

The Effect Of Using Mind Mapping Method On Learning Motivation In Science Subject Of Fifth Grade At SD Inpres Sudiang Kota Makassar

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ABSTRACT

The research problem is low student learning motivation in science subjects in fifth grade of SD Inpres Sudiang Kota Makassar. The problem statement in this research there are: (1) how is the description of using mind mapping method in science subject?, (2) how is the description of students learning motivation in science subject?, (3) is there an effect of using mind mapping method on learning motivation in science subject at the fifth grade student of SD Inpres Sudiang Kota Makassar?. The purpose of this study there are: (1) to know the description of using mind mapping method in science subject, (2) to know the description of students learning motivation in science subject, (3) to know the effect of using mind mapping method on learning motivation in science subject at the fifth grade student of SD Inpres Sudiang Kota Makassar. The approach used in this study is quantitative the type of research is Quasi experiment. The focus of this research the used of the learning methods of Mind Mapping and student learning motivation. The population and sample of this study were fifth grade students of SD Inpres Sudiang Kota Makassar, with 60 students. Data collection techniques used were observation, questionnaire, and documentation. The technique of analyzing data used descriptive statistical and inferential statistical analysis. The results showed that there was: (1) The learning process was observed using the learning process sheet the results showed progress improvement in each meeting and categorized as very effective. (2) The learning motivation in experiment class more increased than in control class after giving treatment. (3) Mind mapping method had an effect on student learning motivation in science subject at the fifth grade student of SD Inpres Sudiang Kota Makassar.

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INTRODUCTION

Education in Indonesia is a right for all citizens. This is confirmed in the 1945 Constitution of the Republic of Indonesia Article 31 Paragraph 1 which reads "every citizen has the right to get education". The purpose and function of education in Indonesia can be done by maximizing the skills of teachers to innovate in the learning process, as well as increasing mastery of the learning methods and applying them in order to make students more motivated to follow the learning process.

Students motivation can be improved by the teacher by using appropriate methods and in accordance with the material being taught so as to attract students attention. A good teacher is a teacher who is able to understand students desires, and is proficient in arousing students intrinsic and extrinsic motivation. Motivation is the existence of a mobilizer in a person to carry out certain activities to achieve a certain goal.

Based on the results of observations made for 4 days, on January 28-31, 2019 on learning activities for natural science, it was found that during the learning process 8 students were busy chatting with their peers. In addition, based on interviews with grade V teachers of SD Inpres Sudiang which stated that there were 32 students from 60 students who did not pass the KKM that had been determined. These conditions indicate that the methods used in the learning process have not been maximized so that student motivation is low.

The results of research by Komsatun (2015), show that using mind mapping methods in the learning process makes student motivation increase. According to Herdin (2017) there are several benefits that can be

felt through mind maps, namely: mind maps can improve memory, help increase creativity, increase student confidence, are effective for exploring ideas, and are very useful for solving problems and making the right decisions. Mind mapping method is a learning method that can encourage students to be interested, willing to accept learning materials, and work together in class.

From the background explanation above, the researcher is interested to know the effect of using mind mapping method on learning motivation in science subject of fifth grade at SD Inpres Sudiang Kota Makassar.

Mind Mapping Method

According to Herdin (2017: 1) "Mind maps are the easiest way to learn through the imagination of what we have read and learned in school or as a hobby in a natural and fun way". Mind mapping helps students to understand the subject by reformatting the presentation of the material to match the radiance of their thoughts. So that when students understand the subject better, the information will be easier to remember. Buzan (2008) says that mind mapping is the easiest way to put information into the brain and take information out of the brain. Mind mapping is a creative, effective, and literally literate way to "map" our thoughts.

Nurhaedah (2016: 104) states that through mind mapping an idea or ideas can be visualized only with a piece of paper so that it can be developed, studied and remembered easily. So that when students understand the subject better, the information will be easier to remember.

Based on the explanation above, it can be concluded that mind mapping is a method or way of teaching subject to students through easy, interesting, and fun notes through a combination of colors, lines, symbols, and colorful images and utilizing students' imagination combined with subject so that it can make students easy to remember the subject.

According to Windura (2013) steps on how to make a mind mapping, namely: 1) Paper is placed and positioned in a horizontal state (landscape); 2) Decide on the topic for mind mapping; 3) Make a mind mapping center in the middle of the paper in the form of a picture and give a title if need be clarified; 4) Make a main branch which is a branch that radiates directly from the center of mind mapping. Use a different color for each different branch; 5) Information written on the branch and only 1 word, which is in the form of keywords; 6) Develop the main branch with other branches that contain information relating to the parent branches. Use the same color as the main branch color; and 7) Images must always be added to strengthen information or help creativity think.

According Warseno and Kumorojati (2011) the advantages of mind mapping are as follows: mind mapping can increase students' understanding capacity, by looking at pictures or seeing detailed information, remembering complex information more easily, being able to improve students' ability to concentrate, take notes, and increase student interest in learning, mind mapping helps students make interesting notes, can optimize the right brain and left brain, because mind mapping works with pictures, colors and simple words.

In addition to having many advantages, the mind mapping method also has weaknesses such as the existence of obstacles in teaching and learning activities according to Buzan (2008), among others: only active students are involved, not fully students are learning, takes a long time in understanding mind mapping, and are found discrepancy between the problems discussed with what is discussed by students. So the discussion is not in accordance with the problems that should be discussed.

The steps of the mind mapping method according to Swadarma (2013) are the delivery of today's learning objectives, providing an explanation of the subject, making a mind mapping that contains the teacher's explanation, students are divided into pairs, students re-explain the material that the teacher has submitted based on the mind mapping that has been made. Meanwhile his partner listened while giving a response. After finishing, the students took turns giving explanations. The teacher and students conclude the learning activities.

Learning Motivation

According to Sumantri (2015) motivation is a series of efforts in the form of power that functions to encourage someone to do something to achieve the desired goal. Purwanto (2014: 39), stated that "learning will produce a change obtained through effort, settled in a relatively long time and is the result of experience".

So it can be said that learning motivation is a driving force that is in a person both intrinsic and extrinsic in nature that can lead to learning activities, provide direction and ensure the continuity of learning and play a role in growing some positive attitudes.

Learning Motivation Indicators according to Uno (2012) consists of 6 indicators, namely: a) the desire and desire to succeed, b) the encouragement and needs in learning, c) the hopes and ideals of the future, d) the

appreciation of learning, e) the existence of interesting activities in learning, f) the existence of a conducive learning environment so that students can learn well.

Science Learning in Elementary School

Natural Sciences is the translation of words in English namely natural science, meaning Natural Sciences (IPA). Related to nature or related to nature, science means science. According to Iskandar (1997) Natural Science (IPA) or science can literally be called the science of nature, the study of natural events. Meanwhile according to Trianto (2013: 136) "Science is a collection of systematic theories, their application is generally limited to natural phenomena, born and developed through scientific methods".

Research Hypothesis

Based on the description in the background, literature review and mindset so that this research is more directed, it is necessary to put forward the following statistical hypotheses:

Hypothesis Zero (H_0) = There is no significant difference before and after the use of the mind mapping method in Grade V students of SD Inpres Sudiang Makassar City.

Alternative Hypothesis (H_a) = There is a significant difference before and after the use of mind mapping methods in Grade V students of SD Inpres Sudiang Makassar City.

METHOD

The research approach used is a quantitative approach. The type of research used is experimental research. In experimental research there must be a treatment that causes and will have an effect or effect. There are two variables used in this study, namely the independent variable in this study is the mind mapping method that is given the symbol x, while the dependent variable is the learning motivation given the symbol y. The research design used in this study is a quasi experiment design nonequivalent control group design.

The population in this study were all students of class V Spres Sudiang, amounting to 60 students. Sampling is done by probability sampling technique with simple random sampling technique. This type of sample is used because the sampling of members of the population is done randomly without paying attention to the strata in the population (Sugiyono, 2015). Data collection techniques used in this study were questionnaire, observation, and documentation. The learning process is carried out during two meetings for eac class, the first meeting as a pretest, and the second meeting as a treatment and posttest.

The data analysis technique used is descriptive analysis and inferential analysis consisting of normality test, homogeneity test, hypothesis test and n-gain test to determine the differences in students' motivation to learn science before and after being treated. Before questionnaires of learning motivation are used for research, there are need validity and reliability tests.

1. Validity Test

Validity test was analyzed using SPSS 20.0 for Windows. To determine the valid statement items if r count is greater than r table, where the value of r table from $N = 30$ is 0.361.

2. Reliability Test

An instrument is said to have good reliability if the measuring instrument can provide a relatively similar score to a respondent, if the respondent fills out a questionnaire at different times or in different places. The data used for the reliability test was taken from questionnaire data that had been declared valid, then the points on the questionnaire were calculated for their reliability value. The test was carried out using the Cronbach's alpha formula. To interpret the reliability coefficient, categories are used according to Sugiyono (2015: 184) as follows:

Table 1. Interpretation of Correlation Coefficients (r)

Interval	Interpretation
0,00-0,199	Very Low
0,20-0,399	Low
0,40-0,599	Medium
0,60-0,799	High
0,80-1,000	Very High

Source: Sugiyono (2015:184)

A. Statistik Deskriptif

Descriptive statistical analysis in this study will be used to describe the level of student motivation in learning science when treated using the mind mapping method. Descriptive data of students is seen from

the average value (mean), lowest value of data (minimum), highest value of data (maximum), range and standard deviation (standard deviation). Learning motivation variables are described using categorization. From the results of the values of students' motivation variables are categorized into:

Table 2. Categories of Student Learning Motivation

Interval	Categori
126 – 150	Very High
103 – 125	High
78 – 102	Medium
54 – 77	Low
30 – 53	Very Low

B. Inferential Statistic

Inferential statistical analysis is an analysis that emphasizes the relationship between variables using the presentation of hypotheses and summarizing research results. Before testing a hypothesis, a normality of data must be known in advance to determine the type of statistics that will be used to test the hypothesis.

1. Normality Test

Data normality test is used to determine whether the data obtained is normally distributed or not. Student learning motivation data can be said to be normally distributed if the significance of the calculation results is greater than 0.05 for the significance level (α) of 5%.

2. Homogeneity Test

The principle of this test is to see differences in the variations of the two data groups, so before testing is conducted, it must first be known whether the variance is the same or different. Data from both groups are said to be homogeneous if the significance value obtained is greater than 0.05. Conversely, if the data of the two groups obtained a significance value of less than 0.05, the data is said to be homogeneous.

3. Independent Sample t-test

Independent sample t-test is used to see the difference in the average learning motivation of the experimental class and the unrelated control class.

4. N-Gain test

N-gain test is performed to determine the strength of the increase in score of student learning outcomes. To see the N-gain in each group used an equation according to Hake (1999):

$$<g> = \frac{(\text{posttest score}) - (\text{pretest score})}{(\text{maximum score}) - (\text{pretest score})}$$

The N-gain results obtained will be categorized based on the following table:

Table 3. N-gain Criteria

Criteria	N-gain
High	$(<g>) \geq 0,70$
Medium	$0,70 > (<g>) \geq 0,30$
Low	$(<g>) < 0,30$

Source: Hake (1999)

RESULTS AND DISCUSSION

A. Research Results

1. Description of Using Mind Mapping Method

The learning process of science in the experimental class is carried out with material types of substances that are in the environment and mixtures. The use of mind mapping methods in the experimental class can be said to be very effective. This is evidenced by the results of observations made during the learning process. Before learning activities are carried out, researchers first prepare and arrange learning tools that will be used. The activities undertaken are preparing examples of mind mapping that are in accordance with the material that has been studied by students, compiling lesson plans, compiling worksheets and making observation sheets to observe learning conditions using the mind mapping method. Next, the researcher prepares a supporting tool for student activities to make mind mapping, namely folio-size plain paper and colored pencils or markers.

The steps of implementing the mind mapping method are: the researcher opens the class and explains the learning objectives and tells about the activities to be carried out. The activity carried out is to summarize the material of mixed substances in the form of mind mapping. Students are then divided into 6 groups, each group having 5 group members. After that, each group was distributed worksheets, folio-size plain paper and colored pencils or markers. Furthermore, researchers explain about mind mapping and how to make mind mapping while showing examples of mind mapping for material types of substances that exist in the surrounding environment. After that, the researcher explains about the material of the mixture that will be made mind mapping, then the researcher asks each group to make a mind mapping that contains material about the mixture. The material of the mixture that will be made mind mapping is the definition of mixture, understanding homogeneous mixture, understanding heterogeneous mixture, and examples of each type of mixture, as well as the difference between homogeneous mixture and heterogeneous mixture. Each group was given the opportunity to discuss and summarize the material in the form of mind mapping, and answer the worksheets that had been distributed. After that, each group alternately presented the results of the discussion, while the other groups listened and responded. The results of the implementation of learning can be seen as follows:

Table 4. Recapitulation of Observation Values Using Mind Mapping Method

Meeting	Total Score	Percentage	Qualification
1	41/54	75,92%	Effective
2	45/54	83,33%	Very Effective

Source: Observation data

Based on these observations it can be concluded that the implementation of the learning process carried out by the teacher increased from the first meeting with a total percentage of 75.92% and categorized as effective with the second meeting with a total percentage of 83.33% with a very effective category. The observed student activities are:

Table 5. Recapitulation of Student Observation Results in Science Learning

Meeting	Total Score	Percentage	Qualification
1	425/600	70,83%	Good
2	495/600	82,5%	Very Good

Source: Observation data

Based on researchers' observations, student activity in the experimental class at the first meeting with a total score of 425 points with a total percentage obtained 70.83% with a good category, while at the second meeting the experimental class received a total score of 495 points with a total percentage obtained 82.5% with a very good category.

2. Description of Student Learning Motivation

a. *Pretest* and *Posttest* Experiment Class

The results of the descriptive analysis for the results of the experimental class pretest answers related to the dependent variable namely learning motivation in science lessons are presented as follows:

Table 6. Qualifications and Pretest Intervals of Experimental Classes

No	Score	Mean	Category	Frequency	Percentage (%)
1	126 – 150	102,43	Very High	4	13,33%
2	103 – 125		High	9	30%
3	78 – 102		Medium	13	43,33%
4	54 – 77		Low	4	13,33%
5	30 – 53		Very Low	0	0%
			Total	30	100%

It can be concluded that the tendency of students' learning motivation pretest scores in the experimental class is in the medium category. The results of descriptive analysis for the results of the experimental class posttest answers are as follows:

Table 7. Experiment Class Posttest Qualifications and Intervals

No	Score	Mean	Category	Frequency	Percentage (%)
1	126 – 150	126,93	Very High	15	50%
2	103 – 125		High	13	43,33%
3	78 – 102		Medium	2	6,67%
4	54 – 77		Low	0	0%
5	30 – 53		Very Low	0	0%
			Total	30	100%

It can be concluded that students learning motivation at posttest has increased from the previous motivation (pretest). That is because students like to follow the learning process using mind mapping methods. So it can be concluded that the tendency of the post-test students' motivation in the experimental class is in the very high category and has increased compared to the pretest.

Table 8. Experiments Pretest and Posttest Results

Statistic Data	Experiment Class	
	Pretest	Posttest
Total Sample	30	30
Mean	102,43	126,93
High Score	134	150
Low Score	73	100
Range	61	50
Standard of Deviation	19,744	13,881

Based on table 8, it can be seen that the mean or average value of the pretest results of the SD Inpres Sudiang Makassar City students who have been given treatment using the mind mapping method is 102.43, while the posttest gets an average of 126.93. From the ideal score of 150, the highest score obtained by students at the pretest and posttest is 134 and 150, and the lowest value obtained by students at the pretest is 73, while at the posttest is 100. The range value at the time of the pretest is 61, while at the posttest it is 50. So the value of the range between the highest and lowest values at the time of the pretest and posttest is 61 and 50 with a difference of 11. The standard deviation of the results of the pretest is 19.744 and at the posttest 13.881 which means the ability of group collaboration at the pretest and posttest varies because the distribution value is away from 0, the data are heterogeneous.

b. Pretest dan Posttest Control Class

The control class is a class that does not use the mind mapping method in the learning process. Determination of students' pretest quantitative scores is to add up the questionnaire answers of respondents according to the frequency of answers.

Table 9. Qualification and Pretest Interval of Control Classes

No	Score	Mean	Category	Frequency	Percentage(%)
1	126 – 150	102,03	Very High	7	23,33%
2	103 – 125		High	8	23,67%
3	78 – 102		Medium	11	36,67%
4	54 – 77		Low	4	13,33%
5	30 – 53		Very Low	0	0%
			Total	30	100%

Table 9 shows that the tendency of students' learning motivation pretest scores in the control class is in the medium category.

Table 10. Qualification and Posttest Interval of Control Classes

No	Score	Mean	Category	Frequency	Percentage(%)
1	126 – 150	118,47	Very High	8	26,67%
2	103 – 125		High	16	53,33%
3	78 – 102		Medium	6	20%
4	54 – 77		Low	0	0%
5	30 – 53		Very Low	0	0%
			Total	30	100%

Based on table 10 it can be concluded that from 30 fifth grade students the results of student motivation were found to be in the high category and increased than during the pretest.

Table 11. Pretest and Posttest Results of Control Class

Statistic Data	Control Class	
	Pretest	Posttest
Total Sample	30	30
Mean	102,03	118,47
High Score	136	141
Low Score	70	95
Range	66	46
Standard of Deviation	20,468	13,670

3. Based on the table above, it can be seen that the results of the pretest and posttest of students' learning motivation in the control class taught without using the mind mapping method show the average value for the pretest is 102.03 while the posttest value is 118.47. This shows that there are differences in the average scores of students' pretest and posttest. Of the ideal score of 150, the highest score at pretest is 136, while the highest value at posttest is 141. The difference in the highest score at pretest and posttest is 5. Meanwhile, the lowest value at pretest is 70, while the lowest value at posttest is 95. The lowest difference between the pretest and posttest scores is 25. The standard deviation value (standard deviation) at the pretest is 20,468, while for the posttest is 13,670. The standard deviation value which shows that the distribution value away from zero means that the ability of the control group cooperation varies. The value of the range at the time of the pretest is 66, while at the posttest is 46. So the value of the range between the highest and lowest value at the time of the pretest and posttest is 66
- The Effect of Mind Mapping Method on Student Learning Motivation**

4. Normality Test

Table 12. Normality Test Results

Data	Sig.	Note
Pretest Experiment Class	0,200	0,200>0,05
Pretest Control Class	0,200	0,200>0,05
Posttest Experiment Class	0,200	0,200>0,05
Posttest Control Class	0,200	0,200>0,05

Obtained experimental class data that were taught using the mind mapping method on the pretest and posttest is 0.200 and 0.200, while the control class taught without using the mind mapping method on the pretest and posttest is 0.200 and 0.200. Because $0.200 > 0.05$, it can be concluded that all data from both classes are normally distributed.

5. Homogeneity Test

Table 13. Homogeneity Test Results

Data	Levene Statistic	Sig.	Note
Student learning motivation Based on Mean	0,000	0,984	$0,984 > 0,05$ =homogeneity

Based on the results of the output obtained statistical levene of 0,000. Levene statistical value shows that the smaller the value, the greater the homogeneity. While the degree of freedom (df) means the degree of freedom associated with sample size, where $df1 = \text{number of variables} - 1$ ($2-1 = 1$). Whereas for $df2 = \text{number of samples} - \text{number of variables}$ ($60-2 = 58$). For values p-value sig. of 0.984 because the significance value is greater than 0.05, ($0.984 > 0.05$), then the data have the same variance (homogeneous).

6. Independent Sample t-test

The following are the results of the independent sample t-test pretest test of the experimental and control classes.

Table 14. Independent Sample T-Test Pretest Experiment Class and Control Class

Data	T	df	Sig.(2 tailed)	Note
Pretest Experiment Class and Control Class	0,077	58	0,939	$0,939 > 0,05$ =no difference

Based on the table, it can be seen that the probability value is greater than 0.05, it shows that there is no difference in the pretest of students' learning motivation between the experimental class and the control class. Then the t-test on the results of the experimental class posttest and the control class. The following are the results of the Independent sample t-test posttest of the experimental class and the control class.

Tabel 15. Independent Sample T-Test Posttest Experiment Class and Control Class

Data	T	df	Sig.(2 tailed)	Note
Posttest Experiment Class and Control Class	2,380	58	0,021	0,021 < 0,05 = Have difference

The results of independent sample t test testing of this study are at sig values. (2-tailed) on the equal variance not assumed whose value is $0.021 < 0.05$ meaning, there is a significant difference between the results of the posttest (control class without using mind mapping methods) and the posttest results (the experimental class which is treated with mind mapping method) .

7. N-Gain Test

Table 16. N-Gain Test

	Class	N	Mean	Std. Deviation	Std. Error mean
Gain	Experiment	30	0,5336	0,21401	0,03907
	Control	30	0,3400	0,11914	0,02175

Based on the table it can be concluded that the experimental class ($M = 0.5336$) has a higher change than the control class ($M = 0.3400$), so it can be concluded that greater changes occur in the experimental class. By using the categorization of control class gain values are in the low category (0.3), while for the experimental class are in the medium category (0.5).

Discussion

This study describes the influence of the use of mind mapping methods on student learning motivation in science subjects class V SD Inpres Sudiang Makassar. This study was conducted for approximately 1 week starting on April 26-May 4 2019 in the fifth grade of SD Inpres Sudiang, Makassar City. The learning process carried out at SD Inpres Sudiang took place during 4 meetings, which were held 2 times in the experimental class and 2 meetings in the control class. The learning process in the experimental class uses the mind mapping method while in the control class without using the mind mapping method.

The results of the calculation of students motivation for the experimental class before being given treatment are in the medium category and in the control class are in the medium category. Furthermore, the results of the calculation of students' motivation scores for the experimental class and the control class after being given treatment ie the experimental class is in the very high category and the control class is in the high category. Based on this it can be interpreted that the mind mapping method was successfully used in science learning because the posttest value of the experimental class was higher than the posttest value of the control class. As stated by Susanto (2014: 52) that the method of teaching is one of the components that must be present, which must be mastered by the teacher to teach or present learning material to students in class both individually or in groups, so that the learning process attracts interest and student motivation to learn so students can understand and utilize their learning.

Based on the hypothesis test using an independent sample t test known sig values. (2-tailed) at the equal variance not assumed is $0.021 < 0.05$ meaning that there is a significant difference between the results of the posttest (control class without using the mind mapping method) and the results of the posstest (the experimental class that was given the mind mapping treatment method). So it can be concluded that the mind mapping method affects student motivation.

CONCLUSION

Based on the results of research and discussion, it can be concluded that student motivation can be improved through the application of the mind mapping method of SD Inpres Sudiang Makassar City. This is evidenced by the differences in student motivation before and after applying the mind mapping method.

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