM data is normal and homogeneous. Furthermore, it was tested whether there was a difference in PKM between the control class and the experimental class using the t-test. The test results obtained that the value of t = 0.226 and sig.=0.82, and so it shows that both classes are the same in terms of PKM. Descriptive statistics for mathematical connection ability are shown in Table 4.

Table 4. Descriptive Statistics Mathematical Connection Ability (MCA)

Data	Posttest Experimental Class (CORE metacognitive approach)	Posttest Control Class(Scientific)
Number of students	13	14
Average	75.54	72.07
Smallest Score	62	50
Highest Score	90	90
Standar Deviation	9.62	13.43

Before testing the hypothesis, the normality and homogeneity tests were carried out, and the t-test or non-parametric test was carried out. The statistical analysis results for MCA's normality test are shown in Table 5.

Table 5. Descriptive Statistics Normality Test MCA

Class	Kolmogorov Smirnov		
	Statistics	Df	Sig.
Posttest Experimental Class	0.17	13	0.20
Posttest Control Class	0.11	14	0.20

Besides that, the homogeneity test results using the Levene statistic obtained a significance value of 0.13. Therefore, the post-test results of students' mathematical connection abilities are homogeneous because the significance value of 0.13 is greater than the 0.05

significance level. After using the data variance homogeneity test, a covariate linearity test will be carried out.

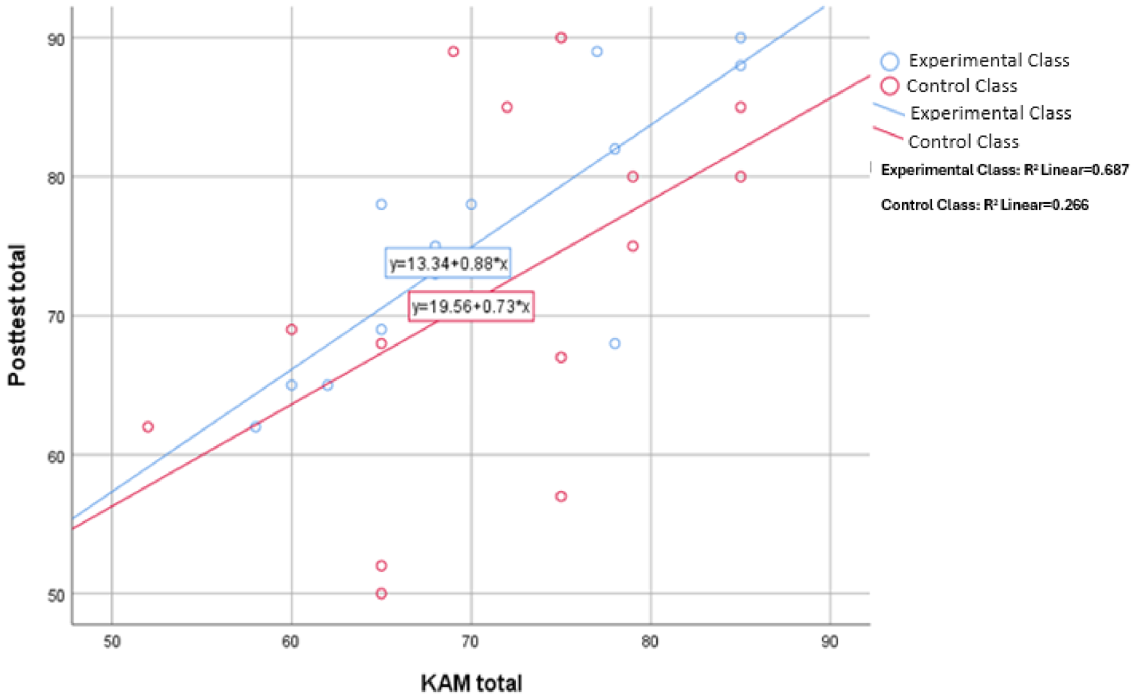

Figure 1. Regression Linearity

Based on Figure 1, the scatter plot shows a tendency for a straight-line pattern (linear), so it can be concluded that there is a significant linear relationship between PKM and MCA in the experimental and control classes. In the experimental class, the regressions MCA and PKM is MCA = 13.34 + 0.88 PKM. The coefficient of determination (*R square*) of 0.687 means that PKM has a 68.7% influence on the mathematical connection ability of the experimental class, and the other 31.3% is influenced by other factors outside of PKM. The Anova test for experimental class as can be seen in Table 6.

Table 6. Anova Test for Experimental Class

Model		Sum of Squares	Dk	Average squared	F	Sig.
1	Regression	763.797	1	763.797	24.182	0.000
	Residual	347.434	11	31.585		
	Amount	1111.231	12			

The regression equation can be written based on the Table 6, where the constant value (a) is 13.34 and the experimental PKM value (b) is 0.88. The positive regression coefficient indicates that there is an influence of PKM on the mathematical connection ability of the experimental class students.

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In the control class the regressions MCA and PKM is MCA = 19.56 + 0.73 PKM. The coefficient of determination (*R square*) of 0.266 means that PKM has a 26.6% influence on the mathematical connection ability of the experimental class, and the other 73.4% is influenced by other factors outside of PKM. The Anova test for control class as can be seen in Table 7.

Table 7. Anova Test for Control Class

Model		Sum of Squares	Dk	Average squared	F	Sig.
1	Regression	625.315	1	625.315	4.359	0.05
	Residual	1721.614	12	143.468		
	Amount	2346.929	13			

The constant value (a) is 19.56, and the experimental PKM value (b) is 0.73. The positive regression coefficient indicates that there is an influence of PKM on the mathematical connection ability of the control class students. Furthermore, hypothesis testing was carried out using the analysis of covariance technique to test the comparison between PKM classes. The Ancova analysis as can be seen in Table 8.

Table 8. Ancova Analysis

Source	**Type III Sum Squared**	**Df**	**Mean Squared**	**F**	**Sig.**
Corrected model	1458.86	2	729.43	8.41	0.002
Intercept	118,55	1	118.55	1.36	0.254
PKM	13777.83	1	13777.83	15.89	0.001
Class	113.86	1	113.86	1.31	0.263
Error	2080.32	24	86.68		
Total	150357.00	27			
Corrected total	3539.18	26			

Based on Table 8, the significance number is 0.002 which is smaller than the value of Sig. 0.05 then the null hypothesis is rejected. This means that at the 95% confidence level, it can be said that there is a linear relationship between PKM and mathematical connection skills. This statement indicates that the Ancova assumption has been met. In addition, the significance value for the experimental class and control class or class with the CORE learning model with metacognitive approach and scientific learning is 0.263. That is, if the significance value is more than 0.05 then the null hypothesis is accepted. It can be concluded that there is no difference between mathematical connection ability in the experimental class and the control class.

If we look at the corrected model row, we can see that the significance value is 0.002. This means that the significance value is smaller than 0.05, so the null hypothesis is rejected. It can be concluded that at the 95% confidence level, there is a simultaneous effect between PKM and the learning model. In other words, there is an interaction between PKM and the learning model. At relatively low PKM, students' MCA in the experimental class is lower than in the control class. However, on the contrary, at relatively high PKM, the MCA of students in the experimental class is higher than that of the control class. In this case, it shows that the CORE learning model with a metacognitive approach is more suitable for high PKM, and the scientific model is more suitable for low PKM.

Based on the research described earlier, it was obtained that the average mathematical connection ability of students in the experimental class had increased. This indicates that the CORE learning model with a metacognitive approach provides opportunities for students to develop mathematical connection skills. This is supported by the opinion of Miller & Calfee (2004), who proposed a learning model that uses the discussion method, which can influence the development of knowledge by involving students, called the CORE model, which stands for four words that have a unified function in the learning process (*connecting*, *organizing, reflecting, and expanding).* Furthermore, Harmsen et al (2005) stated that these elements connect old information with new information, organize various materials, reflect on everything students learn, and develop a learning environment.

The metacognitive relates to one's knowledge of one's thinking processes. Metacognition helps students connect their understanding of their knowledge by knowing their weaknesses and strengths, knowing what to do, and in what way or strategy to do it. Metacognitive regulation comes from cognitive knowledge and experience. Metacognitive knowledge refers to knowledge of how an individual learns and processes information and individual knowledge of his learning process, so it is known to be metacognitive as knowledge of cognitive and metacognitive strategies and conditional knowledge of when and how to use an appropriate strategy.

Metacognition can also be interpreted as one's knowledge and beliefs about one's cognitive processes and the efforts that a person makes to manage these cognitive processes to maximize learning and memory. It can be concluded that the CORE model with a metacognitive approach is learning that invites students to be directly involved in exploring, exploring, developing, expanding, using, and finding the results of the material being studied so that students will easily remember the material they are studying.

Furthermore, it was also explained that CORE learning with a metacognitive approach tends to show positive responses. This is supported by the learning theory of *Piaget.* Ibda (2015) said that *Piaget* assumes that there is a network (abstract) in mind and that concepts such as dots and concepts that are related or have lines connect parts in common. This network of concepts is called a schema. Each new knowledge stimulus will be captured and matched with the concepts in the schema to look for similarities. This process is called assimilation. If it turns out that the stimulus is not related to an existing concept, then a new concept is added to the schema. This process is called accommodation. If a student can tell the equation (*assimilation*) and difference (*accommodation*) about two or more concepts, then it is said to be at the level of balance. If it is associated with mathematical connection abilities, students at this stage can relate concepts in mathematics and outside mathematics.

The learning theory of *Piaget* states that knowledge is not only transferred verbally but must also be constructed and reconstructed by students. In realizing this theory, students should be active in learning. Hence, *Piaget* theory supports this research because students are encouraged to be active in the CORE learning model with a metacognitive approach. In addition, in the CORE learning model with a metacognitive approach, there is a connecting stage, which refers to associating the new concept with the previous concept. When referring to the theory *Piaget,* this process occurs in stages of assimilation. Level reflecting refers to the level accommodation, while stage extending refers to the level balance.

In addition, they were learning with the CORE model with meaningful learning. The learning in this case, is facilitated at the stage of reflecting, extending, linking, and applying the concepts learned in the previous stage. Based on the theory, according to Miller & Calfee (2004), the CORE learning model with a metacognitive approach guides students in understanding a concept by connecting each piece of knowledge they have and organizing what they already know. Hence, they understand every step in understanding the concept. With this guide, students will be helped when solving questions so that they are expected to maximize learning outcomes. However, the application of the CORE learning model with a metacognitive approach in this study has several obstacles where there are still students who are less focused during the learning process in class, and because this research has just been carried out in a structured manner, students must adapt more to following slightly different learning styles. Usually, what happens in the experimental class.

Other factors that influenced this research included the research time, which had to ask for additional study time because of the many agendas at school and the existence of school examination schedules for grade 9, which had an impact on students' study hours at school and made the environment not conducive so that adjustments were needed to carry out learning. Under ideal conditions, this should be facilitated at the stage of *connection,* which, according to Siregar et al (2018), Lestari & Yudhanegara (2017), and Al Humaira (2014) state that it provides space for students to link old knowledge with new knowledge and associate knowledge with real life. *Connecting* refers to connections between old and new information between topics and mathematical concepts, connections between other disciplines, and connections to everyday life. At stage connecting, new information students receive relates to what was previously known. This allows stages of connection when core learning cannot be maximized. A person's memory can decrease rapidly after a specific time interval, causing them to forget. In addition, according to Soesilo (2013), forgetting can be caused by interference. Interference is usually stored in memory due to the amount of new information. Long-term lags allow more and more information other than learning mathematics to enter the student's memory. This explains why the configuration of time-related learning at school can affect student learning outcomes.

Students' initial ability is a prerequisite for participating in learning so that they can carry out the learning process properly. A person's ability gained from training during his life and what he brings to face a new experience. Initial ability is also the main factor that will influence the learning experience for students, and initial knowledge has a very important role in increasing the meaning of teaching (Astuti, 2015). Learning that is oriented toward initial abilities will have an impact on the process and acquisition of adequate learning. According to constructivist views, meaningful learning can be realized by providing opportunities for students to select contextual facts and integrate them into students' initial abilities. When the negotiation of meaning takes place, the information received changes slowly from the general context to the specific context of the field of knowledge and is then linked with a variety of imaginary activities or events that will spur to continue to seek and find. Student abilities achieved through learning, understanding, and meaningfulness processes can be realized by students in various forms of learning acquisition (Brahmantara et al, 2013).

In this study, PKM in both classes was in the same condition. In addition, participating in learning is also caused by two factors, namely internal factors originating from within the students themselves, such as low motivation and student interest in participating in learning, so that they can influence the implementation of learning and student learning outcomes. In addition to motivational factors, other influencing factors are environmental factors, such as a less conducive learning environment, which causes students to be distracted from participating in the learning process. These factors influenced student learning outcomes in this study.

Data processing through the Ancova analysis to determine the effect of the experimental class and control class learning models on the ability of mathematical connections obtained a significance value of 0.263, more significant than 0.05, so there is no difference between mathematical connection abilities in the experimental class and the control class. Furthermore, to determine the effect of PKM on the ability of mathematical connections, a significance value of 0.001 was obtained, which was less than 0.05, so that PKM influences students' mathematical connection abilities. There is a linear relationship between PKM and mathematical connection abilities. To compare PKM between classes with mathematical connection abilities, when viewed from the corrected model, the significance value is 0.002 less than 0.05, so H0 is rejected to conclude that there is a simultaneous influence between PKM and the learning model. In another sense, there is an interaction between PKM and the learning model. At a relatively low PKM, students' mathematical connection abilities in the experimental class were lower than in the control class. However, on the contrary, in the relatively high PKM, students' mathematical connection abilities in the experimental class were higher than in the control class. In this case, the CORE learning model with a metacognitive approach is more suitable for high PKM, and the scientific model is more suitable for low PKM.

Learning outcomes using assessment can be seen from the value obtained from the test instrument. Regarding student activities during the learning process, applying the CORE learning model with a metacognitive approach and learning using a scientific approach. The t-test found that the PKM in the control and experimental classes was in the same initial conditions as the P-value, which is 3.569 more than 0.05. After students were given the CORE learning model with a metacognitive approach and a scientific learning model, there was an increase in student scores. The increase in the average student is also due to students' understanding and mastery of the material, which has begun to increase.

This is in line with the research of Trihasari et al (2019), which shows a linear influence of the initial ability covariate on the final problem-solving ability following the learning model *of problem-based learning* with a scientific approach. After students were given the treatment of learning models, there was an increase in student scores, so there were differences in students' mathematical abilities after being given the treatment of conventional learning and learning models after controlling for students' initial mathematical abilities (Widada et al, 2019c), (Widada et al., 201a) and (Widada et al., 2019bb). Based on this description, the influence of the linear covariate of students' initial abilities on students' mathematical connection abilities indicates that students' initial abilities must always be used as a basis for preparing mathematics learning plans.

The success of this research is supported by one of the most important reasons regarding the CORE learning model with a metacognitive approach, which is one of the learning models based on constructivism. Viewed from the perspective of student learning interests, the CORE model of learning with a metacognitive approach provides optimal flexibility for students to develop and practice mathematical connection abilities to affect mathematical connection abilities directly. This is in line with Umbara (2017), who states that according to constructivism theory, the basis for students acquiring knowledge is the students' activeness with the help of cognitive structures. With the help of these cognitive structures, students gain their knowledge through interaction with their environment.

Vygotsky's learning theory emphasizes the importance of utilizing the environment in learning. Vygotsky's learning theory focuses on education that develops cooperative learning models, peer-interaction models, group learning models, and problem-solving learning models. So, in this study, the CORE learning model with a metacognitive approach and a scientific learning model are carried out in groups that can help students in their constructivist understanding.

The results of the hypothesis show that without PKM, there is no effect of differences in the metacognitive approach CORE learning model and the scientific learning model on mathematical connection abilities. This is in line with the research of Tusitadevi & Astuti (2021) and Dewi & Wardani (2021), which shows that problem-based learning and problem-solving influences critical thinking skills. Based on the description, researchers can conclude that applying the metacognitive CORE learning model to scientific learning has an effect and a linear relationship to students' mathematical connection abilities in terms of PKM.

CONCLUSION

We can conclude that there is no difference between the ability of mathematical connections in the experimental class and the control class, there is an influence of PKM on students' mathematical connection ability, and there is a simultaneous influence between PKM and the learning model; in other words, there is an interaction between PKM and the learning model. At a relatively low PKM, students' mathematical connection abilities in the experimental class were lower than in the control class. However, on the contrary, with the relatively high PKM, the mathematical connection ability of students in the experimental class is higher than that of the control class, so the CORE learning model with a metacognitive approach is more suitable for high PKM and the scientific model is more suitable for low PKM.

SUGGESTIONS

Other researchers, can develop further research regarding the simultaneous effect of PKM and learning models, which shows that there is an interaction between PKM and learning models with different research methods, which shows that high PKM is more suitable for CORE learning models with a metacognitive approach and low PKM is more suitable for scientific approach.

REFERENCES

Ary, D., Jacobs, L. C., Sorensen, C., & Razavieh, A. (2017). Introduction to Research in Education. In *Jurnal IlPKMh Matematika* (Vol. 21, Issue 2).

Astuti, S. P. (2015). Pengaruh Kemampuan Awal dan Minat Belajar terhadap Prestasi Belajar Fisika. *Formatif: Jurnal IlPKMh Pendidikan MIPA*, *5*(1), 68–75. https://doi.org/10.30998/formatif.v5i1.167

Brahmantara, I. B. G., Santyasa, I. W., & Tegeh, I. M. (2013). Pengetahuan Awal Untuk Mata Pelajaran Fotografi Bagi Siswa Kelas X Smk Ti Bali Global Singaraja. *E-Journal Program Pascasarjana Universitas Pendidikan Ganesha*, *3*(6), 10.

Bruning, R. ., Schraw, G. ., & Norby, M. . (2011). Congnitive Psychology and Instruction. *Boston: Pearson Education*. https://doi.org/10.4324/9781315802480

Caillies, S., Denhière, G., & Kintsch, W. (2002). The effect of prior knowledge on understanding from text: Evidence from primed recognition. *European Journal of Cognitive Psychology*, *14*(2), 267–286. https://doi.org/10.1080/09541440143000069

Calfee, R. C., Curwen, M. S., Miller, R. G., & White-smith, K. a. (2010). Increasing Teachers ' Metacognition Develops Students ' Higher Learning during Content Area Literacy Instruction : Findings from the Read-Write Cycle Project. *Issues in Teacher Education*, *19*(2), 127–151.

Dewi, W. A. F., & Wardani, K. W. (2021). Meta Analisis Efektivitas Model Pembelajaran Inquiry dan Problem Based Learning Terhadap Kemampuan Berpikir Kritis Matematis Siswa Sekolah Dasar. *Jurnal Basicedu*, *5*(3), 1683–1688.

Fisher, D., Yaniawati, P., & Kusumah, Y. S. (2017). The use of CORE model by metacognitive skill approach in developing characters junior high school students. *AIP Conference Proceedings*, *1868*. https://doi.org/10.1063/1.4995137

Flavell, J. H. (1929). Metacognition and Cognitive Monitoring. *Notes and Queries*, *157*(DEC14), 424. https://doi.org/10.1093/nq/CLVII.dec14.424-a

Harmsen, H., Bernsen, R., Meeuwesen, L., Thomas, S., Dorrenboom, G., Pinto, D., & Bruijnzeels, M. (2005). The effect of educational intervention on intercultural communication: Results of a randomised controlled trial. *British Journal of General Practice*, *55*(514), 343–350.

Al Humaira, F. (2014). Penerapan model pembelajaran core pada pembelajaran matematika siswa kelas X SMAN 9 padang. *Jurnal Pendidikan Matematika*, *3*(1).

Ibda, F. (2015). Perkembangan kognitif: teori jean piaget. *Intelektualita*, *3*(1), 27–37.

Lestari, K. E., & Yudhanegara, M. R. (2017). Analisis Kemampuan Representasi Matematis Mahasiswa pada Mata Kuliah Geometri Transformasi Berdasarkan Latar Belakang Pendidikan Menengah. *Jurnal Matematika Integratif*, *13*(1), 29.

https://doi.org/10.24198/jmi.v13i1.11410

Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior*, *61*(1), 20–52. https://doi.org/10.1006/jvbe.2001.1842

Miller, R. G., & Calfee, R. C. (2004). Making Thinking Visible: A Method to Encourage Science Writing in Upper Elementary Grades. *National Science Teachers Association*, *42*(3), 20–25.

Ningsih, E. F., Lestari, I., & Khotimah. (2021). *Penerapan Model Core Dengan Pendekatan Metakognitif Terhadap Kemampuan Berpikir Kritis Matematis*. *2*(2), 38–47.

Nurvita, Sinaga, B., & Mukhtar. (2019). *Analisis Kesulitan Metakognisi dan Koneksi Matematis Siswa Dengan Menggunakan Model Pembelajaran Kooperatif Tipe Jigsaw Di SMPN 1 Lawe Bulan Aceh Tenggara*. 1–6.

Özsoy, G., & Ataman, A. (2017). The effect of metacognitive strategy training on mathematical problem-solving achievement. *International Electronic Journal of Environmental Education*, *1*(2), 67–82.

Purnamasari, I., & Setiawan, W. (2019). Analisis Kemampuan Pemecahan Masalah Matematis Siswa SMP pada Materi SPLDV Ditinjau dari Kemampuan Awal Matematika. *Journal of Medives : Journal of Mathematics Education IKIP Veteran Semarang*, *3*(2), 207. https://doi.org/10.31331/medivesveteran.v3i2.771

Rivai, E. (2018). Meningkatkan Kemampuan Representasi Matematis Pada Materi Integral Luas Siswa Kelas XII Tek A SMK Negeri 1 Cimahi Menggunakan Pendekatan Metakognitif. *Jurnal IlPKMh P2M STKIP Siliwangi P2M STKIP Siliwangi*, *5*(2), 1–6.

Rosdiana. (2021). *Analisis Kemampuan Koneksi Matematis Siswa Smp Kelas Viii Pada Materi Spldv Smp Negeri 2 Alla*. *February*, 6.

Sa'adah, D., Masrukan, & Kuniasih, A. W. (2017). Pengembangan Perangkat Ajar Model CORE Pendekatan Metakognitif untuk Meningkatkan Kemampuan Pemecahan Masalah Geometri Kelas VIII. *Jurnal Edumath*, *3*(1), 15–27.

Siregar, N. A. R., Deniyanti, P., & Hakim, L. El. (2018). Pengaruh Model Pembelajaran CORE Terhadap Kemampuan Berpikir Kritis Dan Disposisi Matematis Ditinjau Dari Kemampuan Awal Matematika Siswa Sma Negeri Di Jakarta Timur. *Jurnal Penelitian Dan Pembelajaran Matematika*, *11*(1). https://doi.org/10.30870/jppm.v11i1.2997

Soesilo, T. D. (2013). *BOOK_Tritjahjo Danny_Psikologi Pendidikan_Judul.pdf*.

Trihasari, S., Haji, S., & Provinsi Bengkulu, S. K. (2019). Pengaruh Model Problem Based Learning dengan Pendekatan Saintifik Terhadap Kemampuan Pemecahan Masalah Siswa Kelas X SMA Kota Bengkulu. *Jurnal Pendidikan Matematika Raflesia*, *4*(2), 94–102.

Tusitadevi, R. S., & Astuti, S. (2021). Meta Analisis Efektivitas Model Pembelajaran Problem Based Learning dan Problem Solving Terhadap Kemampuan Berpikir Kritis pada Mata

Pelajaran Matematika Kelas V. *Inventa*, *5*(1), 1–15. https://doi.org/10.36456/inventa.5.1.a3528

Umbara, U. (2017). Implikasi Teori Belajar Konstruktivisme dalam Pembelajaran Matematika. *Jurnal Matematika IlPKMh STKIP Muhammadiyah Kuningan*, *3*(8), 31–38.

Widada, W., Agustina, A., Serlis, S., Dinata, B. M., & Hasari, S. T. (2019a). The abstraction ability of students in understanding the concept of geometry. *Journal of Physics: Conference Series*, *1318*(1). https://doi.org/10.1088/1742-6596/1318/1/012082

Widada, W., Herawaty, D., Mundana, P., Agustina, M., Putri, F. R., & Anggoro, A. F. D. (2019b). The REACT strategy and discovery learning to improve mathematical problem solving ability. *Journal of Physics: Conference Series*, *1318*(1). https://doi.org/10.1088/1742-6596/1318/1/012081

Widada, W., Nugroho, K. U. Z., Sari, W. P., & Pambudi, G. A. (2019c). The ability of mathematical representation through realistic mathematics learning based on ethnomathematics. *Journal of Physics: Conference Series*, *1318*(1). https://doi.org/10.1088/1742-6596/1318/1/012073