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The Effects of Conventional Method, Mind Mapping Method, and Learning Motivation on Thematic Learning Outcomes in 3rd Grade of Elementary School

Wahyu Niken Irbawati[1]
Iskandar Wiryokusumo[2]
Ibut Priono Leksono[3]

[1,2,3]*Educational Technology Study Program, Graduate Program, Universitas PGRI Adi Buana Surabaya, Jl. Dukuh Menanggal XII, Surabaya 60234, Indonesia.*
[1]*Email: wahyuniken1993@gmail.com*

Abstract

This study aims to determine the effect of mind mapping vs. conventional methods and learning motivation on learning outcomes in the thematic subjects of energy themes and changes in energy change sub-themes 2 in third grade students of SD Muhammadiyah 1 and SD Muhammadiyah 2 Waru 2017/2018 academic year. Sources of data were obtained from students of SD Muhammadiyah 1 Waru with a total of 47 students and SD Muhammadiyah 2 Waru with 38 students. This study uses experimental research design with the form of Factorial Design with the sampling technique is Cluster Sampling. The results of the study concluded that the experimental group students showed better learning outcomes compared to the control group. Students who had high learning motivation towards thematic subjects had better learning outcomes compared to students who had low learning motivation on thematic subjects, and not there is interaction between mind mapping vs. conventional methods and student learning motivation on thematic subjects in grade 3 of Muhammadiyah 1 Waru Elementary School and Muhammadiyah 2 Waru Elementary School in the academic year 2017/2018.

Keywords:
Mind mapping
Conventional method
Learning motivation
Learning outcome
Criteria completeness minimum
Control and experiment class.

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1. Introduction

Education is the most important means in an effort to improve the quality of human resources. Without education, it will be very difficult for a country to obtain quality results from existing human resources to the fullest. Education has a purpose that can be used as a reference in a country in improving the quality of existing human resources. Riyanto (2006) argues that the purpose of an education is a statement that describes what abilities students can do after doing a learning activity. The essence of this opinion is fattening about the delivery of a learning outcome in an education.

The success of learning and the purpose of education does not escape the role and effort of the teacher in realizing the ideal learning process and is easily understood by students. Factors that influence learning success are teachers, curriculum, learning models, learning methods, and learning media. The balance of learning success has a major impact on improving student learning outcomes. Learning media that are used by teachers in packaging learning to be interesting are still not on target and provide convenience to students in receiving learning. The role of the teacher in realizing educational goals can be done by determining a learning method that is in accordance with the subjects taught by the teacher in accordance with the character

of the lesson and the condition of the students to be given learning. The appropriate and ideal learning method will result in an increase in student learning outcomes. At the basic education level the teacher plays a very vital role in the success of student learning outcomes. The teacher is really required to be smart, interactive, and master the learning methods that are in accordance with the character of the subjects with the character of the students.

Elementary school education is the foundation of children's education which functions to construct knowledge and information in the learning process. Information that is well connected and interesting simultaneously will have an impact on increasing student learning outcomes to the maximum. According to Purwanto (2013) learning outcomes are as a level achieved in following the teaching and learning process in accordance with established educational goals. Seeing the definition of learning outcomes it can be concluded that learning outcomes are an important stage in the teaching and learning process that is in accordance with the goals rather than education itself. Learning outcomes are the final results that are used to measure the level of success of a teaching and learning activity. At the level of education the learning outcomes will be explained thoroughly if the value of student learning outcomes is at Criteria Completeness Minimum (*Kriteria Ketuntasan Minimum/KKM*) value or above the KKM value.

The learning process does not always go smoothly, even though the revitalization of the curriculum continues to be done to overcome the shortcomings of the old curriculum and is expected to produce a learning curriculum that is in accordance with the conditions and current educational constraints. Many problems faced by students in the learning process, one of which is the lack of student participation in participating in learning activities. This is because the learning process is not fun, the learning method used is not in accordance with the character of students, and interesting learning media.

The reality of the problem that occurred at *SD Muhammadiyah 2 Waru* class 3 Abu Bakar here is not much different from the problems mentioned above. The problems that occur here are 3rd grade students Abu Bakar at Muhammadiyah Elementary School 2 Waru has low thematic learning outcomes, said to be low because more than 50% of the class students scored below the minimum completeness criteria (KKM) set by the school which is 80. Problems others are students' lack of learning interest, the difficulty of students in digesting the material, the class is not conducive, frequent conflicts, and students who prefer drawing learning rather than learning that seem to drain the mind. Based on the results of interviews with the teacher of grade 3 Abu Bakar, it was revealed that the tendency of students to understand the method of learning by memorizing at a glance all the material directly so that they easily forget, even more often they did not understand the material they memorized at a glance, triggered again by their lack of interest in the material that seemed to drain the mind further triggered their learning outcomes not as expected. Motivation is of course also very influential for student learning outcomes. Degeng (2013) revealed that motivation is also a very important part of managing student interactions with learning. Most fields of study actually have an attraction to learn, but learning fails to use it as a means of attraction, and what remains is the ability of facts, concepts, procedures, or principles that are not meaningful.

Hoerudin, Sudrajat, and Setiawan (2009) revealed that education in Indonesia is still tinged with trivial matters such as the busyness of elementary students memorizing subject matter. Elementary students in fact do always understand the learning material by memorizing the whole so that the material will be easily forgotten and not stored in long-term memory. Current problems must be addressed immediately and a suitable solution is sought, so that the learning process is expected to return to maximum and student learning outcomes become better. The use of interesting learning methods is expected to attract interest, attention, and learning motivation of students to want to learn.

The application of learning methods to thematic subjects that have quite a lot of material, and some subjects are put together, of course, must be supported by a high learning motivation. Because with a high learning motivation will make it easier for students to follow the learning process. This is in accordance with the results of Hamdu and Agustina (2011) which says that if a student has a high motivation to learn, his learning success will be good. So that it can be said that motivation is the main aspect for successful learning. Based on the above problems, the researcher will conduct research with two kinds of learning methods, namely mind mapping methods and conventional methods in thematic learning the theme of energy and change in third grade students of SD Muhammadiyah 1 and SD Muhammadiyah 2 Waru Academic Year 2017/2018

2. Methods

This study examines the effect of mind mapping vs. conventional methods and learning motivation on learning outcomes in energy thematic subjects and changes in energy change sub-themes 2 in third grade students of SD Muhammadiyah 1 and SD Muhammadiyah 2 Waru in the academic year 2017/2018.

This study uses experimental research design with the form of Factorial Design. According to Sugiyono (2012) Factorial Design is a modification of design true experimental, namely by considering the possibility of a moderator variable that influences the treatment (independent variable) on the outcome (dependent variable). Research designs that are suitable for situations where not all variables are able to be controlled as in educational research are experimental designs as in Tuckman (1999). According to Tuckman, if researchers

cannot randomly select samples, the initial state of the members of the experimental group and the control group cannot be ascertained as equal (not having initial group equivalence).

The research design that is suitable for controlling research bias is due to the random selection of individuals not Nonequivalent Control Group Design, Tuckman (1999). The characteristics of Nonequivalent Control Group Design are the pretest in both the experimental group and the control group. The purpose of the pretest is to find out whether the initial conditions of the two groups are equivalent (non-equivalent). To find out the initial state of the group can also use scores/values of other variables that are relevant to the treatment of Tuckman (1999). If the initial state of the group is not commensurate then the score/value of the pretest or the score of another variable that is relevant is used for the covariance analyst so that the bias of the study because the selection of samples that are not done randomly can be omitted.

The population in this study was taken from 3rd grade students of SD Muhammadiyah 1 Waru and SD Muhammadiyah 2 Waru in the 2017/2018 Academic Year. The number of students is 85 students divided into four parallel classes. With the consideration that between the four classes his knowledge of the Thematic subject theme of Energy and Change was relatively the same. Two classes were used as the experimental group and two classes as the control group. The recapitulation of population in this study are as follows:

Table-1. Population of Research Subjects.

SD Muhammadiyah 2 Waru	Class 3 Abu Bakar	19 students
	Class 3 Umar Bin Khatab	19 students
SD Muhammadiyah 1 Waru	Class 3 Usman Bin Affan	23 students
	Class 3 Umar Bin Khattab	24 students
Total Population		85 students

Source: Data Statistic from SD Muhammadiyah 1 & 2 Waru, Sidoarjo.

This research uses Cluster Sampling technique. According to Sugiyono (2012) Cluster Sampling is a sampling technique in which sampling is based on a predetermined population. In this study the sample is each school for the experimental group is 19 students of the class of Abu Bakar SD Muhammadiyah 2 Waru as many as 19 students, and students of class 3 Usman SD Muhammadiyah 1 Waru as many as 23 students. While for the Control group, there were 19 students in the third grade of Umar Muhammadiyah Elementary School 2 Waru, and 24 students in the third grade of Umar Muhammadiyah 1 Waru Elementary School. Recapitulation of samples in this study can be seen in the following table:

Table-2. Research Sample.

No	School	Class	Total	Sampling Technique	Group
1	SD Muhammadiyah 1 Waru	3 Usman Bin Affan	23		Experiment
		3 Umar Bin Khattab	24		Control
2	SD Muhammadiyah 2 Waru	3 Abu Bakar	19	*Cluster Sampling*	Experiment
		3 Umar Bin Khatab	19		Control
Total			85		

Source: Data Statistic from SD Muhammadiyah 1 & 2 Waru, Sidoarjo.

According to Arikunto (1996) research instrument is a tool when researchers use a method. Measuring tool that refers to tests for mind mapping methods and conventional methods. The instrument that will be used by researchers in retrieving data is learning devices, learning outcomes tests, and student learning motivation questionnaires. Data collection techniques used in this study were motivational tests and questionnaires.

Learning outcomes were obtained from the pretest before treatment with learning media carried out. At the end of the teaching and learning process, a second test (posttest) is conducted. To ensure the quality of the research instruments in the form of items and questionnaires, the prerequisite test is first carried out, namely by validity test, reliability test. The results of the test items will be used to determine the items that are feasible to use in the field of data collection process

3. Results and Discussion
3.1. Results
3.1.1. Description of Student's Learning

Student learning outcomes on the topic of subjects on energy themes and their changes in initial abilities in the energy theme emotion subjects and their changes and Post Test was used to measure students' final abilities in the theme of energy and change. Student learning outcomes in this study were measured using instruments in the form of objective tests. Value of learning outcomes Pre-test students of the experimental group (Mind Mapping) with a total of 42 students showing an average value of 69.30, standard deviation of 4.89, median of 69.50, minimum score of 59.00, maximum score of 80.00, and the range is 21.00. While the learning outcomes of the control group students (conventional) with 43 students showed an average value of

69.04, the standard deviation of 5.97, the median of 68.00, the minimum score of 50.00, the maximum score of 80.00, and the range of 30.00. Pre-test learning outcomes between the experimental group (Mind Mapping) and the (conventional) control group were 69.30–69.04 = 0.26.

Table-3. Frequency Distribution of Student Pre-Test Learning Results in Experimental Classes and Control Classes.

Treatment	N	Mean	Std. Deviation	Median	Minimum	Maximum	Range
Mind Mapping	42	69,30	4,89	69,50	59,00	80,00	21,00
Konvensional	43	69,04	5,97	68,00	50,00	80,00	30,00

Source: Result of calculation by SPSS 22.

Based on Table 3, the description of the pre-test learning outcomes of students in the experimental class (Mind Mapping) and the students of the conventional (control) group are known to have no difference in mean values, standard deviations, medians, minimum values, maximum values, and the range of analysis results at a reasonable and descriptive level this means that students in the experimental class (Mind Mapping) and students in the control class (conventional) have the same initial learning ability. The value of post-test learning outcomes of students in the experimental group (Mind Mapping) with a total of 42 students shows an average value of 90.97, a standard deviation of 4.68, a median of 93.00, a minimum score of 80.00, a maximum score of 97.00, and the range is 17.00. While the post-test learning outcomes of the control group students (conventional) with a total of 43 students showed an average value of 81.72, a standard deviation of 5.09, a median of 80.00, a minimum score of 73.00, a maximum score of 93, 00, and the range of 20.00. The difference in the average value of students' post-test learning outcomes between the experimental group (Mind Mapping) and the (conventional) control group was 90.97−81.72 = 9.25.

Table-4. Frequency Distribution of Student Learning Outcomes in Experimental Classes and Control Classes.

Treatment	N	Mean	Std. Deviation	Median	Minimum	Maximum	Range
Mind Mapping	42	90,97	4,68	93,00	80,00	97,00	17,00
Konvensional	43	81,72	5,09	80,00	73,00	93,00	20,00

Source: Result of calculation by SPSS 22.

Based on Table 4, the description of the post-test learning outcomes of students in the experimental class (Mind Mapping) and the control group (conventional) students found that there were differences in mean values, standard deviations, medians, minimum values, maximum values, and ranges of analysis results. Descriptively this means that the average student learning outcomes in the experimental class (Mind Mapping) is higher than the student learning outcomes in the control class (conventional).

3.1.2. Hypothesis Testing

The results of the analysis of the variables between the experimental group (Mind Mapping) were compared with the control group (conventional), as follows:

Table-5. Summary of ANOVA Results.

Variant Source	Df	Means Square	Fratio	Probability
Learning methods	1	1813.17	79.710	0.000
Learning Motivation	1	177.451	7.801	0.007
Interaction	1	1.896	0.083	0.774

Source: Result of calculation by SPSS 22.

The hypotheses to be tested in this study are as follows:
a. Hipotesis 1
   H_1 : There was a significant influence on the learning outcomes of grade 3 students on the thematic subjects of energy themes and their changes with the sub-theme of 2 energy changes between the experimental group students (Mind Mapping) and control groups (conventional) at Muhammadiyah 1 Waru Elementary School and Muhammadiyah 2 Waru Elementary School in 2017.
   H_0 : There was no significant effect on the learning outcomes of grade 3 students on the thematic subjects of energy themes and their changes with the sub-themes of 2 changes in energy between the experimental group students (Mind Mapping) and control groups (conventional) at Muhammadiyah 1 Waru Elementary School and Muhammadiyah 2 Waru elementary school year.
b. Hipotesis 2
   H1 : There is a significant effect of high learning motivation and low learning motivation on the learning outcomes of grade 3 students in the theme of energy thematic subjects and their changes with the subtema 2 of energy changes between students of the experimental group (Mind Mapping) and (conventional) control group students at SD Muhammadiyah 1 Waru and Muhammadiyah 2 Waru Elementary School 2017/2018 school year.

H0 : There was no significant effect of high learning motivation and low learning motivation on the learning outcomes of grade 3 students in the thematic subjects of energy themes and their changes with the sub-theme 2 of energy changes between students in the experimental group (Mind Mapping) and (conventional) control group students at SD Muhammadiyah 1 Waru and SD Muhammadiyah 2 Waru 2017/2018 academic year.

c. Hipotesis 3

H1 : There is an interaction between the Mind Mapping method versus the conventional method and learning motivation towards learning outcomes in thematic subjects on energy themes and changes in the energy change sub-theme 2 in third grade students of SD Muhammadiyah 1 Waru and SD Muhammadiyah 2 Waru 2017/2018 academic year.

H0 : There is no interaction between the Mind Mapping method versus the conventional method and learning motivation towards learning outcomes in the thematic subjects of the energy theme and changes in the energy change sub-theme 2 in third grade students of SD Muhammadiyah 1 Waru and Muhammadiyah 2 Waru Elementary School 2017/2018 academic year.

Based on the results of variance analysis in Table 5 shows that: H0 for hypothesis 1 is rejected, F-count = 79,710 with a probability of 0,000, because the probability value is less than the significance level of 0.05, it can be concluded that H0 is rejected. This means that there is a significant influence on the learning outcomes of grade 3 students on the thematic subjects of energy themes and their changes with the sub-theme of 2 energy changes between the experimental group students (Mind Mapping) and control groups (conventional) at Muhammadiyah 1 Waru Elementary School and Muhammadiyah 2 Waru Elementary School year 2017/2018. Based on the results of hypothesis testing it can be concluded that the experimental group taught using the Mind Mapping method on thematic subjects with the theme of energy and change is better than the control group students who are taught using conventional methods.

Based on the results of analysis of variance in Table 5 shows that: H0 for hypothesis 2 is rejected F-count = 7.801 with probability 0.007. Because the probability value is less than the 0.05 level, it can be concluded that H0 is rejected. This means that there is a significant effect of high learning motivation and low learning motivation on the learning outcomes of grade 3 students in the thematic subjects of energy themes and their changes with the sub-theme 2 of energy changes between students of the experimental group (Mind Mapping) and control (conventional) students at SD Muhammadiyah 1 Waru and SD Muhammadiyah 2 Waru 2017/2018 academic year. Based on the results of testing the hypothesis that the group of students who have high learning motivation towards thematic subjects, the theme of energy and change has a better result compared to the group of students who have low learning motivation on thematic subject subjects on energy themes and changes in grade 3.

Based on the results of analysis of variance in Table 5 shows that: H0 for hypothesis 3 fails to be rejected (accepted) F count = 0.083 with probability 0.774. Because the probability value is above the 0.05 significance level, it can be concluded that H0 failed to be rejected, meaning that there is no interaction between the Mind Mapping method vs. the conventional method and learning motivation towards learning outcomes in the thematic subjects of energy themes and changes in the sub-theme 2 energy changes in class students 3 Muhammadiyah 1 Waru Elementary School and Muhammadiyah Elementary School 2 Waru 2017/2018 school year. The results of this study indicate that the use of learning methods (using Mind Mapping media and conventional methods) and student motivation in the thematic subjects of energy themes and their changes, does not have an effect on the learning outcomes of thematic subjects on energy themes and changes in grade 3.

3.2. Discussion
3.2.1. Description of Student Learning Outcomes in Experimental Classes and Control Classes in Thematic Subjects Theme of Energy and Change in Grade 3 Students of SD Muhammadiyah 1 and SD Muhammadiyah 2 Waru

The results of the translation of data analysis showed that there were significant differences between student learning outcomes in the experimental group and the control group in the thematic subjects of energy themes and changes in grade 3 students of SD Muhammadiyah 1 and SD Muhamamdiyah 2 Waru. This study was conducted to determine the differences in post-test learning outcomes in the experimental class and control class in the thematic subjects of energy themes and changes in class 3. Students' learning outcomes from the control group obtained a minimum value of 73.00 and maximum results of 93.00 while student learning outcomes from the experimental group obtained a minimum value of 80.00 and a maximum result of 97.00. The average value of student learning outcomes in the control group was 81.72 while for the experimental group it was 90.97. Based on the results of the average value between the two groups has a value range of 9.25.

Based on the average value of the control group student learning outcomes with the experimental group can be concluded that the learning outcomes of students taught using mind mapping methods on thematic subjects the theme of energy and change has better learning outcomes and has a significant increase compared to students taught using conventional method. This is supported by Buzan (2006) saying that the mind mapping method uses the technique of channeling ideas using words, colors, lines, and images so that it is very

easy to build knowledge. Wahida (2014) further revealed that the mind mapping method is an interesting learning method and the easiest way to place information into the brain, and a way to record effective, efficient, creative, interesting, easy and has high usability because it is done by mapping mind. According to Gagne (1985) suggests that, the success of learning depends on the teacher. The interaction of teacher and student behavior influences changes in students. The changes that occur in these students are as a result of involvement in class activities with teachers and other students.

3.2.2. Hypothesis Test Differences in the Application Results of Mind Mapping Methods and Conventional Methods in Thematic Subjects of the Theme of Energy and Change in Class 3 Students of SD Muhammadiyah 1 and SD Muhammadiyah 2 Waru in Control Groups and Experimental / Intervention Group

Based on the results of hypothesis testing through the two-way ANOVA test on the learning outcomes of the control group and the experimental group students, it shows that there are differences in the learning outcomes of the thematic themes of energy themes and their changes significantly between the experimental group students compared to the control group students. The experimental group students who were taught using the mind mapping method showed better learning outcomes compared to the control group taught using conventional methods. This is indicated by the value of F-count in hypothesis 1 amounting to 79,710 with a probability value of 0,000 or less than the significance level of 0.05. Based on the results above, it can be concluded that the experimental group taught using the Mind Mapping method on thematic subjects with the theme of energy and change is better than the control group students who are taught using conventional methods. This is supported by the results of research Abdurrahman in Jihad (2009) who argued that, learning outcomes are abilities obtained by students after going through learning activities. Learning itself is a process of someone who tries to obtain a form of behavior change that is relatively settled. A student who is successful in learning is one who successfully achieves learning goals or instructional goals. The statement above is also supported by Hamalik (2010) which states that learning outcomes are abilities possessed by students after receiving their learning experiences. Learning outcomes are used by teachers to be used as a measure or criteria in achieving an educational goal. Learning outcomes are shown by the achievement of indicators made by researchers. Learning outcomes can be seen from the high and low values obtained by students during the learning process.

Based on the results of hypothesis testing through the two-way ANOVA test on the learning outcomes in the control group and the experimental group, it shows that there are differences in the learning outcomes of energy theme thematic subjects and their significant changes between groups of students who have high learning motivation compared to groups of students who have motivation low learning on thematic subjects on energy themes and changes in the experimental group taught by using mind mapping methods with control groups taught using conventional methods. Students who have high learning motivation towards thematic subjects with the theme of energy and change have better learning outcomes compared to students who have low learning motivation on thematic subjects on energy themes and changes in grade 3 students at SD Muhammadiyah 1 and SD Muhamamdiyah 2 Waru. This is evidenced by the value of F-count on hypothesis 2 of 7.801 with a probability value of 0.007 or the probability value of hypothesis 2 is less than the significance level of 0.05. Based on the results of the statement, it can be concluded that there are differences in the learning outcomes of thematic subjects on energy themes and significant changes, between groups of students who have high learning motivation compared to groups of students who have low learning motivation on thematic subjects on energy themes and changes in grade 3. This is in line with the opinion of Degeng (2013) that media is an integral part of the teaching and learning process and whatever media the ultimate target is used to facilitate learning. According to Olivia (2014) in his book that mind mapping is a form of note that is not monotonous because it has a concurrent brain function and has interrelationships with each other so that it forms a continuity of the work of two brain parts.

Based on the results of hypothesis testing through the two-way ANOVA test on student learning outcomes and the results of student learning motivation in the control group and experimental group showed that there was no interaction between the learning process using mind mapping methods and conventional methods with students' learning motivation towards learning outcomes in thematic subjects the theme of energy and change in class 3. The results of this study indicate that the learning process (using mind mapping methods and using conventional methods) and student motivation in the thematic subjects of the theme of energy and change in class 3 does not have an effect on the learning outcomes of the eyes thematic lessons on the theme of energy and change in class 3. This is evidenced by the results of hypothesis testing which states that the value of F-count on hypothesis 3 is 0.083 with a probability value of 0.774 or the result of the probability of hypothesis 3 having a value greater than level of significance is 0.05. Based on the results above, it can be concluded that the use of learning methods (using Mind Mapping media and conventional methods) and student motivation in the thematic subjects of energy themes and their changes, does not have an effect on the learning outcomes of the thematic themes of energy themes and their changes to the class 3. The results of this study are reinforced by the research of Iqbal (2009) which concluded that there were no differences in learning outcomes due to the interaction between the use of learning models and the initial abilities of learning outcomes. This is reinforced by Howell (2006) which states that if the independent variables and moderator

variables each have a strong influence on the dependent variable, then the influence of the interaction of independent variables and moderator variables on the dependent variable is expected to be weak.

4. Conclusions

Based on the results of the research described above, conclusions can be taken as follows.

1. There is a significant influence on the learning outcomes of grade 3 students in the thematic subjects of energy themes and their changes with the subtema of 2 energy changes between the experimental group students (Mind Mapping) and control groups (conventional) at Muhammadiyah 1 Waru Elementary School and Muhammadiyah 2 Waru SD 2017/2018 lessons.

2. There is a significant effect of high learning motivation and low learning motivation on the learning outcomes of grade 3 students in the thematic subjects of energy themes and their changes with the subtema of 2 energy changes between students in the experimental group (Mind Mapping) and control (conventional) students at SD Muhammadiyah 1 Waru and SD Muhammadiyah 2 Waru 2017/2018 school year.

3. There is no interaction between the Mind Mapping method versus the conventional method and learning motivation towards learning outcomes in the thematic subjects of energy themes and changes in the energy change subtema 2 in third grade students of SD Muhammadiyah 1 Waru and SD Muhammadiyah 2 Waru 2017/2018 academic year.

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