

Observational Skill: The Use of Picture Storybook with Scientific Approach Based Through Project-Based Learning

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Abstract: Observational skills are one of the indicators to know the level of achievement of science process goals. This research examines the influence of picture storybook with scientific approach through project-based learning on observational skills. The research was a quasi-experiment conducted in the second grade of the elementary school in Banguntapan Subdistrict. The samples were 265 students, 139 of experimental and 126 of control groups. The picture storybook with a scientific approach through project-based learning on observational skills was applied to the experimental group and the 2013 curriculum book from the Ministry of Education and Culture of Indonesia for the control group. The instrument used was a written test and observation. A t-test was used to analyze the effect of picture storybook with scientific approach through project-based learning on observational skills. The results of this study found that the achievement of observational skills for the experimental group was higher than the control group. The picture storybook with scientific approach through project-based learning on observational skills has a significant effect on observational skills. These findings contribute significantly to the current knowledge about the effectiveness picture storybook with scientific approach through project-based learning on observational skills to improve students' science process skills in every teaching and learning.

Keywords: *observational skill, picture storybook, scientific approach, project-based learning*

INTRODUCTION

Learning is an ability that is owned by each people, which makes a person become able and ordinary. In this disruption era, a student is required to be able to be at the stage of evolutionary and revolutionary innovations (Ahmadi & Marwala, 2017), they must be attractive and can give the solution of the problem, so that a student must be able to understand a situation that exists in the surrounding environment. Understanding is a process of learning. However, the quality of learning has a higher level to later be able to provide a solution to the problem at hand. Students can receive and understand information from their environment using their senses. Especially the sense of sight can absorb the various information it faces.

Observation is one of the most important tools or skills of a scientist (Gambro, 1994) and the subject of science process skills (Abruscato, 1995). Also beside, observation skills are the initial provision for learning for a student because it is an integrative part of the steps in the scientific method (Johnston, 2009) so that the observation is necessary for someone to be able to move on to the next stage. Observation is not only looking at objects (Ahtee, et. Al., 2009), but observation is a process skill that develops the senses to understand an object and activity (Abungu, et.al, 2014). The ability to recognize and remember objects in detail to help answer problems in science and provide a way to receive information and become the basis for further capacity building (Goh & Chia, 2011).

Based on the development of the needs of the current disruption era, science skills are very necessary for every individual. The skills needed include the skills they possess, of course, are

expanded from fundamental skills, one of them is observation skills (Gambro, 1994). This difference, in fact, makes observation skills very necessary as a basic provision in mastering all other skills.

To support the improvement of observation skills, which are the basic aspects of the scientific approach at the elementary school level that students must have (Ward, et. Al., 2008: 33) there is a need for media to help students' thinking flow as the object they are observing. Books are learning media that have a large role in success for some students (Good, Woodzicka, & Lylan, 2010). Picture storybook based with scientific approach through project-based learning is a media book for understanding learning, especially thematic learning. The book is presented in the form of a story accompanied by illustrated images that bring students to understand the phenomena that surround them. Picture storybooks contain information and stories that are not obtained directly from other media (Pringle & Lamme, 2005), this contains a special theme presented by students. The scientific approach in the storybook is integrated into the form of narrative stories and images. Approach with step 5 M (observing, asking, gathering information, reasoning, communicating) (Develaki, 2010) which directs students to be active in learning. Students read stories and do learning according to the storyline presented. Project-based learning, that familiar named PjBl presented as a model of systematic learning model combined of students' knowledge and skills. Students can plan creations and realize their creations or products. PjBL facilitates students to learn in groups, communicate with each other, cooperate and give mutual reciprocity. Project-based Learning has the syntax: Project Planning, Project Launch, Guided Inquiry and Product Creation, and Project Conclusion (Mergendoller & Lamer, 2010: 13)

The combination of scientific and PjBL approaches in picture storybooks is presented interestingly so that students can receive and follow learning with fun. The pictures presented in the book help students to take steps in the book. So, examine the effect of applying the picture storybook with scientific approach through project-based learning to observational skill as the purpose of this research.

METHOD

This research used a quasi-experimental method, with the contribution of this research being all of second-grade students in the Banguntapan Subdistrict, Bantul Regency, Yogyakarta Province area with 265 students with composition 139 students of the experimental class and 126 of control class students. Data retrieval is done through observation tests by written research instruments using instrument development from Kohlhauf, Rutke, and Neuhaus (2011). Written tests are taken to measure the knowledge of learning that has been done and obtained from the observation guidelines with six questions. Measurements were made through learning to students during learning through the development of instruments from research of Rankin (2006). Observation of the students' abilities in observational skills is carried out by the researcher by giving a checklist to the instruments that have been used. The indicator of this research are: Scientific Explanation, Scientific Reasoning, and Interpretation. The study was conducted in three learning meetings. compare the two groups of Pre-Tests and Post-Tests with villages like the following. The research design used control group is carried out by learning using books published by the Ministry of Education and Culture of Indonesia, while the experiment group is given treatment using the Picture Storybook with Scientific Approach Based through project-based Learning. The book is a product of book development at Theme 6 'Merawat Hewan dan Tumbuhan' for the second grade of elementary school. The analysis of

the results is done in descriptive and inferential. The normality test is done using the Kolmogorov-Smirnov Test to find out whether the data used in this study is normally distributed or not, which is indicated by $\alpha = 0.05$. The homogeneity test through the Levene Test was conducted to find out whether the data obtained had a homogeneous variant or not, that is $\alpha = 0.05$. Furthermore, the T-Test was carried out to determine the significant difference between the two classes with the significance level used was $\alpha = 0.05$ and assisted by the SPSS 22 program.

RESULTS AND DISCUSSION

In this study has shown analysis picture storybooks with scientific approach through project-based learning to improve observation skills. The data from the result was normal, which showed in Table 2.

Table 1. Kolmogorov-Smirnov Test Result

Data	Class	Kolmogorov-Smirnov Value of Significance	Hint
Pre-Test	Control	0.175	Normal
	Experiment	0.082	Normal
Post-Test	Control	0.200	Normal
	Experiment	0.074	Normal

From the results of the analysis, it was found that the value of the significance of the normality of the pre-test and post-test data in the experimental class and the control class was more than the alpha value (>0.05). This shows that the cognitive value between the experimental class and the control class has a normal distribution. The Levene's Test score at pre-test shows 0.823 means that the test scores of students on observation skills have a homogeneous score. The significance of the post-test between the experimental class and the control class also has a homogeneous variance. Shown in Table 3.

Table 2. The Result of T-Test

Data	Levene's Test for Equality of Variances				T-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pre-test	0.050	0.823	-0.974	263	0.331	-0.540	0.554
Post-test	3.763	0.053	-3.158	263	0.002	-1.748	0.554

This research to make certain the effect of picture storybooks with scientific approach through project-based learning on observation skills. In the class of experiment, students are given a need to use picture storybooks based with scientific approach through project-based learning. Different in the control class, the treatment used the 2013 curriculum book published by the ministry of education and culture. The learning lesson is thematic, Theme 6 'Merawat Hewan dan Tumbuhan'. From the results of the analysis, it was found that between each class had significant differences after the treatment was done. It is proven that the average post-test value of the experimental class is higher than the control class, shown in Figure 1.

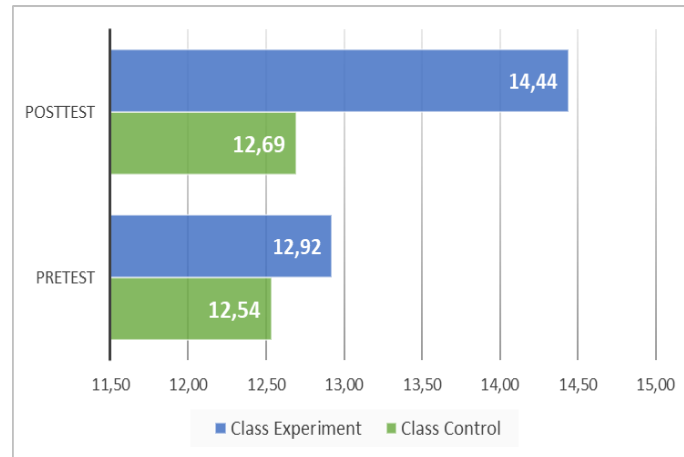


Figure 1. The Comparison of Observational Skills Test

The result of observation by the researcher presented in indicators of observational skill. The experimental and control groups are presented in Figure 2 on each indicator. The average score of the experimental class was slightly higher than the control class.

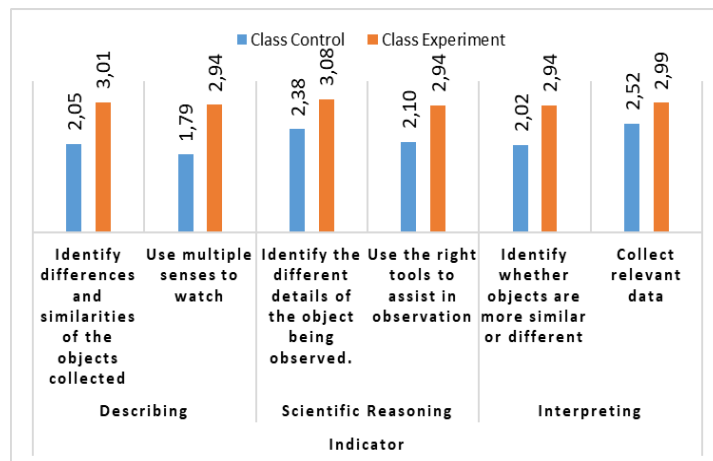


Figure 2. The Comparison of Indicators

Furthermore, hypothesis testing has been done for each indicator to know the significant difference of the score, and the result was showed in Table 4. The result showed that each indicator of observational skill has a significant level of $0.00 < 0.05$. The average value of the experimental class was higher than the control class. These results indicated that the picture storybooks with scientific approach through project-based learning have significantly influenced the observation skills.

Table 3. Hypothesis Testing on Each Indicator of Observational Skills

Mann-Whitney U Test		
Describing	Scientific Reasoning	Interpreting
Z = -11.045	Z = -8.082	Z = -7.750
Sig.		
0.00	0.00	0.00

Learning using picture storybooks based on scientific approach through project-based learning was carried out for three meetings. In the first step students are introduced to the

characters in the book as Pre-project. In this pre-project, students are allowed to observe as widely as possible about the book and its environment, ask questions and draw conclusions from the evidence that they have collected as the essence of the scientific approach (Pringle & Lamme, 2005; Monhardt & Monhardt, 2006). Then students together read books in, this step enters the observation stage in the scientific approach. By providing visualization in the form of images, making students interested, they find motivation and feel comfortable to read storybooks (Ratminingsih & Budasi, 2018). This is indicated that the more curious students to open page by page. In the storybook there are also questions to explore students' knowledge related to animals and plants. Then students are grouped through games that have guidance in the book by forming groups of 4-5 students. By grouping, making students active in learning. In this grouping of students, the first syntax of project-based learning.

In this grouping of students, the first syntax of project-based learning is the Project Planning step begins. Students read stories related to caring for animals. They think of whatever style they need to care for animals and what needs to be done if animal waste accumulates. Students observe objects around them related to caring for animals and plants. This stage is describing the ability to identify differences and similarities of observed objects. Next, students read stories that convey the Project Launch step, which is to carry out activities to collect the tools needed in the project. In the next stage of the story, students begin to do Guided Inquiry and Product Creation activities, namely by making products or goods at that time. In the book, a story is given about the steps in making compost. The final stage is the Project Conclusion step, students explain the benefits of making the product. The process of observing student activities at the describing stage includes the identification of differences and similarities of collected objects and identifying different details of the object being observed. Besides, students provide a review or description of the object that has been described, so that it sharpens their ability to describe objects. On the indicators of scientific reasoning, students Identify different details of objects being observed and Use the right tools to assist in observation. At this stage, students are sharpened to reveal the results of their observations verbally or in writing. In this case, students can solve problems through the help of books they have read and observations in their environment. This is supported by Fetting, Schultz, & Ostrosky (2015) that can improve the ability of imagination, problem-solving, empathy, social sense and so on. Students more attractive used this book because all of the student can act by project in outdoor activity. The project-based learning to give a positive response to the study from their interest to the study and the benefit of activity (Yamin, et. al., 2017)

On the interpreting indicator, the students identify whether objects are more similar or different and gather relevant data. This stage requires intelligence because on the side of the student is only skilled in observing, he also needs memory, so his cognitive skills must also be honed. Like the opinion of Elia & Hauzel's (2010) that with storybooks students can improve their cognitive abilities.

Post-project, in this phase, all student project outcomes are evaluated with the teacher. The usefulness of the project becomes a common concern and then becomes a new science for students. Making manure, recycled materials, and liquid fertilizer has a major influence on students' observation skills as evidenced by the images or illustrations presented by students, it is said that picture storybooks provide students the ability to describe an object (Khu, Graham, & Granea, 2014). It also appears in the language of students to gain knowledge of new terms (Nyhout & O'Neils, 2014), as well as increasing student creativity (Fang, 1994). So that picture storybooks have very broad usefulness, especially in scientific knowledge (Pringle & Lamme, 2005). On the other hand, the scientific process skill, especially observation, has increased. We

can see in the ability of describing, scientific reasoning and interpreting have to difference between experiment and control group because of the activity in project-based learning activities compared to active learning. It is shown in the student of responsibility in each learning, the other hand student more attractive in their attention, and can improve the effectiveness of process skill, so children can motivate for learning and more, the attitude more correctly in positive (Can, Yıldız-Demirtaş, & Altun, 2017).

The unity of picture storybook, scientific approach, and project-based learning give effect in the learning. Picture storybook made the learning more attractive. The picture book that contains science made effective to learn and understand the concept of science (Beaumont, et al, 2017). On the other hand, Hernawati, et al (2018) showed that project activities were integration in learning and impacted in science process skill of student higher. One of the skills was observation skill, the scientific approach contributed to an increasing this skill, observational skill, in high quality (Arliantya, Febriana, & Diniaty, 2017). All of part of this learning made students more experience that not reach another chance.

CONCLUSION

This research concluded that there is a significant effects of using picture storybooks based on scientific approach through project-based learning in the students' observational skills. The average observational skills of the experimental group students were higher than the control groups.

The findings of this study contribute to the development of the science of education especially theme learning, and those related to the development of other thinking skills. In further research, it is recommended that there be a measurement of the effectiveness of the picture storybooks based on scientific approach through project-based learning model with technology application or like an electronic book for support the disruption era.

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