

# Application of PBL with Mind Mapping Method to Increase Cognitive Learning Result of Social Study in Fourth Grade Students

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**ABSTRACT:** This study aims to describe and analyze the improvement of students' cognitive learning result. This is a classroom action research which applied PBL with mind-mapping method on social study learning in fourth grade of elementary school. Data collection using observation and test method. Data analysis techniques using descriptive quantitative. The results of this study indicate a significant increase of aspects studied in each cycle. Percentage mastery of students' cognitive learning result from 76.19% to 95.24% in cycle 2. The success indicator in cycle 2 is equal  $\geq 80\%$ , and the grade point average is 81.11 ( $\geq 70$ ). Improvement of cognitive learning result of students on social study learning through authentic problem solving formulated and presented with mind mapping method, so that learning is more easily absorbed by students because the learning is interesting, challenging and meaningful.

## 1. INTRODUCTION

Based on the background of the problem is the low cognitive learning result of fourth graders in social studies learning can be seen from the daily point and student activities. The results of the initial study found that the low cognitive learning result of students in social studies learning because the learning activities are applied more likely to use teacher-centered learning system. Less learning activities encourage students to construct their own knowledge of the material learned. In addition, less learning activities relate the material learned with real life that exist within the student environment, emphasizing more of the material memorization in the book (book text) without understanding its meaning. So that impact on learning result because the material is memorized too much, difficult to understand and meaningless.

In social studies learning of elementary school, students are expected not only to master the material (concept) that is theoretical, but more emphasizes how students can apply and relate it in real life. According to Nasution (2011: 6-7) that social studies in schools is aimed at answering the current real-life conditions of academic science, which serves to help students build a deeper understanding of how to know, how to apply what he knows, and how to participate in building the future.

One of the learning models that can be applied to social studies learning is the Problem-Based Learning (PBL) model. According to Arends (2008: 41) PBL is a learning model that offers authentic and meaningful problems to students, which can serve as a springboard for investigation and investigation, as well as helping students to develop critical thinking skills and problem-solving skills.

Characteristic of the PBL model is the submission of questions or problems that are then solved by the students. The proposed problem refers to learning materials that are related to real life in the student environment. PBLs should use authentic issues tailored to the level of student knowledge, engage students in discussions, lead to proper identification of problems, stimulate self-directed learning, and exciting activities (Schmidt et al., 2011: 795).

The implementation of PBL in this study used five phases adapted from Arends (2008: 57) and Ibrahim (2012: 24), namely phase 1 (student orientation to problem), phase 2 (organizing students to learn), phase 3 (guiding investigation independently or group), phase 4 (developing and presenting the work), and phase 5 (analyzing and evaluating the problem-solving process). These five phases are tailored to the subject matter and the level of fourth-grade students' ability to guide students in problem-solving investigations.

Of the problems to be solved requires a framework for analysis. Thus, an appropriate method is needed to optimize the quality of the process and learning result. One method that can be collaborated with PBL model is by Mind Mapping method. According to Buzan (2006: 4) Mind Mapping is the easiest way to put information into the brain, and to retrieve information from the brain. Mind Mapping is a creative, effective and literally creative way to "map" our thoughts. Windura (2009: 16) explains that Mind Mapping is a technical graphic that allows us to explore all of our brain's ability for thinking and learning purposes. Mind Mapping is an excellent learning method used by teachers for students in terms of improving memorization and understanding of strong concepts, students can also increase their creativity through imagination freedom. The Mind Mapping method helps students develop the mind in a connected circuit so that more information is gained, besides this

method is able to provide meaningful experience to the students (Said & Budimanjaya, 2015: 174).

The use of Mind Mapping has a positive effect on the learning process, because Mind Mapping is a kind of tool that is visualized to assist in terms of reference information so as to improve student academic achievement (Liu et al., 2014: 26). Through the Mind Mapping method students can project problems encountered and pour ideas or ideas into the form of maps or graphics techniques so it is easier to understand. Thus, Mind Mapping method is very suitable in mix with PBL model that emphasizes student's activity and meaningful learning.

This study aims to describe and analyze the improvement of learning result of social studies focused on the cognitive aspects of students in the application of PBL model-aided Mind Mapping method. The results of this study are expected to provide a variety of learning experiences that can encourage interest and active participation of students in learning activities, train students to express the idea and can solve authentic problems associated with learning materials so as to improve learning result.

## 2. METHOD

This research is a Classroom Action Research (CAR) with descriptive quantitative design. The CAR model used in this research is the Kemmis & Teggart model modified by Riyanto. The model design developed by Kemmis and McTaggart suggests that action research is a cyclical process of research consisting of: Plan, Action, observe, and Reflect conducted repeatedly (Riyanto, 2007: 141).

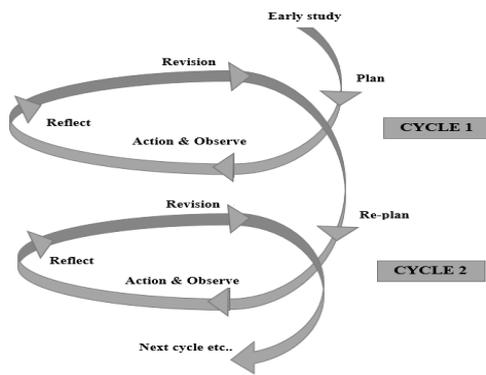


Figure 1 CAR Cycle of Kemmis & Teggart Model

Subjects in this classroom action research were all fourth grade students of SD Negeri 002 Sebatik Utara, Nunukan, Indonesia in the academic year 2016/2017. The number of students as many as 21 children consisting of 8 children of male students and 13 children of female students. To all students get the same treatment and action. Data collection techniques used in this study are observation and test. Testing in this study to measure data about Social Studies cognitive learning result. The test is given at the end of each cycle. The research instrument used is a test sheet of learning result. The test instrument of Social Studies cognitive learning result is used to measure learning result in the cognitive aspects of the learner. Instruments are prepared using written tests in multiple choice and essay. The data obtained in this study will be analyzed. Quantitative data analysis of Social Studies cognitive learning result is derived from test results given to students. The test is conducted with the aim to determine the level of understanding of students on the subject matter Social Studies.

### 3. RESULTS AND DISCUSSION

The results of this study indicate that the application of PBL with mind mapping method can improve the cognitive learning result in social studies learning in the fourth grade of elementary school. Based on data of research result that activity and result of student

cognitive learning from cycle 1 to cycle 2 increase quite significant. The results of data analysis on the observation stage of student activity on the learning process in each cycle can be seen in Table 1:

Table 1 Data of students activity in the learning process

Students Activity	Percentage (%)	
	Cycle 1	Cycle 2
Listening to information (listening activities),	83,33	91,67
Ask and answer questions (oral activities),	65,48	80,95
Observe the presented image / object (visual activities),	76,19	95,24
Investigate / collect information from various sources (motoric and visual activities)	73,81	83,33
Conducting group discussions (mental and oral activities)	76,19	82,14
Create a report report in the form of mind mapping (drawing and writing activities),	80,95	89,29
Presents the work / report (oral activities)	71,43	80,95
Analyze and evaluate the results of the discussion (mental activities)	75,00	79,76
Average percentage of students activity	75,30	85,42
Criteria	Good	Very good

Average of activity percentage of student in cycle 1 is 75,30% to 85% in cycle 2. Intensity of student activity in cycle 2 is high from every observed aspect, such as listening activities aspect, visual activities, oral activities, motoric activities, mental activities, drawing and writing activities. This shows the student activity on cycle 2 increases with very good criteria.

Akınoglu & Tandogan in Batdi (2014: 272), PBL transforms students into active, active learners rather than passive recipients of information. During the learning process with the PBL model, the students' activities are not expected to just listen, record, and then memorize the subject matter, but with the PBL model the students actively think, communicate, search and process information through mind mapping method.

The high activity of students while the learning process, has a positive impact on

the level of material absorption of the students. This can be seen from the cognitive learning result of students from cycle 1 to cycle 2 increased significantly. Here is the graph of the percentage of students' learning mastery based on the learning result of learning cognitive social studies learning.

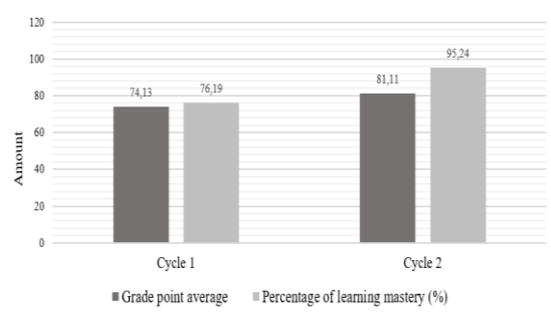


Figure 2 Students Cognitive Learning Result

Based on the data in the figure above, shows the average grade on the cognitive learning result of 74.13 in cycle 1 to 81.11 in cycle 2. Meanwhile, the percentage of classical learning completeness of 76.19% in cycle 1 to 95.24 % in cycle 2. Thus, the percentage of classical learning completeness in the cognitive learning result of students in cycle 2 has achieved a research success indicator of  $\geq 80\%$ .

Through learning PBL model with mind mapping method can help students develop their ability to manipulate and process information from various sources. Problems are given around the subject matter that is related to the real life that exist in the environment (authentic), thus facilitating the students to construct their own knowledge. It is in line with Piaget's opinion that every learner of any age is actively involved in the process of obtaining information and constructing their own knowledge (Nur, 2011: 21).

In addition, the PBL model with the help of mind mapping method emphasizes the activity of the students in the learning process so that it can absorb and comprehend the subject matter (concept) optimally. According to Zejnilagic-Hajric et al. (2015) that PBL

learning is more efficient than conventional teaching methods in learning, because it encourages student activeness in every learning process (student centred).

Jain (2015) Mind Mapping method is more effective and helps students to understand concepts and ideas in knowledge. The Mind Mapping process involves a unique combination of images, colors and visual-spatial settings that are shown to significantly improve memory compared to conventional methods of noting and learning out of the head. Mind Mapping enhances long-term memory for better memory formation. Mind Mapping can help students remember more effective words.

The application of PBL model with mind mapping method makes social studies learning more interesting, challenging and meaningful so as to improve students' cognitive learning result. It is appropriate with John Dewey's progressive education that education should encourage active involvement of learners in the problem-oriented learning process through group work to address a project based on their interests, so that learning in the classroom becomes meaningful.

#### 4. CONCLUSIONS

Basically, problem-based learning can be applied to social studies learning in the fourth grade of elementary school. Learning is more challenging and meaningful, since the problem is based on the subject matter associated with real life. More interestingly, students are guided to formulate and solve problems with the help of mind mapping method. This method is able to help students to understand the concepts in social studies subject matter knowledge, as it involves a unique combination of images, colors and visual-spatial arrangements that are shown to significantly improve memory compared to conventional methods of noting and learning out of the head.

The results showed the percentage of student activity increased from 75.30% to 85% in cycle 2. This shows the student activity on cycle 2 increases with very good criteria. Students cognitive learning result increased significantly, the average grade of 74.13 to 81.11 in cycle 2. Meanwhile, the percentage of classical learning completeness of 76.19 to 95.24% in cycle 2. Thus, the percentage of learning mastery classical on the cognitive learning result of students in cycle 2 has achieved a research success indicator of  $\geq 80\%$ .

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