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The Effect of Mindmapping-Based Lecture Methods Assisted by Crossword Puzzles on Short Term Memory in View of Students' Visual Type Learning Styles in Class VII Civics Subjects at SMPN 1 Boyolangu

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Abstract: The Effect of the Mindmapping-based Lecture Method assisted by Crosswords on Short Term Memory in terms of the Visual Type Learning Styles of students in Civics Class VII Subject at SMPN 1 Boyolangu. This research began with observations of the application of the lecture method carried out by PPKn teachers at SMPN 1 Boyolangu which was considered conventional and not in accordance with the development of today's students. This research aims to develop a variation of the lecture method by combining mindmapping techniques and using crossword puzzles as an evaluation standard, with a focus on students' visual learning styles. The research method used was Pre-Experimental Design, One Shot Case Study type, involving 76 students of class VII A and B of SMPN 1 Boyolangu as samples. The results of the research show that the application of the mindmapping-based lecture method with crossword puzzles has a positive influence on students' short-term memory simultaneously and partially. In conclusion, this method can increase students' enthusiasm for learning and memory skills in the context of learning Civics subjects.

Keywords: Visual learning style, Mindmapping, Short term memory, Crossword puzzle

Abstrak: Pengaruh Metode Ceramah berbasis Mindmapping berbantuan Teka-teki silang terhadap *Short Term Memory* ditinjau dari Gaya Belajar tipe Visual siswa pada Mata Pelajaran PPKn kelas VII di SMPN 1 Boyolangu. Penelitian ini bermula dari observasi penerapan metode ceramah yang dilakukan guru PPKn di SMPN 1 Boyolangu yang dinilai konvensional dan tidak sesuai dengan perkembangan siswa masa kini. Penelitian ini bertujuan untuk mengembangkan variasi metode ceramah dengan menggabungkan teknik mindmapping dan menggunakan teka-teki silang sebagai standar evaluasi, dengan fokus pada gaya belajar visual siswa. Metode penelitian yang digunakan adalah Pre-Experimental Design, tipe One Shot Case Study, dengan melibatkan 76 siswa kelas VII A dan B SMPN 1 Boyolangu sebagai sampel. Hasil penelitian menunjukkan bahwa penerapan metode ceramah berbasis mindmapping dengan teka-teki silang memberikan pengaruh positif terhadap memori jangka pendek siswa secara simultan dan parsial. Kesimpulannya, metode ini dapat meningkatkan semangat belajar dan kemampuan daya ingat siswa dalam konteks pembelajaran mata pelajaran PKn.

Kata kunci: Gaya belajar visual, *mindmapping*, *Short term memory*, Teka-teki silang

▪ INTRODUCTION

Learning strategies can be defined as patterns or sequences of student teachers in realizing teaching and learning activities to achieve predetermined goals. While the method is defined as an effort to put into practice the plans that have been prepared in real learning activities so that the goals that have been designed are optimally achieved. In a learning process, choosing the right method will facilitate the achievement of learning objectives. This is in order to encourage an increase in the quality of education which is very influential in the development of a nation (Dirgantoro A, 2016). Because the progress and decline of a nation can be seen from the quality of education (Rahayu D.A, 2017). Therefore, it would be nice if the teacher first determines the right learning method at the same time based on its efficiency to achieve the goals set. Even though teachers and instructors are not the only determining factor for the success of education, teaching is the central point of education as a reflection of the quality of teaching staff to demonstrate a very large contribution to the quality of education for which they are responsible (Sari I.K, 2019). In other words, support from the government for improving the quality of teaching is relatively weak, one of which is the low quality of teaching resources, and weak learning evaluation standards (Nurul F. S. N, 2021).

Lectures themselves can be said to be a method that is quite familiar to those who are struggling in the educational sphere. The Lecture Method is a teaching method in which the delivery of information and knowledge to audiences (students) is carried out verbally and is one of the most economical methods as an intermediary for teachers delivering learning material to their students in an environment of teaching and learning activities (Wirabumi R, 2020) . Lectures are often identified as teaching with a system of conveying information through verbal narrative by the teacher to students by emphasizing the professional quality of the teacher in terms of voice, language style and fluency in speaking. Especially for those who work as teachers, where the teacher is an important element in realizing an optimal learning process. The results of observations made by researchers at SMPN 1 Boyolangu itself obtained the fact that the lecture method applied by Civics teachers at SMPN 1 Boyolangu still uses the conventional type so that it is less relevant to the conditions of students in the current era. Where educators convey the entire substance of a material orally accompanied by assignments or group discussions and usually after learning is over there is some kind of evaluation session using a question and answer system where in that session the educator uses semantic questions to measure students' comprehension of the material presented. This pattern is repeated every week so that students feel bored and bored because learning is considered less interesting and varied. As a result, students are now less responsive and tend to choose silence without responding to any questions asked by the teacher. In addition, students also appear to have difficulty or are unable to remember clearly when asked to reconvene their own ideas about what is being taught. This indicates that during learning the material presented was not able to be absorbed optimally.

Regarding the density of material that is usually delivered and the limited time for learning, this sometimes becomes an obstacle for students in understanding the essence of learning material (Purnamasari N.L, 2020). Seeing these conditions, where an educator's ability to improvise related to creative learning designs seems minimal, plus there is no rigid evaluation standard that prioritizes cognitive aspects (memory) of students, if not addressed immediately it can trigger a loss of memory condition which can impact on the achievement of goals. learning. Therefore the researcher took the initiative to develop a variation in applying the lecture method which is able to turn

boring learning into more interesting and even more enjoyable by combining the lecture method with mindmapping and then using crossword puzzles (TTS) as standard evaluation standards as well as for maximize students' short term memory skills. Through hard work supported by discipline, it is hoped that children will be able to grow and develop into strong and strong individuals to face the times that are constantly moving and fast, especially in this era of modernization and globalization (Asrori M.A.R, 2019).

Short term memory or short term memory is memory of facts, words, numbers, letters, or other small pieces of information that last for a few seconds to a minute or more at a time. Meanwhile, according to Sari A.P and Grashinta A (2015) Memory is the ability to store information so that it can be used again in the future. The learning process in class is expected to provide a separate experience for students, so that the material taught will be easily remembered by students. Short term memory itself is divided into three, namely sensory memory, short term storage, and working memory. Differences in short-term memory performance between individuals can be influenced by sleep quality, gender, age, medical history, psychological stress, drug use, diet, and physical activity (Lienardy G. Q et al, 2021). As explained the secret of recalling is to 'forget' the things you are trying to remember and the memory to flow freely without 'trying' to remember anyone particular thing surround the absence (what you have forgotten) with every possible association or connection available to you. Usually the best way to do this is to 'relive' all the experiences connected in some way to the item you are trying to remember (Buzan T, 1986 p. 162).

The Mindmapping-based lecture method in Civics learning has the possibility of making students more focused on the core of the material being taught because students will at the same time project clearly the main points being studied. According to Karim A (2018) The difference lies in the characteristics and elements. In accordance with the mindmapping law rule 6 “Single key words per line” designed to help students more quickly gain access to intelligence with special techniques that are compatible with the brain. By following the laws, memory as well as creativity will be greatly enhanced. Each keyword has a million possibilities for associations. Since Mind Mapping is the process of accessing and using key cortical skill areas, it is important to have a "brain-supporting" environment (Buzan T, 1988). While crossword puzzles can be the answer to reduce student boredom with dynamics that can increase student enthusiasm to think critically in solving a problem. With crossword puzzles students will understand more about the material provided related to the use of terms in Latin which must be filled in exactly according to the number of columns in the crossword puzzle (Wahyuni N, 2022). This is very important in improving students' short term memory. In every memory system there is a keyword, this word is called 'Key Word Memory' which acts as a constant peg to hang the items it wants to remember. Key Memory Word is specifically designed to be an 'Image Word' in this case it must reflect the image of the mind of the person using the memory system (Buzan T, 1986 p. 41). Crossword puzzles can spur students to analyze and give more attention and better reasoning, thus reducing the occurrence of a kind of memory loss.

The combination of mindmapping-based lecture methods and crossword puzzles will further encourage student enthusiasm in learning to improve critical thinking skills and train short term memory so that it is sharper when absorbing information, especially for users of visual learning styles in line with research conducted by Kristianty W.D and

Sulastri S (2021) which is used to test the effectiveness of the lecture method in increasing student motivation. This is because in general most students are less aware of how objective patterns suit them in absorbing a given material, through the senses of sight (visual learning), the senses of hearing (auditory learning) or actually practice it (kinesthetic learning) so that the information received can survive. long in the taste and memory of students. Someone may dominantly learn by using one of them (Wiediarti P, 2018). If a student is familiar with his own learning style, then it is certain that the subject matter or information learned can be absorbed properly and entered into short-term memory which leads to long-term memory (Irawati I. et al, 2021). Where mindmapping-based lecture media assisted by crossword puzzles are so in accordance with their learning interests of visual students that they have the potential to increase their short term memory more optimally because students with a visual learning style tend to absorb information more quickly by seeing how the teacher explains learning material in front of the class with tools in the form of data and images (Yuanita I.et al, 2020).

▪ METHOD

Types and Research Design

This research is a type of quantitative research which involves types of design, data collection instruments, data analysis, identification of samples and populations, consistent interpretation of research results based on surveys or studies (Creswell J. W, 2014). While the design itself uses Pre-Experimental Design. Where according to Dr. Prof. Sugiyono (2013 p.74) this experiment is not a real type of research, because there are still external variables that have an effect. So it can be said that the results of the dependent experiment were not purely influenced by the independent variables. This was caused by the absence of the influence of the control variable and the sample was not chosen randomly. Then the type used was the One Shot Case Study, where a group was selected which was then given a treatment which was then observed regarding the results.

Variable Operational Definitions

According to the presentation from Dr. Prof. Sugiyono (2013, p. 38) A variable is often defined as an attribute or value of an object that has certain variations determined by the researcher to be studied and then the final results are drawn. Variables need to be determined so that it is clear for the reader to determine which group is receiving the treatment and the outcome being measured (Creswell J.W, 2014).

Table 1. Variabel Operational Definitions

No	Variable	Definition	Annotation	Measuring Instrument	Scale
1	Independent Variable	Lecture Method based on Mindmapping assisted by	Lecture Method based on Mindmapping (X_1)	Test and Questionnaire	Likert

No	Variable	Definition	Annotation	Measuring Instrument	Scale
		Crosswords	Crosswords (X_2)		
2	Dependent Variable	Short Term Memory	Short Term Memory (Y)		
3	Moderator Variable	Visual Type Learning Style	Visual Type Learning Style (Z)		

Location and Time of Research

This research is planned to take place from 15 February to 12 June 2023 Even Semester for the 2022/2023 Academic Year at SMPN 1 Boyolangu, located on Jl. Raya Boyolangu, Tulungagug Regency, East Java Province. Meanwhile, the implementation time is on effective days, namely Monday to Saturday (07.00-12.40) during school hours.

Population and Sample

According to Dr. Prof. Sugiyono (2013, p. 80) The population is a generalization area consisting of objects/subjects that have the qualities and characteristics determined by the researcher to be studied which then conclusions are drawn. In identifying the research population to express the size of a population, you can start by identifying each individual in the research ecosystem (Creswell J.W, 2014). The population itself is not only people, but also objects and other natural objects. female student And in the sampling process it is attempted to be homogeneous because if the subject is not homogeneous it will affect the conclusion. Therefore, the research sample is taken from a homogeneous research population. This is because the sample is representative (Dr. Prof. Sugiyono, 2013 p. 81). The sampling technique in this study was saturated sampling by selecting two experimental classes, namely class VII A and B of SMPN 1 Boyolangu which consisted of 36 students per class.Where this technique provides equal opportunities for each individual to become a candidate and take part as a participant (Dr. Prof. Sugiyono, 2013 p. 85). For sampling, there were 76 students.

Data Collection Technique

Data collection techniques were carried out using 3 techniques, namely tests and questionnaires. A test to determine students' short term memory abilities after receiving treatment. The test is useful for measuring how far the ability of students' short term memory after being given treatment, then the database is then used for hypothesis testing. Meanwhile, a questionnaire is useful to know the effectiveness of mindmapping based lecture methods and crossword puzzles respectively on short term memory in terms of visual learning styles using a Likert scale. While the documentation in this study in the form of photos during the learning activities took place was used as evidence if the research had been carried out and to find out student activities during learning.

Data Analysis Technique

Data from the observation test results were then analyzed through three stages, namely the validity and reliability of the instrument, the analysis prerequisite test stage, the data description stage. The validity of the tests was analyzed using the Microsoft Excel 2016 program. Meanwhile, the validity of the mindmapping questionnaire and crossword puzzle instruments were analyzed using Pearson Product Moment with the help of the SPSS 25.0 for windows program. Then to show the significance level of the reliability of the questionnaire instrument based on mindmapping and crossword puzzles using Cronbach's Alpha coefficient. Meanwhile, to measure the reliability of the short term memory test instrument, students use Spearman Brown. Furthermore, in the data description stage, the application must meet many classical assumptions, such as the data analyzed must be normally distributed, the group data tested must be homogeneous, besides that the regression test must meet the assumption of linearity. While at the data description stage to prove the hypothesis which consists of a partial test (t test) and multiple linear regression analysis and MRA and the coefficient of determination.

▪ RESULT

The data analysis method uses multiple linear regression, but if the data does not meet the standard regression requirements, then the results are biased, therefore it is necessary to carry out analysis prerequisite tests which include normality, homogeneity and linearity tests.

Table 2. Normality Test

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			76
Normal Parameters[a,b]	Mean		,0000000
	Std. Deviation		,27344043
Most Extreme Differences	Absolute		,082
	Positive		,072
	Negative		-,082
Test Statistic			,082
Asymp. Sig. (2-tailed)			,200[c,d]
Monte Carlo Sig. (2-tailed)	Sig.		,662[e]
	99% Confidence Interval	Lower Bound	,650
		Upper Bound	,674

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.
e. Based on 10000 sampled tables with starting seed 2000000.

The table above shows the Lcount values for the combination of variables (X1, X2 and Y) in LCount showing a significance value = 0,200 where the value is LCount = 0,200 > LTabel = 0,05 greater than LTabel. Meanwhile, if using Monte Carlo

calculations, the significance level L Count = 0,662 > L Table = 0,05 so that it can be concluded that all variables originate from populations that are normally distributed, using a significance level of 5% or an error level = 0,05.

Table 3. Linierity Test

No	Variable	Coefficient	Value F		Status
		α=5%	FCount	FTable	
1	(X1)(Y)	0,05	0,416	1,92	Linear
2	(X2)(Y)	0,05	0,111	1,79	Linear

The results of the calculation of the linearity test presented in the table above are obtained for the Fcount value for X1 to Y of 0,416, obtained from the numerator dk = 18 with the denominator dk = 56 using a significance level of 0,05 which is 1,92. Meanwhile for the comparison, the value of Fcount = 0,416 < Ftable = 1.92 due to the value of Fcount < Ftable, so it can be concluded that the relationship involving Variables X1 and Y is linear. Then for the Fcount value of X2 to Y it is 0.111, then for dk quantifier = 24 and dk denominator = 50 using a significance level of 0,05 is 1,79. The value of Fcount <Ftable is obtained, so it can be concluded that the relationship between X2 and Y is linear.

Table 4. Homogenity Test

ANOVA Unstandardized Residual					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3586,509	56	64,045	1,698	,101
Within Groups	716,667	19	37,719		
Total	4303,175	75			

The homogeneity test is carried out after the resulting data are normal. Homogeneity testing was carried out to find out whether the two group data were homogeneous or not, so that it was known that the abilities of the two classes were the same and could be used as research samples with a significance level of α = 0,05 and with the criterion that if probability (sig) > 0,05, then the data homogeneous, if the probability (sig) < 0,05 then it is not homogeneous. The results of the test for class A and B data obtained a significance value (sig) of 0,101. This shows that at the significance level α = 0,05. Significance (sig) > 0,05. Thus it can be concluded that the two samples come from populations with a homogeneous (same) distribution.

Before testing the research hypothesis, multiple linear regression analysis was first carried out. The summary of the multiple linear regression analysis carried out using the SPSS 25.0 for windows program is:

Table 5. Summary of Multiple Linear Regression Testing

Variable	Coefficient	TCount	TTable
Constanta (C)	,941		

Mindmapping Based Lecture Method (O1)	,124	23,551	1,993
Crossword (O2)	,130	22,393	1,993
F : 4194,956	Sig : 0,00		
R : 996	R^2 : 991		

Based on the test summary table above, a linear regression equation scheme can be created as follows Y = 0,941 + X1 0,124 + X2 0,130
Then the interpretation can be described as follows:
a = 0,941 can be interpreted if the lecture method based on mindmapping and crossword puzzles is stagnant (fixed) then the student's short term memory value is 0,941.
b1 = 0,124, it can be interpreted that if the mindmapping-based lecture method experiences an addition of 1 point, then the student's short term memory value will increase by 0,124. Provided that there is no change in the value of the crossword puzzle
b2 = 0,130, it can be interpreted that if the crossword puzzle experiences an addition of 1 point, then the value of the student's short term memory will increase by 0,130. With the condition that there is no change in value in the mindmapping-based lecture method.

1. Hypothesis Testing (T-test)

This analysis aims to examine the effect of each independent variable on the dependent variable. The results of statistical testing are as follows:
1.1 Mindmapping based Lecture Method (X1)
a) Hypothesis

Ho = 0 means that there is no significant effect between the methods mind mapping on social studies learning achievement.

H1 ≠ 0 means that there is a significant influence between the mind methodsmapping of social studies learning achievement.

b) Level of significance = 5% by using the formula (α/2 ; n – k – 1) is the result (0,025; 73) then the ttable is 1,9.
c) Tcount value
In this study, to determine the statistical value of the t test, SPSS 25.0 for Windows was used. After analyzing the data, it is known that the value of tcount is 23,551.
d) Criteria for testing the hypothesis

If tcount < ttable then Ho is accepted and H1 is rejected.

If tcount > ttable then Ho is rejected and H1 is accepted.

e) Conclusion

Based on the calculation results, it is known that the tcount value is 23,551 and with a ttable of 1,9. The tcount value of 23,551 > ttable 1,9 means that H0 is rejected, as well as indicating if the mindmapping method (X1) has an effect on short term memory (Y).
1.2 Crossword (X2)
a) Hypothesis

Ho = 0 means that there is no significant effect between crossword puzzles on short term memory.

H1 ≠ 0 means that there is a significant effect of crossword puzzles on short term memory.

b) The level of significance = 5% by using the numerator α/2 and the denominator = n – k – 1, it is known that the ttable value is 1.993

c) Tcount value

In this study, to determine the statistical value of the t test, SPSS 25.0 for Windows was used. After analyzing the data, it is known that the value of tcount is 22,393

d) Criteria for testing the hypothesis

If tcount < ttable then Ho is accepted and H1 is rejected.

If tcount > ttable then Ho is rejected and H1 is accepted.

5) Conclusion

Based on the calculation results, it is known that the tcount value is 22,393 and with a ttable of 1,9. The value of tcount 22,393 > ttable 1,9 means H0 is rejected, this also shows that the crossword puzzle (X2) has an effect on short term memory (Y).

2. Hypothesis Testing (F-Test)

The F test analysis itself was carried out to find out whether the implementation of the lecture method based on mindmapping and crossword puzzles simultaneously had an effect on students' short term memory. The following are the results of the F test:

a. Hypothesis

H0 : β1 = β2 = 0, it can be defined if the mindmapping and crossword puzzle methods simultaneously do not have a significant effect on students' short term memory.

H1 : β1 ≠ β2 ≠ 0, it can be defined if the mindmapping and crossword puzzle methods simultaneously affect students' short term memory.

b. The level of significance = 5% with the Ftable value of df (2 ; 73) is 3,15.

c. Fcount value

The testing process uses the F statistic test with the help of the SPSS 25.0 for windows program. After analyzing the data, it is known that the value of Fcount is 4194,9.

d. Decision-making conditions

If Fcount < Ftable then Ho is accepted and H1 is rejected.

If Fcount > Ftable then Ho is rejected and H1 is accepted.

e. Conclusion

Based on the calculations performed, it is known that the Fcount value is 4194,9 and the Ftable is 3,15. The Fcount value is 4194,9 > Ftable 3,15 which means H0 is rejected, as well as showing that the mindmapping method (X1) and the crossword puzzle (X2) have an effect on the short term memory (Y) of class VIII students at SMPN 1 Boyolangu .

3. Hypothesis Testing (MRA-Test)

The Moderation Test is implemented to determine whether there is an influence that may arise either strengthening or weakening the independent variable on the dependent variable. And after the analysis test, the results are as follows:

a. The significance value of the interaction variable between the mindmapping-based lecture method (X1) and visual learning style students is worth 0,00 < 0,05, which means that it can be concluded that the visual learning style variable (Z) is able to

moderate the effect arising from the interaction of the lecture-based method mindmapping (X1) on short term memory (Z)
b. The significance value of the crossword puzzle interaction variable (X2) with visual learning style students is valued at 0,018 < 0,05, which means it can be concluded if the visual learning style variable (Z) is able to moderate the effect arising from the crossword puzzle interaction (X2) on short-term memory (Z)
c. The R Square value of the mindmapping-based lecture method assisted by crossword puzzles on students' short term memory before the intervention of the moderating variable was 0,991. While after the intervention increased to 0,995. So it can be concluded that the visual learning style variable (Z) contributes to the influence of the interaction between the lecture method (X1) based on mindmapping assisted by crossword puzzles (X2) on short term memory (Z).

4. Relative and Effective Contribution

Based on the tests that have been carried out, the R2 result is 0,991 and it can be said that the test results are of very good value. In addition, the coefficient of determination shows a positive connotation, which means that a ratio of 99,1% can be explained by the variable mindmapping and crossword puzzle methods. While the remaining 0,9% is defined as by other variables outside the model. The magnitude of mindmapping and crossword puzzle based lecture methods in influencing short term memory can be measured using relative contribution (SR) and effective contribution (SE). The lecture method variable based on mindmapping makes a relative contribution of 51,3% with an effective contribution of 50,8% to short term memory. The crossword puzzle variable provides a relative contribution of 48,6% and an effective contribution of 48,1% to short term memory. Overall the mindmapping method variables contribute 99,1% to short term memory. Then between the two variables it can be concluded that the mindmapping-based lecture method makes a larger and dominant contribution to short term memory (50,8%) of class VIII students of SMPN 1 Boyolangu.

▪ DISCUSSION

The results of the data analysis show that the mindmapping-based lecture method is assisted by crossword puzzles on students' short term memory where the regression test forms a linear regression line equation Y = 0,941 + X1 0,124 + X2 0,130, a constant value of 0,941 means that if you do not consider the lecture-based method mindmapping and crossword puzzles, the short term memory of class VII students of SMPN 1 Boyolangu is 0,941 units, the variable value of the mindmapping-based lecture method (X1) is 0,124 meaning that if the mindmapping-based lecture method variable increases by 1 unit, then the short term memory will increased by 0,124 units assuming that other variables are in a fixed condition. and the crossword puzzle variable (X2) is 0,130, which means that if the crossword puzzle variable increases by 1 unit, then the student's short term memory will increase by 0,130 units assuming that the other variables are in a constant state.

The results of the first hypothesis test with the t test obtained the tcount of the mind mapping-based lecture method variable (X1) of 23,551 and with greater than ttable (1,9) at a significance level of 5%. This means that the first hypothesis is accepted, namely that the mindmapping method has a positive effect on students' short term memory in class VIII students of SMPN 1 Boyolangu. This shows that the application of the mindmapping-based lecture method used during learning has a

significant effect on students' short term memory. The mindmapping-based lecture method is a method for teachers as educators to provide convenience in carrying out their duties, namely providing subject matter so that students can easily digest it. The results of this study indicate that the mindmapping-based lecture method has a significant effect on students' short term memory. Students will find it easier to learn by making a summary map of ideas or ideas actively so that students will find it easier to explain and solve problems related to Civics material problems.

The results of the second hypothesis test with the t test obtained the tcount of the crossword puzzle variable (X2) of 22,393 which is greater than ttable (1,9) at a significance level of 5%. This means that the second hypothesis is accepted, namely that the crossword puzzle has a positive effect on the short term memory of class VII students of SMPN 1 Boyolangu. This shows that the higher the students' crossword puzzle scores, the higher the students' short term memory abilities. Conversely, the lower the crossword puzzle, the lower the short term memory in class VII students of SMPN 1 Boyolangu. From the results of research on crossword puzzles, it can be seen that class VIII students of SMPN 1 Boyolangu show that students have been active in groups when solving PPKn material problems, students also always ask friends if someone doesn't understand when working on PPKn questions, always active in them. express their opinions both in discussions and during lessons and if there are problems that are not known, students try to find out, by asking the teacher or looking for additional material from the textbooks provided.

Testing the F test using SPSS 25.0 for windows shows that the Fcount value is 4194,9 and with a significance level of 0,00 and it is known that the Ftable is 3,15, because the Fcount value is greater than the Ftable (Fcount = 4194,9 > Ftable = 3,15) means that the variables of mindmapping-based lecture methods (X1) and crossword puzzles (X2) jointly affect short term memory in class VII students of SMPN 1 Boyolangu.

Finally, for testing the MRA (Moderated Regression Analysis) test using SPSS 25.0 for windows, it shows that the interaction value between the mindmapping-based lecture method (X1) and visual learning style students is 0,00 < 0,05, then the significance of the puzzle interaction variable cross (X2) with visual learning style students worth 0,018 < 0,05 where both have a significance value below 0,05. And for the R Square value of the mindmapping-based lecture method assisted by crossword puzzles on students' short term memory before the intervention of the moderating variable was 0,991. While after the intervention increased to 0,995. That means simultaneously the mindmapping and crossword puzzle based lecture methods can accommodate the short term memory of students who have a visual learning style for class VII SMPN 1 Boyolangu.

With a coefficient of determination of 99,1%, it means that variations in students' short term memory can be explained by the variable mindmapping and crossword puzzle methods. While the remaining 0,9% is explained by other variables outside the model. The mindmapping-based lecture method makes a relative contribution of 51,3% and an effective contribution of 50,8% to students' short term memory. The crossword puzzle variable provides a relative contribution of 48,6% and an effective contribution of 48,1% to short term memory. Furthermore, between the two variables, it can be seen that the mindmapping-based lecture method makes a greater contribution to students' short term memory (50,8%), so that it can be said that mindmapping based lecture

methods provide a more dominant (superior) influence on students' short term memory. class VII SMPN 1 Boyolangu.

▪ CONCLUSION

Mindmapping based lecture method assisted by crossword puzzles on short term memory in terms of the visual learning styles of students in PPKn class VII subjects at SMPN 1 Boyolangu for the 2022/2023 academic year, it can be described as follows:

1. Partially through the t test the use of the mindmapping method has a significant effect on short term memory, while the crossword puzzle indicates the same thing, where a significant effect on short term memory has an effect on the short term memory of students VII SMPN 1 Boyolangu.
2. The results of the F test prove that simultaneously the mindmapping method (X1) and crossword puzzles (X2) have a significant effect on the short term memory (Y) of class VII students of SMPN 1 Boyolangu
3. Through MRA testing, it is known that the application of the mindmapping-based lecture method (X1), crossword puzzle assistance (X2) and visual learning styles (Y) for the R Square value before the intervention of the moderating variable is 0,991. increased to 0,995. That means simultaneously the mindmapping and crossword puzzle based lecture methods can accommodate the short term memory of students who have a visual learning style for class VII SMPN 1 Boyolangu.
4. Related to testing the coefficient of determination of the coefficient, it is known that the mindmapping-based lecture method makes a greater contribution to students' short term memory (50,8%), so that it can be said that the mindmapping-based lecture method provides a more dominant (superior) influence on short term memory class VII students of SMPN 1 Boyolangu

So it can be concluded that the application of the mindmapping-based lecture method assisted by crossword puzzles on students' short term memory in terms of the visual learning styles of class VII students of SMPN 1 Boyolangu has an effect simultaneously or partially. So if the method is applied in learning PPKn subjects it will further encourage students' enthusiasm in learning and short term memory so that it is sharper when absorbing information conveyed in the learning process of Civics subjects.

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