

**INFLUENCE OF USE OF MIND MAPPING METHOD BY TEACHERS ON
TEACHING PREPARATION IN BASIC SCHOOL IN SUBJECT OF MATERIALS
TEACHING EYES LESSON SCIENCE NATURAL SCIENCE (IPA)**

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ABSTRACT

In terms of time, Mind Mapping can streamline the use of time in studying an information. This is mainly because this method can present a comprehensive picture of a thing in a short time. In other words, Mind Mapping is able to cut learning time by changing the pattern of linear recording into effective recording and at the same time directly understood by the individual. So is the preparation of teachers. Teaching preparation is a special tip in the successful delivery of a subject matter. One of the subjects in Elementary School (ES) is a Natural Science that in fact many proofs between theory and practice. Therefore, the Mind Mapping method in preparation for teaching is one of the special tips for the delivery of the material in its entirety. The more mature the preparation of a teacher in planning the lesson, the better prepared the teacher teaches. With Mind Mapping, the teacher must have tried to think about the things involved with the lesson to be conveyed, such as the tool of the demonstration, how to estimate the condition of the learning condition if using the props, how to use the props, or whether the learner should try the props We make / we serve. With Mind Mapping, teachers are ready to teach with all their abilities accompanied by learning tools that are prepared.

Keywords: *Mind Mapping, Preparation, Teaching.*

I. INTRODUCTION

Mind Map is a creative thinking tool that reflects the natural workings of the brain. Mind maps allow the brain to use all its images and associations in radial and network patterns as the brain is designed, as it is internally always used by the brain, and where it needs to give it a habit. Mind Mapping is usually made by students to be able to vary on each material. This is due to the different emotions and feelings that are present in the student at all times. The pleasant atmosphere that students get when they are in the classroom during the learning process will affect the creation of mind maps. Thus, teachers are expected to create an atmosphere that can support student learning conditions, especially in the process of making Mind Mapping.

The learning process that a person experiences depends on the learning environment. If the learning environment can provide positive suggestion, it will have good impact on the learning process and outcomes, otherwise if the environment gives negative suggestions it will adversely affect the process and learning outcomes.

So is the teacher. The teacher is one of the decisive figures of success in a lesson. In making Mind Mapping is also required courage and high creativity. Variations with capital letters, colors, underscores or symbols depicting key points or ideas. Turning on the Mind

Mapping created by the teacher will be more impressive. Creating Mind Mapping contained in the learning when the implementation becomes a stimulus for students to be more creative.

a. Problem Formulation

Based on the description that has been disclosed in the background of research, then the formulation of this research problem stated as follows: "What is the effect of using mind-mapping method by teachers on the preparation of teaching in elementary school (SD) in the delivery of subject matter of Natural Science (IPA)? . "

b. Research Questions

The problems in research are specifically formulated through the following research questions:

1. What is the effect of learning when a teacher does not prepare well?
2. How does the Mind Mapping method benefit if used by a teacher on all subjects given to elementary students?
3. What is the effect of using Mind Mapping method by teachers on preparing teaching in elementary school in the delivery of subject matter of science subjects?

c. Research Purposes

The specific objectives of this study are based on the formulation of the issues already discussed previously concerning the ability of teachers in presenting the subject matter of science in elementary school which makes the aspects that should be owned and taken by the teacher so that the learning given to the students can be delivered properly. The objectives of this study are specifically as follows:

1. Gain a picture of the difference in learning, to a teacher who does not prepare well and who prepare well what will be taught to the students.
2. To obtain the benefits of Mind Mapping methods when used by a teacher on all subjects given to elementary students.
3. Getting a picture of the effect of using Mind Mapping method by teachers on the preparation of teaching in elementary school in the delivery of teaching materials subjects IPA.

d. Research Survey

Output target of research that will be achieved from this research as follows:

1. The results of this study were published in the Journal of Primaryedu PGSD STKIP Siliwangi Bandung in September 2017.
2. The results of this study will be published in the Teacher Working Group (KKG) at both the school cluster level, sub-district level and at the district and provincial levels.

3. Research results on Mind Mapping method can be applied to teachers, especially those teaching in elementary, in order to maximize all its ability in the delivery of materials, especially science subjects.

Science is a science that learn about the nature and its contents. This means the science of learning all the objects that exist in nature, events, and symptoms that appear in nature. Science can be interpreted as an objective knowledge. So from the side of the term IPA is an objective knowledge about the nature and its contents.

The term Science or Nature Science is also known as science. This word of science comes from the Latin word *scientia* which means "I know". In English, the word science comes from the word *science* which means "knowledge". Science then developed into a social science which is in Indonesian known as Social Science (IPS) and natural science which is in Indonesian is known as Natural Science (IPA). In the Fowler dictionary (1951), natural science is defined as: systematic and formulated knowledge dealing with material phenomena and based primarily on observation and induction (which means that natural science is defined as: systematic knowledge and composed by linking natural phenomena Material and based on observations and inductions). Another source states that natural science is defined as a piece of theoretical knowledge or a kind of theoretical knowledge.

IPA is a branch of knowledge that begins with natural phenomena. IPA is defined as a collection of knowledge about objects and natural phenomena derived from the results of scientists' thought and investigation carried out with the skill of experimenting using scientific methods. This definition implies that IPA is a branch of knowledge built on observation and classification of data, and is usually compiled and verified in quantitative laws, which involves applications of mathematical reasoning and data analysis of natural phenomena. Thus, IPA is essentially a science of natural phenomena poured in the form of facts, concepts, principles and laws tested kebenarannya and through a series of activities in scientific methods. Science is a science that studies about natural phenomena and everything that exists in nature.

IPA has some understanding based on the scientist's point of view from the definition of science itself, the way of thinking of science, the way of science investigation to the object of science study. The understanding of science according to Trowbridge and Bybee (1990) science or IPA is a representation of a dynamic relationship that includes three main factors namely the extant body of scientific knowledge, the values of science and the method and the proses of science "which means that science is the product and process , And contains values. IPA is the result of an interpretation of the world of depth. IPA as a process / method

of inquiry involves the way of thinking, attitude and action steps of scientists to obtain IPA products, such as observation, measurement, formulating, testing hypotheses, collecting data, experimenting and predictions.

Therefore IPA should be viewed as a way of thinking to understand nature, as a way to conduct investigations and as a collection of knowledge. This is consistent with that of Collete and Chiapetta (1994) "IPA should be regarded as a way of thinking in the search for the understanding of the secrets of nature and as the body of knowledge produced from inquiry." It can be concluded that IPA is a collection of knowledge or science as a scientific product, a way or a way of thinking or science as a scientific product and a way to investigate or science as a scientific process.

To clarify our knowledge about the nature of science, we need to put forward the terms "facts, concepts, principles, and theories" as follows:

1. Facts in Science are statements about things that really exist, or events that really happen and have been objectively confirmed. Examples of facts; The hydrogen atom has an electron; Merkuri is the closest planet to the sun; And water freezes at 0°C .
2. The concept of science is an idea that unifies facts. The concept is a combination of facts that are related to each other. Example: all substances are composed of particles; Living things are affected by the environment; Matter will change its level of existence when it absorbs or releases energy;
3. The IPA principle is a generalization of the relationship between concepts of IPA. For example: heated air expands, is the principle of connecting the concept of air, heat, expansion. This means the air will expand if the air is heated;
4. Scientific theory is a broader karangka of facts, concepts, and principles are interconnected. Theories can also be said as models, or images created by scientists to explain natural phenomena. For example, meteorological theory helps scientists to understand why and how fog and clouds are formed.

Selection of appropriate learning strategies tailored to the goals and students as the subject of learning. Kozna (in Unno 2011), learning strategy is an activity chosen to provide facilities, assistance to the students toward the achievement of learning objectives. In addition Dick and Carey (in Unno 2011), learning strategies are all components of the learning procedure, learning materials used by teachers to help students achieve learning objectives. While Unno own (2011), learning strategy is the chosen way, the teacher used to convey the material so as to facilitate the students to receive, understand and master the goal at the end of learning activities.

From these various conclusions can be concluded learning strategy is as a way of the teacher to choose the material, procedure activities that can help students receive, understand, master the goals at the end of learning activities. The components of learning strategies according to Dick and Carey (in Unno 2011) include:

1. Preliminary learning activities: Teachers are expected to attract students' interest on the subject matter to be delivered;
 2. Submission of information: Teachers should understand the situation, conditions, so that the information conveyed can be absorbed by students well;
 3. Participation of learners: The learning process is more meaningful if the students are actively doing the exercises directly and relevant to the intended purpose;
 4. Test: Conducted at the end of learning activities to determine the achievement of learning objectives;
 5. Follow-up activities: Given as a consequence of learning outcomes obtained by students.
- These five components are a system that can not be separated interconnection function to each other to achieve the goal.

Selection and use of strategy becomes an important factor in achieving defined learning objectives. Mind mapping was discovered and developed by Tony Buzan, a British researcher who applied knowledge about the brain and thought processes in various areas of life. Buzan explains mind mapping as the easiest way of putting information into the brain and taking information out of the brain, how to record creative, effective, literally mapping out our thoughts very simply (Khan, 2010). Mind mapping involves both sides of the brain because it uses images, colors, imagination (right brain region) along with words, numbers and logic (left brain region).

All ideas in mind mapping are related, helping the brain make great leap in imagination and imagination through association (Buzan, 2011). Mind mapping helps us learn, organize, store as much information as possible, group them in a natural way, giving us easy and direct access (perfect memory of whatever we learn). The following steps to make mind mapping by Buzan (2011):

1. Starting from the middle of a blank paper with long sides laid flat.
2. Using images or photos for the central idea to make it more interesting, keeps us focused, helps concentrate and activates the brain.
3. Using color.

4. Making connections, interconnection between branches because the brain works by association, linking two or more things to easily understand and remember.
5. Make a curved line, not straight so as not to be boring.
6. Use one keyword for each line.

This is in accordance with the opinion of Olivia (2008) mind mapping emphasizes the process of student learning is active, independent, train creativity, imagination so that learning outcomes will be achieved maximally. The steps of mind mapping strategy by Olivia (2008) implemented in learning activities according to KTSP process standards (2007) are:

1. Students re-read briefly the material described by the teacher at the beginning of the learning activity;
2. Answering the subject matter in general;
3. Students are divided into groups (4-5 people per group);
4. Each group analyzes the material and discusses the mind mapping of the subject matter;
5. Students are mentored, motivated, supervised by teachers during group discussions to create mind mapping of subject matter;
6. Each group presents their mind mapping for feedback, feedback from other groups and teachers;
7. Students and teachers equate perceptions of the presentation and discussion of all groups;
8. The teacher reviews the material and the learning activities in outline with the mind mapping material;
9. Students are given strengthening, motivation to be more creative to make mind mapping learning materials at the next meeting.

Warseno and Kumorojati (2011) revealed the benefits of using mind mapping:

1. Learning feels good because the process of making mind mapping involves pictures, colors etc;
2. Can see the picture of the material in detail, thorough, clear without loss of antartopic thread;
3. Make it easy to remember information because there are visual markers;
4. There is a grouping of information;
5. Appealing to the eye and not boring;
6. Ease of concentration;
7. Save, make good use of time;
8. Getting good grades;
9. Organize thoughts, hobbies, life.

Mind mapping strategy will teach students how to summarize to know the essence of a subject matter in a structured manner. That way he can see the entire learning material in one paper with an eye-catching, non-boring, easy-to-understand and remembered visualization (Olivia, 2008). The use of mind mapping strategy makes students learn to think to form the framework of thinking, not learn to memorize the subject matter (Surya, 2011). He also stated advantages of using mind mapping strategy, namely:

1. Stimulate the active participation of students in the learning process,
2. Free the mind of the students from the subjective nature, bias or mental groupings;
3. Stimulate students to focus and concentrate on the subject of thought,
4. Enabling maximal brain function to think,
5. Directing students to develop a detailed and objective reconstruction of a subject organization of thought,
6. Demonstrate the relationship between the piece of information that is terisoli,
7. Provide a graphical representation of what students understand about the subject of thought so as to make it easier to identify associations in information,
8. Directs students to concentration, helps gain understanding and understanding so that the information obtained can form skills and provide long-term memory.

From the formula can be used as an alternative problem solving by implementing mind mapping strategy according to Olivia (2008) implemented in the learning activity according to KTSP process standard (2007), that is:

1. Students reread a glimpse of the material the teacher has described at the beginning of the learning activity.
2. An outline of the subject matter.
3. Students are divided into groups (4-5 people per group).
4. Each group analyzes the material, discusses to create a mind map of the subject matter.
5. Students are mentored, motivated and supervised by teachers during group discussions to create mind mapping materials.
6. Each group presents their mind mapping for feedback, feedback from other groups and teachers.
7. Students and teachers equate perceptions of the presentation and discussion of all groups.
8. Teachers review the material and learning activities that have been implemented in outline with the help of mind mapping material.
9. Students are given strengthening and motivation to be more creative to make mind mapping learning materials.

In learning using mind mapping strategy, students actively participate in group discussions to make the mind mapping learning materials after the teacher provides a stimulus in the form of explanations and brief questions and answers about the material and learning activities that will be done. This is in accordance with the concept of learning theory of behaviorism where students will do learning activities consciously after the teacher provides stimulus, appropriate stimulus to students. Implementation of cognitive learning theory in learning can be seen when students actively read back the material that has been explained by previous teacher, question and answer about learning materials, role in group discussion and class discussion.

Teachers guide, motivate and supervise the course of learning is the implementation of the theory of konstruktivisme, where students become the main focus of learning, the teacher just as a facilitator. Students' need for pleasure during the learning process in accordance with the concept of humanism learning theory. This can motivate students to get good learning outcomes.

Teacher skills and student activities in a system are positioned as synergistic inputs with the learning process resulting in output in the form of learning outcomes. The quality of learning includes these three indicators as an absolute benchmark to achieve learning success. Improving the quality of science learning using mind mapping strategy assessed by researchers as the most appropriate step to solve the problem. The amount of material causes low motivation and student activity to study the science. Using a long mindmapping strategy of information is diverted into colorful, organized charts, real-time image display, memorable because it works in harmony with the brain's natural work in doing things. The combination of colors, images, curved branches, the image of the environment itself is more visually stimulating than traditional notes that tend to be linear and one color. This makes it easier for us to remember information (Buzan 2011).

The learning step using mind mapping strategy (Olivia 2008):

1. Each student provides blank paper with no lines and colorful markers.
2. Determine the main topic of the subject matter to be discussed.
3. Write down the main topic in the middle of the paper then circle and color it as attractive as possible.
4. Create a pointer line around the circle as a subtopic, coloring it in different colors and using one keyword for each line.

5. From each line a subtopic pointer is made a line like a branch of a tree to create additional information and write down the keywords on each branch in the form of important words from the material summary using capital letters.
6. Create an image or symbol next to text or text that matches the content of the text, underlining the words and using bold.
7. New information can be added by adding additional branches creatively and imaginatively.
8. Activities can be done individually or in groups.

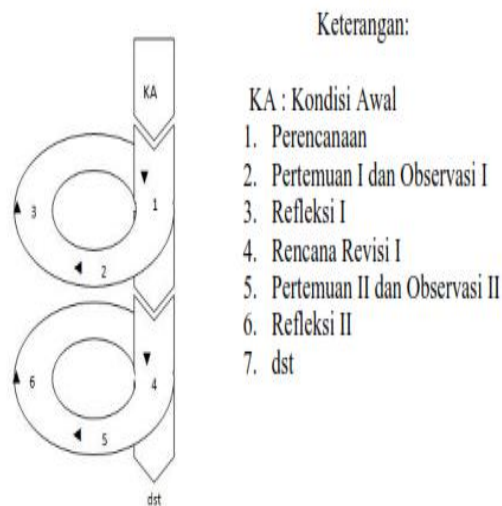
The steps implemented in the learning activities refer to the standard KTSP process (2007) as follows:

1. Students are asked to re-read briefly the material that has been explained by the teacher at the beginning of learning activities.
2. Questions for learning materials in outline.
3. Students are divided into groups (4-5 people per group).
4. Each group analyzes the material and discusses the mind mapping of the subject matter.
5. Students are mentored, motivated and supervised by teachers during group discussion to create mind mapping of subject matter.
6. Each group was asked to present their mind mapping on the results of their discussion to get feedback, feedback from other groups and teachers.
7. Students and teachers equate perceptions of the presentation and discussion of all groups.
8. Teachers review material and learning activities that have been implemented in outline with the help of mind mapping material.
9. Students are given strengthening and motivation to be more creative in making the mind mapping material on the next learning.

II. METHODS

a. Research Methods and Design

The Class Action Research Model (PTK) used is a research model developed by Stephen Kemmis and Robbin Mc Taggart with a spiral model (Sujati, 2000). The model consists of a cycle that has four components, namely planning (planning), action / acting (acting), observation (observing), and reflection (reflecting). Images of the spiral model are:



b. Stages of Research

Preparation / Initial Phase

The initial condition in this research is the low preparation of a teacher in science learning in elementary school students. The condition is obtained from the results of observation of student learning outcomes, questionnaire response to science learning, and the evaluation of students on previous IPA materials. The purpose of this study is to provide action to increase teacher motivation using Mind Mapping Method on the Learning of Science Subjects in elementary school students.

At this stage the activities undertaken include permissions and determination of research subjects as for the steps as follows:

1. Literature study to study the theoretical foundation on Mind Mapping Learning, case study of teacher difficulty in delivering IPA materials in SD and subject to be studied.
2. Develop Learning Implementation Plan (RPP) implemented on science lesson.
3. Develop suitable teaching tool, observation, test, and questionnaire of teacher motivation on science learning and student response.

c. Implementation Phase

Implementation stage is the main activity to obtain data of research results with the following activities:

1. Take care of the permit to conduct research and ask for recommendation from the education office, UPT Padalarang district to determine the right SD to be examined in order to get the appropriate data to answer research questions.
2. Preliminary observation to know the condition of school following with teacher and student so get information about difficulties experienced by teacher in delivery of

material especially science subjects and student response on the subject so deserve to be sample research.

3. Collecting teachers and their students to be sampled research to build understanding to be willing to participate in research and willing to be observed during the lesson.
4. Determining the schedule of observation visits to be performed
5. Gathering one material (from teachers) of science subjects that are considered difficult to convey.
6. Make observations and record three times the learning of teachers and students while in class.

Data Processing Stage

At this stage, the steps taken is to process the data of research that is the series of preparation of teachers in teaching including props, questionnaire responses of students on science materials taught by teachers, data analysis of student learning outcomes through student ability tests after learning.

1. Analyze the results of a teacher in preparing before the lesson begins, which has previously prepared the necessary things in the lesson, starting from the preparation of its RPP, the appropriate teaching aids in the material, the creation of its own LKS, and the appropriate test instrument after the learning is done.
2. Analysis of student questionnaire responses data on science materials taught by teachers, after the teacher presents them with lectures or just looking at the sources, with teachers who teach with careful preparation through props, slideshows, questions and answers and more.
3. Data analysis of student learning outcomes from the ability test results after learning diampu. This analysis data is compared with the same material when the teacher explained without preparation, with the teacher performing the preparation (Mind Map), so this activity gets accurate and significant results.

Location and Subject of Research

This research was conducted at SD cluster IX of Padalarang District. The subjects of this study were all 5th and 6th grade students in cluster IX which included 5 SD.

Data Analysis Technique Research

Data analysis techniques used in this study as follows:

1. Data difficulties experienced by teachers, especially teachers in grade 5 and 6 in the delivery of some SD science materials, and take a sample of the difficult material to be re-taught to students with good preparation, ranging from RPP, props, test instruments, and others.
2. The test data of the students' initial ability when the teacher delivered the basic material.
3. Data analysis of student learning outcomes of the ability test results after learning is implemented. This analysis data is compared with the same material when the teacher explained without preparation, with the teacher performing the preparation (Mind Map), so that this activity gets accurate and significant results.

III. RESULTS AND DISCUSSION

1. The Influence of Mind Mapping on Teachers Success

Preparation of teachers in science lessons in elementary school proves that, the application of mind mapping method in learning can increase students' attention becomes more focused. In addition, with the application of mind mapping methods teachers also more master the material that will be given to students. This is in accordance with the theory put forward by Michael Michalko in Buzan (2007) which states that one of the benefits of using mind mapping method in learning is to focus students' attention on the subject to achieve learning objectives. Active learning is also evident from the increased student activeness in each given action. In previous actions teachers who teach poorly without careful preparation of the material given is not maximal. In addition, students do not seem to actively ask when something is poorly understood. From these explanations, proving that the activity of students in learning greatly affects the level of student learning. This is in accordance with the opinion of Hendra Surya (2007) which states that if we are active in learning, then we dispel the emergence of the process of odysence of mind (duplication of mind), and intensity of learning concentration will be more optimal.

2. Effect of Mind Mapping on Student Motivation

Mind Mapping method successfully helps students to improve students' learning motivation. The constraints experienced can be corrected appropriately. For example, constraints when students are still confused in the creation of mind mapping, so that teachers provide solutions to control one by one (around) during the process of mind mapping, and help students who have difficulty in pouring their ideas. In addition, the researchers also added an example of mind mapping in each student's LKS prepared by the teacher.

From the provision of these actions, also found that the period of concentration of students in receiving the subject matter increasingly long. This is in accordance with the theory proposed by RatihZulhaqqi (2013) which states that to know how long the time span of a person's concentration ability, the formula is 3-5 minutes multiplied by age. In the final reflection of the learning done by the teacher, the students admitted that they were happy to follow the activity with the mind mapping method, because the students not only listen to the lecture, but also directly learn to master the material, pour the main idea and create their pictures freely. From the reflection, it is also known that through the mind mapping method students not only learn the theory to improve cognitive abilities, but also affectively and motorically involved actively participate in the actions undertaken. Students are able to create mind mapping with their own creations. Mind mapping that made it look fun for students because it contains pictures, symbols, writing, and colors that are interesting to look at so that students are impressed away from the word tired or bored. In addition, with this mind mapping, the atmosphere in the classroom becomes comfortable and conducive. The above explanation states that the hypothesis of mind mapping method can improve students' learning motivation of class V and class 6 elementary in cluster IX.

IV. CONCLUSION

Based on the results of data analysis and discussion, then the conclusion that can be taken from this research is the application of mind mapping method can influence the success of a teacher on science learning in class V and 6 elementary. The improvement of the learning achievement of IPA materials is supported by the careful preparation by using mind mapping method can be done through modification of action in the form of: the delivery of material with modified mind mapping method, question and answer material by involving students akif, create mind map form with teacher and Researchers, presented the students mind map results by randomly selecting them, and reflecting on learning by involving students at the end of the lesson. The students' science learning motivation has improved with the high-criterion. In the pre-action, the number of students who scored concentration and learning motivation only reached (46.9%), and the teachers made good preparations in terms of teaching aids, learning tools and the use of Mind mapping method, then increased to (100%). Furthermore, data on student learning outcomes that get the value = 75 (KKM) of the total number of students that is almost reached 80%.

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