The Effectiveness of Mind Mapping Techniques in Counseling of Enhancement Ability Memory Students in Learning

Irman*)
Institut Agama Islam Negeri Batusangkar,
Sumatera Barat, Indonesia
E-mail: irman@iainbatusangkar.ac.id

*) *Corresponding Author*

Abstract: This paper aims to explain the effectiveness of mind mapping techniques in counseling to improve students' memory ability in learning. This research uses experimental design, especially pretest-posttest control group designs. The population of this research is the second semester students of Department of Islamic Communication and Broadcasting of FUAD IAIN Batusangkar Academic Year 2018/2019. The sample size was 12 students, consisting of an experimental group and a control group. Data analysis used independent t test through the SPSS computer program. release 20. The results of the study indicate that the mind mapping technique in counseling is effective in improving students' ability to remember lessons. These findings can be used as an alternative by lecturers and students to overcome students' problems to remember the lessons in learning.

Keywords: Mind Mapping, Counseling, Memory

INTRODUCTION

College student with full expectations of their academic achievement in class. Hyun, Ediger, & Lee (2017) revealed that learning activities in the classroom is one of significant factors that influence students' satisfaction. Tukilah (2016) promote success in the lecture process is an indicator of academic achievement. Unfortunately some students felt confused and forget when asked about what material they had learned last week. They immediately flip through the notes. Forgetting is a symptom of cognitive difficulties in lectures. Rosada (2016) revealed that learning difficulties are basically a symptom that appears in various types of behavioral manifestations both directly and indirectly. These symptoms will appear in cognitive, motorist and affective aspects in the process and learning outcomes achieved.

The forgetfulness condition is actually not appropriate for students who are in the stage of cognitive development, which is in the final stages of mielination. What is meant by the mielinasi period is the final stage of the development of axons in the brain area. Luca & Leventer (2008) assumed the end of the period of mielination was at the age of 20 to 29 years. In this stage, a person will have a mature working memory and strategic planning. Ideally students who are in their 20s can remember the subject matter well, because it has been mature in working memory. In fact there are still many forgetful students. Based on interviews on March 23rd 2019 of 30 Islamic Broadcast Communication students in the second semester, 83,33% students stated that they forgot about the subject matter last week.

Forgetting is an obstacle in learning, because forgetting to remember subject matter will affect the academic success of

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students. Students will easily master the lesson if he/she has the ability to remember well. Pinel (2009: 329) explains that learning and memory are two things alike, which are equally connected with brain function. Learning relates to how experience changes brain function, and memory relates to how those changes are stored and reactivated by the brain. Fun climate and learning methods will support students' memories of the subject matter. All subject matter obtained by students will be stored in the brain, and released again when needed. Unfortunately not all students can remember well. This is one of the symptoms of learning disabilities. Many students complain and desperate, because they think were born as a person who is slow in learning. Stine (1997) revealed that millions of people or almost all people have the belief that they were born as slow learning and unlucky person.

There are several symptoms of learning disabilities felt by students as learners, namely lack of motivation and difficulty remembering lessons. Jensen (2007) details the symptoms of learning disabilities, including; (1) do not care what happens, (2) have given up before it starts, (3) lack of motivation, (4) cognitive impairment/ difficult to remember, and (5) are passive/ inactive. Furthermore Sternberg (2008) revealed that negligence associated with attention and awareness are; (1) error capturing information, (2) forget, (3) error description, (4) data error, (5) activation- associative error, and (6) error due to loss of activation. The two expert opinions above, suggest that forgetting is an inability to learn and neglect in attention and awareness. Thus it can be concluded that forgetting will bring negative impacts on the learning process. Sternberg, (2006) describes the causes of people forgetting information already stored in memory. Theories related to forgetfulness, namely the theory of confusion (interference theory) and the theory of decline (decay theory). The mixed theories explain that forgetfulness is caused by information that is just as strong in competition. Furthermore, the main cause of people forgetting based on the deterioration theory outlines is the factor of time passing. Forgetting is closely related to errors that exist in human memory.

Human memory lies in the brain, especially in the area of the cerebrum, it is also called memory. Etymologically, memory means the existence of past experiences that come back to life, notes containing explanations, tools that can store and record information. This memory will support humans to remember the history in the past, the present and the future. Human memory has a different structure from other creatures on earth.

The structure of human memory has a structured system and complicated. Amin & Malik (2013) describes that the structure of memory consists of three systems, they are; (1) sensory memory system, (2) short-term memory system, and (3) long-term memory system. Furthermore Kalat (2010) describes the type of memory, namely short-term memory and long-term memory. Furthermore, it is also explained that memory is located in the hippocampus as the center of rational memory which stores rational memory. Furthermore Bulters & Shenouda (2009) describes the division of memory, such as; working memory, verbal memory, immediate memory, and virtual memory. All of these memories will be involved in the learning process, if there is problem in memory, it will have an impact on student academic achievement.

Various experts have tried to develop various methods and techniques to improve memory, especially in learning. This is an opportunity for students to take advantage of these findings. Stine (1997) reveals that nowadays you are in an era of many demands on the mastery of new skills in learning, and mastery of the learning process. For this reason, you are faced with a fixed choice in your current study habits or

utilizing learning technology that has been developed by some experts. If a student utilizes good learning technology, he/she will be easy to remember the lesson. So it can improve academic achievement later.

To reduce forgetting in the learning process, several effective methods and techniques need to be developed. Some experts have developed various ways and techniques to improve memory in learning time by time. Actually, long before science developed as it is today, the Greeks had developed a basic memory system, called the mnemonic. It was taken from the goddess of memory Mnemosyne. Through this mnemonic, prospective senators and social leaders throw questions to each other about numbers, names, and names of cities and certain laws. The winner will be appointed as a senator or social leader.

In this modern era, experts are competing to develop techniques and ways to improve memory. Munawarah & Haryanto (2005) revealed that one way that can be done to be able to remember well is by using music in learning. Furthermore, Pink (2006) explained the results of his research exposed in the Nature Journal, that students who often practice visualization through video games, have better learning abilities, especially in remembering information. Regarding how to remember well, Mukerjea (2013) suggests using Kim's game. Furthermore Sternberg (2006) states that to make it easier for someone to remember is to make associations. Febriyanti S (2019) revealed in his research results that the use of visual learning media power point projections can improve learning outcomes.

Various fields of science simultaneously carry out research and discovery related to how to learn and how to remember lessons well. One of the sciences that focus on discussing memory is neuroscience. Neuroscience explains about the anatomy and function of the brain which directly related to the process of remembering.

Neuroscience research in learning gives new hope to the world of education. One technique developed based on the study of neuroscience is related to remembering through mind mapping techniques. This mind mapping technique was first developed by Tony Buzan who is an expert in the field of neuroscience. Mind mapping technique is a learning media in the form of graphics using paper and stationery as the medium. Tony & Barry (1993) revealed that mind mapping is a powerful graphic technique for unlocking brain potential. Furthermore Mukerjea (2013) revealed that mind mapping is a device / instrument / tool that maximizes the brain that functions to improve learning outcomes through play. Budd (2004) states that mind mapping is a diagram used for visual line information that is made around one word or text, placed in the middle, with related ideas, the addition of words and concepts. The main categories are radiating from the central point, and the low categories are branches and sub branches.

Furthermore Atkinson & Hilgard (1991) revealed that mind mapping is one way to strengthen the structure of memory which is an embodiment of abstract events, objects, and relationships in the real world. Liu, Tong, & Yang (2018) argued that mind mapping in teaching can improve logical thinking and innovative thinking.

Based on the opinions of some experts on mind mapping, it can be concluded that the mind mapping technique is a structured activity to enter information into the brain and then issue information from the brain, through diagrams and visual lines with words or the image that is placed in the middle then spreads in the form of a network with related ideas. Santi, Abdat & Makhmudah (2017) promote counseling service to improve the learning skill using mind map for academic achievement.

The mind mapping work process according to Wycoff (1991) are, the first step is to present a graphical problem that placed

in the middle of the page, then ideas are allowed to flow freely without judgment, keywords used to represent ideas are connected to the main ideas with lines, colors used to highlight and emphasize ideas through images and symbols used to highlight ideas that can stimulate the mind to make connections.

In the process of mind mapping activities there are several stages. The mind mapping stages according to Buzan (2010) are; (1) first of all making a central image; using three or more colors per central image, using dimensions, lines and images, and using organized spaces. (2) Using association; using arrows to make connections on branch patterns, using colors, and codes. (3) Using clarity; using one keyword per line, printing all the words, printing key words on the line, writing the line length equal to the word length, connecting to other lines, writing the center line thicker, and drawing the picture as clear as possible. In general, mind mapping patterns can be seen in the figure 1 below.

Picture 1. The Use of Different Colors in *Mind Mapping* Activities (Buzan, 2010: 36)

This mind mapping technique is carried out in the counseling process, with the following steps; (1) building psychological relationships with counselees, (2) exploring problems related to the counselee's memory, (3) Implementing mind mapping techniques, in accordance with the remembering problems experienced by students, (4) reflecting on mind mapping activities, and (5) Closing activities. Through these 5 steps of counseling, students are expected to remember the lessons well. Mind mapping techniques can also help students to share information with their classmates.

In theory neuroscience, there is a link between mind mapping techniques and the brain. Mukerjea (2013) said that using mind mapping will make it easier for us to recall. Jensen (2007) assumed that mind maps are graphical visual displays that can describe key relationships with symbols, colors, and interesting words, so that can create meaning for the learner and also make the lesson truly belongs to the learner. The use of mind mapping techniques in the learning process provides various advantages. Buran & Filyukov (2015) revealed that results of this study showed the mind maps help students solve problems, brainstorm creative ideas, remember new vocabulary, take notes, enhance their reading skills, organize the tasks and prepare presentations

Furthermore Tee et al., (2014) showed that there are various benefits obtained when using mind mapping techniques in the learning process, including; (1) activities become interesting, (2) economically, and (3) involve the left brain and right brain holistically.

Many theories state that there is a link between mind mapping techniques and memory. The theory needs to be carried out empirical tests, especially on students who have difficulty in remembering lecture material.

METHOD

This study uses quantitative research types, specifically Pretest-posttest control group designs Johnson & Christensen (2004). This design aims to determine the effect of treatment on research subjects, by comparing the results of the two groups' posttest. In this study the research subjects were the second semester students of the Islamic Communication and Broadcasting Department (KPI) IAIN Batusangkar Academic Year 2018/2019 who attended quantitative research methodology lectures. The research mechanism goes through several stages. For the initial stage, a pretest

is given by using the Ability Questionnaire to Recognize Lessons towards KPI Department students in the second semester of 2019/2020 Academic Year. The questionnaire contained 56 statements, with an ideal score of each statement is 5. Ideal score of 280, which is 56 items x 5 maximum score = 280. Based on the total ideal score, there are 3 categorization of students' ability to remember such as high, medium and low.

The research subjects were divided into 2 groups. The first group is Group A consists of 6 students called as experimental group. The second group is Group B consists of 6 students and named as control group. Each group was given intervention. Group A is given the mind mapping technique intervention in counseling, and group B is given the same memorization exercise as is often practiced by students in the group. The treatment was given 6 times in each group.

The steps in mind mapping treatment in counseling for group A in the first session, are : (1) building psychological relationships, (2) Explaining the understanding and steps of mind mapping, (3) Questions and Answers, (4) Reflections, and (5) Closing. Then the activity steps in sessions 2,3,4 and five are; (1) building psychological relationships with counselees, (2) exploring problems related to counselee's memory, (3) implementing mind mapping techniques, (4) reflecting on mind mapping activities, and (5) Closing activities. The steps of activities in the 6th session are: (1) building psychological relationships, (2) reflections on improving students' abilities through mind mapping, (3) impressions and messages of students towards learning activities through mind mapping, and (4) Closing. This mind mapping treatment was carried out for 6 meetings.

Furthermore, the steps for memorization techniques for group B in the first session, are : (1) building psychological relationships, (2) explaining the understanding and steps to

memorization techniques, (3) question and answer, (4) reflection, and (5) closing. Then the activity steps in sessions 2,3,4 and five are; (1) establishing psychological relationships with counselees, (2) exploring problems related to the counselee's memory, (3) implementing memorization techniques (4) reflecting on memorization activities, and (5) closing activities. The steps in the 6th session are : (1) establishing psychological relationships with counselees, (2) reflection on improving students' abilities through memorization techniques, (3) impressions and messages of students towards learning activities through memorization techniques, and (4) Closing. This memorization techniques treatment was carried out for 6 meetings.

RESULTS AND DISCUSSION
Results

Preliminary data about groups are needed to ensure that all groups have the ability to remember relatively similar beginnings, thereby only providing assistance related to improving student memory. In the following Table 1, the average scores and standard deviations of students' ability to remember the scores based on groups are described.

Table 1. The Result of Pretest

Group	N	Mean	Std. Deviation
A	6	74.33	11.082
B	6	74.00	11.112
Total	12	-	-

In Table 1 above it shows that the average scores between groups are almost the same, namely 74.33 for group A, and 74.00 for group B. Standard deviations per group are 11,082 and 11,112, these results illustrate that the mean and standard deviation of group A and B is relatively the same. This data suggests that there is no difference in student's remembering ability between groups A and Group B. Testing the assumption of a normal distribution

Before testing the hypothesis, a prerequisite test or assumption test is conducted first. It aims to ascertain whether the data to be analyzed meets the requirements or not. The requirements to be carried out for the analysis of different tests with the pretest-posttest control group design in this study are the data normality test and the data homogeneity test. Henceforth, the normality test analysis is described first.

Kolmogrov-Smirnov test was used to see the data normal or not. It was used the SPSS 20.0 for Windows program. Testing is done by the Kolmogorov-Smirnov test at a significance level of $\alpha = 0,05$. The results of the normality test were conducted on both groups. Table 2 below presented the results of the normality test for the pretest score of students remembering ability.

Table 2. The Result of Pretest Data Distribution by Normality Test

No	Group	N	K-S	P	Conclusion
1.	A	6	0,673	0,776	Normal Distribution
2.	B	6	0,691	0,762	Normal Distribution

Table 2 above shows that the statistical values of the Kolmogorov-Smirnov test pretest score of the ability level remember students of Semester II KPI FUAD Batusangkar Academic Year 2018/2019 based on the treatment group and the control group followed the normal distribution (p>0,05). It can be interpreted the pretest data meets the assumptions that are a condition of using parametric statistical methods, which are normally distributed. The normality test was also carried out on the posttest score of remembering ability level KPI's students. In the following Table 3 the results of the normality test results of the posttest results of KPI students in Semester II Academic Year 2018/2019 are explained.

Table 3. The Result of Postest Data Distribution by Normality Test

No	Group	N	K-S	P	Conclusion
1.	A	6	0,650	0,792	Normal Distribution
2.	B	6	0,581	0,889	Normal Distribution

Table 3 above shows that the statistical values of the Kolmogorov-Smirnov test posttest score level of ability to remember students based on the treatment group and the control group followed the normal distribution (p> 0,05). It can be concluded the posttest data fulfills the assumptions that are a requirement for the use of the independent t test for the different tests planned earlier. In addition to the data normality test, a data homogeneity test is also performed as a prerequisite for the Parametric statistical test. Homogeneity test results are described as follows.

Homogeneity Test

Homogeneity variance test was performed on the level of students remembering ability against 2 groups, namely the experimental group and the control group. Homogeneity test aims to test whether the variation in the level of students remembering ability between groups is homogeneous or not. Homogeneity examination of variants between groups used the Levene test. The requirement is if the f value is not significant, ie p> 0,05, it means that the data is homogeneous. A summary of the results of the homogeneity test for the variance score of students remembering ability is presented in Table 4 below.

Table 4. The Result of *Levene* for Homogeneity Variance

No	Data	*Levene Statistics*	P	Conclusion
1.	*Pretest* ability to remember	0,342	0,805	Homogeneous
2.	*Posttest* ability to remember	1,695	0,636	Homogeneous

In Table 4. above, it can be seen that the homogeneity test results of the pretest and posttest variant scores of the students' ability to remember lessons based on groups are homogeneous (p> 0.05). So that the pretest and posttest data on the level of ability to remember the lessons of KPI's students meet the assumptions that are required to use parametric statistical methods.

The Difference Score of Posttest Student's Remembering Ability Group A and B

To see the effectiveness of mind mapping as a treatment to improve student memory, the difference in posttest scores is seen In the following Table 5 the differences in the posttest scores are explained.

Table 5. The Test of Score Difference of Postest Student's Remembering Ability Group A and B

Group	N	Average	Difference	T	P
A	6	191,10	99,167	17,014	),013
B	6	91,73			

In Table 5 above, the relationship between the results of the T test values with the P values of the treatment and control groups. The hypothesis can be accepted if the value p <0,05. To prove the major hypothesis the group A and group B different test results will be seen. The group A and B group different tests show that the value of t=17,014 and the value of p=0,013. This data illustrates that a p value <0,05, this provides evidence that there is a significant difference in the level of ability to remember groups A and groups B.

Data description about the different test between the treatment group and the control group above proves that there are differences in the level of remembering that students who were given mind mapping techniques in counseling treatment with students who were not given mind mapping techniques in counseling treatment. The level of ability to remember students who were given mind mapping technique interventions in counseling was higher than students who did not receive mind mapping techniques in counseling.

Discussion

Treatment mind mapping for the students of the Department of KPI's Fuad IAIN Batusangkar is effective in improving memory, another advantage is that the quantitative subject notes become more complete and simple. The findings of this study are almost the same as the research conducted by Tasya (2017) namely mind mapping can improve memory in learning. Research on mind mapping using pocket book media was carried out by Masita & Wulandari (2018) who revealed that mind mapping with pocket book media was effective in increasing activity in learning. The emphasis of Masita and Desi's research is to use a pocket book devoted to resuming subject matter at each meeting. Furthermore Pinasti & Saraswati (2015) also conducted research related to content mastery services using mind mapping techniques, and proved to have an effect on learning effectiveness. The same thing was expressed by Astuti (2018) that the use of mind mapping media with image media can improve memory. The research on mind mapping is almost the same as what has been done on KPI's FUAD IAIN Batusangkar students.

Mind mapping is also used in mathematics. Rahma, Yunni, & Ana (2015) conducted research related to the use of mind mapping to improve students' mathematical communication in solving mathematical problems. The results of the study revealed that; (1) the learning process using the mind mapping learning method goes well as indicated by the achievement of indicators of students' mathematical communication skills in solving mathematical problems, and (2) the average improvement of students 'mathematical communication skills and students' mathematical communication in solving mathematical problems in class. In addition to mathematics subjects, mind

mapping was also applied to Indonesian subjects by Riana & Setiadi (2016) the results of the study found that there was an increase in student learning outcomes through the application of mind mapping models to subject matter especially Indonesian subjects.

Furthermore, mind mapping is also used by Aliyah , 2017)(Nadwa, Pendidikan, & Vol, 2017)(Aliyah, 2017)Aliyah (2017) to improve the ability to read the Koran. The research findings are mind mapping can improve learning outcomes of reading Al Qur'an of students class XI IPS2 of SMAN 1 Cepiring Kendal Regency semester 2 of 2015/2016 academic year from the initial conditions have not been able to read with aspects of makhroj, tajwid and fluent-tartil properly and correctly to be able to read with aspects of makhroj, tajwid and fluentartil well and very well.

Based on the results of various studies related to mind mapping, it can be concluded that mind mapping can improve memory, make the learning process more interesting, and can improve academic achievement.

CONCLUSION

In the data analysis and discussion the results of the difference between the average score and the different test groups of the experimental and control groups have been described. Based on the description, several conclusions can be drawn, first; students who were given mind mapping techniques in counseling had higher ability to remember lessons than students who were not given mind mapping techniques in counseling. It can be seen clearly on the results of the t test based on the p value of the treatment and the control group. This data illustrates that a p value <0.05, this provides evidence that there is a significant difference in the ability to remember the experimental group compared to the control group. The second conclusion, mind mapping techniques in effective counseling to improve student memory in learning. It can be proven by the improvement in memory from low to high categories. The third conclusion, mind mapping technique is an interesting and simple technique to be done by students in remembering lessons.

Based on the conclusions, there are several things that need to be recommended with regard to the research that has been done, first, mind mapping techniques in counseling can be used by counselors in overcoming problems of students' difficulties in remembering lessons. Second, mind mapping techniques can also be used by lecturers to improve student memory in learning, third, students can practice mind mapping techniques independently in learning to improve memory.

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