

Developing Worksheet (LKS) Base on Process Skills in Curriculum 2013 at Elementary School Grade IV,V,VI

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Abstract. The Lacks of students' skills in the learning process is due to lacks of exercises in the form of LKS. In the curriculum of 2013, there is no LKS as a companion to improve the students' skills. In order to solve those problem, it is necessary to develop LKS based on process skills as a teaching material to improve students' process skills. The purpose of this study is to develop LKS Process Skills based elementary school grade IV, V, VI which is integrated by process skill. The development of LKS can be used to develop the thematic process skills of elementary school students grade IV, V, VI based on curriculum 2013. The expected long-term goal is to produce teaching materials LKS Process Skill based of Thematic learning that is able to develop the process skill of elementary school students grade IV, V, VI. This development research refers to the steps developed by Borg & Gall (1983). The development process is carried out through 10 stages: preliminary research and gathering information, planning, draft development, initial test (limited trial), first product revision, final trial (field trial), product operational revision, Desemination and implementation. The limited subject of the this research is the students of SDN in Dharmasraya grade IV, V, VI. The field trial subjects in the experimental class are the students of SDN Dharmasraya grade IV, V, VI who have implemented the curriculum 2013. The data are collected by using LKS validation sheets, process skill observation sheets, and Thematic learning test (pre-test And post-test). The result of LKS development on the validity score is 81.70 (very valid), on practical score is 83.94 (very practical), and on effectiveness score is 86.67 (very effective). In the trial step the use of LKS using One Group Pretest-Posttest Design research design. The purpose of this trial is to know the effectiveness level of LKS result of development for improving the process skill of students in grade IV, V, and VI of elementary school. The data collection in this research uses the test result sheet of the process skill through pre-test and post-test. Observation results were analyzed with SPSS 16.0 software. The Result of analysis learning process of student skill of Sig value. (2-tailed) (0,000) < α (0.005) then H0 is rejected. There is a significant difference to the development of process skills between students using LKS with students who do not use LKS. It can be concluded that LKS have accuracy, ease and can improve result learn on aspect of skill process of student of grade IV, V and VI elementary school.



1. Introduction

Education is the key of all the progress and development of quality, because with human education can realize his potential both as a person and as a citizen. According to UU SISDIKNAS No. 20 2003. Objectives Curriculum 2013 seeks to simplify the subject matter and application of thematic-integrative learning model that starts from grade I until VI. The curriculum 2013 is prepared a generation ready in the future. Therefore, the curriculum is structured to anticipate the attitude and intellectual development. The emphasis is on encouraging students to better observe, ask, reason, and communicate (present) what they gain or know after receiving the learning materials. The objects that become learning in structuring and perfecting the curriculum 2013 emphasize on the phenomenon of nature, social, art, and culture for younger generation more creative, innovative, and productive.

Some aspects contained in the curriculum 2013 include:

1. Aspects of knowledge is the emphasis on the level of understanding of students in terms of lessons. The value of the knowledge aspect can also be obtained from Daily Deuteronomy, Middle Exam/End Semester, and Classroom Increase Test. In the curriculum of 2013, knowledge is a major aspect of curriculum in the past.
2. Aspect of skill is an effort of emphasis on student's motion or motor. In this aspect the students are guided to be able to do and be creative.
3. Aspects of attitude is attitude is the temperament of manners, attitude in learning, social, and religion. The difficulty of assessment in this aspect is mostly due to the fact that teachers are not able to supervise their students at all times.

LKS are sheets containing assignments done by students. This worksheet contains instructions and steps to complete a task given by the teacher to his students. The development objective to be achieved in this research is to produce LKS Skill Process for grade IV, V, VI Elementary School.

Carin [1] states that " Science Process Skills are often referred to as lifelong learning skills, because they can be used in daily life on learning in school in every subject. Science Process Skills is very important in the learning. Thematic learning will be meaningful for students if in practice involves motor skills to perform discovery or hands-on activities. Ostlund [2] states "

The intellectual value of mastering the science process skills is far greater than value of the ability to repeat scientific facts or principles. The process of scientific inquiry, learned not as set of rigid rules but as ways of finding answers, can be applied without limit. To be effective, methods for testing students with hands-on materials and the opportunity to demonstrate their use of science process skills.

Ostlund [2] describes process skills at level 4 until 6 as follows:

Skill
Observing: Using one or more of the five sense to gather information. May include the use equipment.
Communicating: Giving or exchanging information verbally, orally, and/or in writing.
Estimating: Approximately calculating a quantity or value based on judgment.
Measuring: Comparing objects to arbitrary units that may or may not be standardized.
Collecting data: Gathering information about observations and measurements in a systematic way.
Classifying: Grouping or ordering objects or events according to an established scheme. Based on observations.
Inferring: Develop ideas based on observations. Requires evaluation and judgment based on past experiences.
Predicting: Forming an idea of an expected result. Based on inferences.
Making models: Developing a physical or mental representation to explain an idea, object, or

event.

Interpreting Data: reading tables, graphs, and diagram: explaining the information presented in a table, a graph, or a diagram (including maps), and/or using it to answer questions.

Making Graphs: converting numerical quantities into a diagram that shoes the relationships among the quantities.

Hypothesizing: Stating a problem to be solved as a question that can be tested by an experiment.

Controlling Variables: Manipulating one factor that may affect the outcome of an event while other factors are held constant.

Defining Operationally: stating specific information about an object or phenomena based on experiances with it.

Investigating: Using observations to collect and analyze data to draw conclusions in order to solve a problem.

The application of these 15 skills is integrated into worksheet (*LKS*). Steps to integrate the skills of the Thematic science process are integrated through the development of themes and sub themes that are adapted to teacher books and student books. The steps of developing LKS Process Skills shown in Figure 1 as follows.

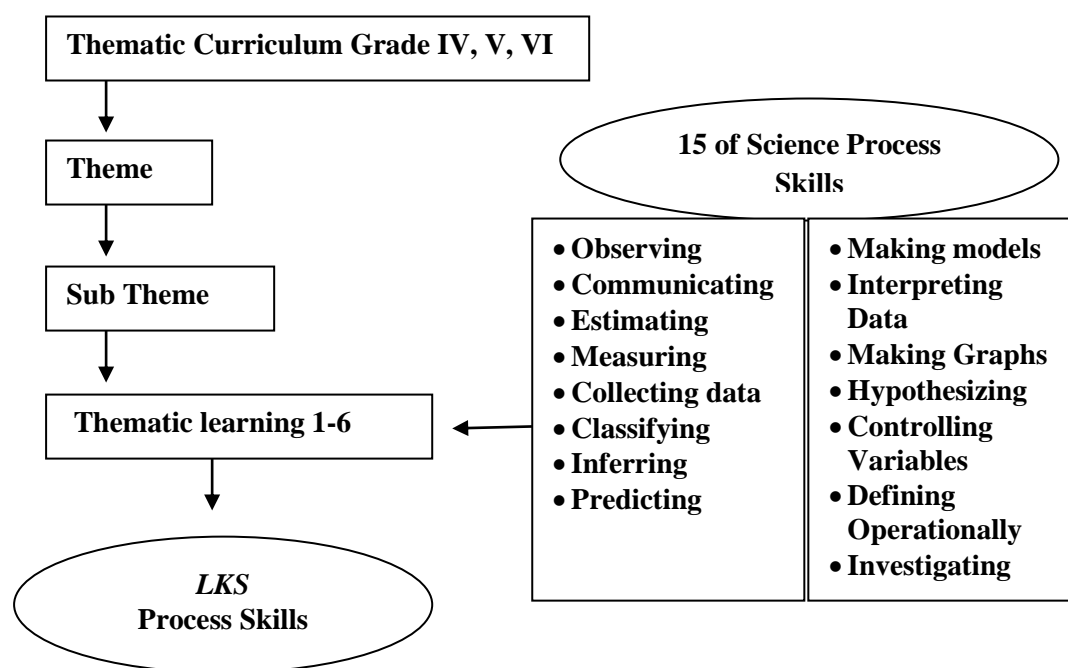


Figure 1. Steps Of developing LKS Process Skills

Osman and Kamisah [3] stated that "The characteristics of scientific process skills are discussed in the previous section with the implications for the role of primary educators. Active learning environment through observing, hypothesizing, predicting, investigating, interpreting findings and drawing conclusion and communicating presupposes teaching that stresses facilitation of learning rather than direct instruction. Teacher's role changes from one just presenting information to one of helping children to develop and use their own ideas ". Characteristics of process skills can be applied in an active learning environment through observation, hypothesis, predicting, investigating,

interpreting findings and drawing conclusions and communicating presupposes teaching emphasizing the facilitation of learning from direct Thematic instructional. The teacher's role is changing from just presenting information to helping children to develop and use their own ideas.

R Russell Wilke; Straits, William J. [4] states that "There are many potential benefits for teaching process skills independently. However, the greatest benefit is that the routine teaching of these skills increases the likelihood that students will learn the skills. Students with stronger foundations in science process skills will be able to use them in other more intensive scientific inquiries, and are more likely to be successful in those inquiries. For this reason, instructors should emphasize the teaching and reinforcing of science process skill ". There are many potential benefits to teaching process skills independently. However, the greatest benefits in this teaching can improve students' process skills. Students with a strong foundation in the science process skills will be able to use them in scientific questions to be able to be used more intensely for other scientific, and more likely to be successful in the invention. For this reason, instructors should emphasize teaching and strengthen the skills of the science process.

Based on the results of the research that the development of process skills can develop aspects of student process skills as a motor of students to perform activities of discovery (inquiry). This research tries to develop LKS which is focused on developing the students process skill in Thematic learning.

2. Methods

This study uses a research and development research method developed by Borg and Gall [5]. The steps consist of preliminary research and gathering information, planning, development of the draft, initial tests (limited trial), revised first product, the end of trial (trial courts). The location of field trials was conducted at SDN 19 Sitiung, SDN 03 Tiumang, SDN 03 Koto Baru, SDN 03 Sungai Rumbai, SDN 08 Sitiung, SDN 189 / II Sari Mulya, SDN 14 Koto Baru, SDN 10 Koto Baru. In this field trial, the Design using the research design used in this research is *One Group Pretest-Posttest Design* (Purwanto&Sulistiyastuti, 2007) as follows:

$$t-1(O_1) (X) t+1(O_2)$$

- t-1 or O1 = before being treated (pretest)
- t + 1 or O2 = after being treated (posttest)

The development of process skills in the data obtained by looking at the results of pretest and posttest observations. To test the results of the development of process skills by testing the hypothesis through the t-test. The first hypothesis to be tested is to compare the development of process skills, between learning before using LKS tools and after using LKS tools. The null hypothesis (Ho) and alternative hypothesis (Ha) in this study are as follows.

Ho: There is no significant difference to the development of process skills between students before using the LKS device after using the LKS device.

Ha: There is a significant difference to the development of process skills between students before using the LKS device after using the LKS device.retest-Posttest Design [6]

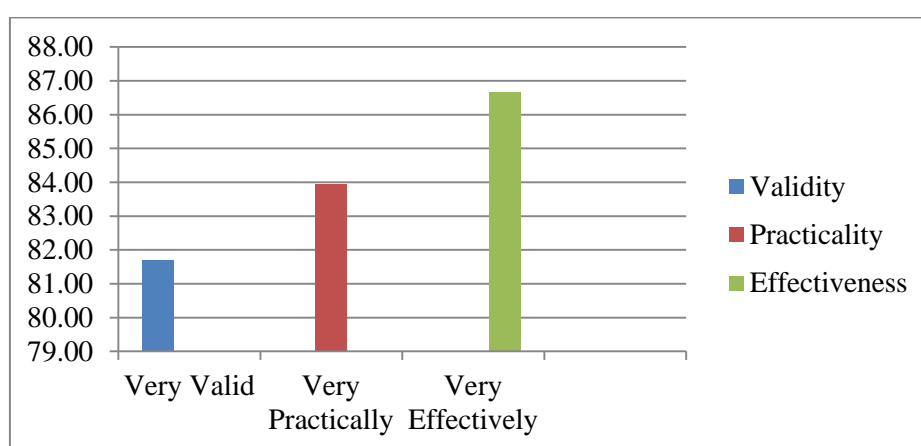
3. Results and Discussion

The results of the validity, practicality and effectiveness of LKS obtained are shown in Figure 2.

Table 3.1 Validity, Practicality, and Effectiveness of LKS

Validity	Practicality	Effectiveness
81.70	83.94	86.67
Very Valid	Very Practically	Very Effectively

The result of the students' skill test by applying the LKS of the development result in grade IV, V and VI classes is shown in Table 3.2 as follows.

**Figure 3.1.** Validity, practicality, and effectiveness of LKS**Table 3.2** Pretest and Posttest of process skills grade IV results

Descriptive Statistics											
	N	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance	Skewness	Kurtosis		
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Pretest	72	55.00	95.00	5410.00	75.1389	6.81611	46.459	-.463	.283	1.646	.559
Posttest	72	65.00	100.00	6455.00	89.6528	8.15028	66.427	-.507	.283	-.037	.559
Valid (listwise)	N	72									

Table 3.3 Process Skills grade IV results

Score Process Skill	Pretest	Posttest
Highest score	95.00	100.00
Lowest score	55.00	65.00
Average	75.1389	89.6528
Standard Deviation	6.81611	8.15028

Table 3.3 shows that there are differences in achievement of learning outcomes in pretest and posttest. An increase of 14.5% in posttest results.

Table 3.4 Hypothesis Analysis grade IV results**Paired Samples Test**

		Paired Differences							
		95% Confidence Interval of							
		the Difference							
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pretest - Posttest	-1.45139E1	7.07902	.83427	-16.17738	-12.85040	-17.397 71		.000

Table 3.5 Pretest and Posttest of process skills grade V results**Descriptive Statistics**

		Std.							
		N	Minimum	Maximum	Mean	Deviation	Variance	Skewness	Kurtosis
		Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Std. Error
Pretest		62	50.00	100.00	71.7903	10.52263	110.726	-.089	.304
Posttest		62	65.00	100.00	85.9194	9.73972	94.862	.235	.304
Valid (listwise)	N	62							

Table 3.6 Process Skills grade V results

Score Process Skill	Pretest	Posttest
Highest score	100.00	100.00
Lowest score	50.00	65.00
Average	71.7903	85.9194
Standard Deviation	10.52263	9.73972

Table 3.6 shows that there are differences in achievement of learning outcomes in pretest and posttest. An increase of 14.13% in posttest results.

Table 3.7 Hypothesis Analysis grade V results

		Paired Differences					t	df	Sig.
		Mean	Std.	Std.	95% Confidence				(2-
			Deviation	Error	Interval of the				tailed)
				Mean	Difference				
					Lower	Upper			
Pair	Pretest	-	10.00735	1.27093	-16.67042	-11.58764	-	61	.000
1	-	1.41290E1					11.117		
	Posttest								

Table 3.8 Pretest and Posttest of process skills grade VI results

Descriptive Statistics										
	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis		
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Pretest	95	60.00	100.00	77.4737	11.00951	121.209	.123	.247	-.617	.490
Posttest	95	60.00	100.00	90.6316	9.28973	86.299	-1.490	.247	2.104	.490
Valid N (listwise)	95									

Table 3.9 Hypothesis Analysis grade VI results

Paired Differences									
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pretest - Posttest	1.31579E1	8.22078	.84343	-14.83255	-11.48324	15.600	94	.000

Table 3.10 Process Skills grade VI results

Score Process Skill	Pretest	Posttest
Highest score	100.00	100.00
Lowest score	60.00	60.00
Average	77.4737	90.6316
Standard Deviation	11.00951	9.28973

Table 3.10 shows that there are differences in achievement of learning outcomes in pretest and posttest. An increase of 13,16% in posttest results.

4. Conclusions

Table 4.1 Hypothesis Test Results Results

Grade	Paired Samples Test				
	Pretest/Posttest	N	Mean	Std. Deviation	Sig. (2-tailed)
IV	Pretest	72	75.1389	6.81611	0.000
	Posttest	72	89.6528	8.15028	
V	Pretest	62	71.7903	10.52263	0.000
	Posttest	62	85.9194	9.73972	
VI	Pretest	95	77.4737	11.00951	0.000
	Posttest	95	90.6316	9.28973	

Analysis of decision-making is a probability value. If the probability is > 0.05 then H_0 is Accepted and if the probability is < 0.005 then H_0 is rejected. Based on Table 4.1 the results of the students' skill analysis process in class IV, V, and VI Sig values. (2-tailed) < 0.005 . So H_0 is rejected, so there is a significant difference to the development of process skills between students before using the LKS device after using the LKS device in class IV, V, and VI. It can be concluded that LKS result of development can improve the process skill of elementary school students class IV, V, and VI.

References

- [1] Carin, A. A. (1993). Teaching science through discovery. United States of America. Macmillan Publishing Company.
- [2] Ostlund, K. L. (1992). Science Process Skills Assessing Hands-on Student Performance. United States of America. Addison-Wesley Publishing Company.
- [3] Osman, Kamisah. (2012). Primary Science: Knowing about the World through Science Process Skills. Journal of Asian Social Science, 1-7.
- [4] R Russell Wilke; Straits, William J. (2005). Practical Advice for Teaching Inquiry-Based Science Process Skills in the Biological Sciences. Journal of American Biology Teacher, 2005, 534-540.
- [5] Borg, W. G., & Gall, M., D. (1983). *Educational research*. New York: Longman
- [6] Erwan Agus Purwanto & Dyah Ratih Sulistyastuti. (2007). Metode penelitian kuantitatif untuk administrasi publik dan masalah-masalah sosial. Yogyakarta: Gava Media.