

# Improving Science Pedagogic Quality in Elementary School Using Process Skill Approach can Motivate Student to be Active in Learning

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## Abstract

On global era today, as the professional teacher should be improving their pedagogic competency, including to improve their science pedagogy quality. This study is aimed to identify: (1) Process skill approach which has been used by Elementary School Teacher in science learning; (2) Teacher's opinion that process skill can motivate the student to be active in science learning; (3) Student behavior during the teacher implemented the process skill approach in science learning at Elementary School; (4) Student activeness in doing an assignment of the science process skill which selected by teacher; (5) Facilities easiness to support the science process skill in the place of teacher teaching; (6) Response of teacher that the process skill approach on science learning in Elementary School; (7) Yes or no restrictions during the teacher implemented the process skill within science learning in Elementary School. This study is survey research. The research sample was determined by using sampling technique with 240 teachers of Elementary School. The research method is descriptive quantitative. The result showed that (1) 81,17% of Elementary School Teacher in Java have implemented the process skill approach within their science learning. (2) 97,92% of Elementary School Teacher in Java stated that the process skill can motivate the student to be active in their science learning. (3) 97,17% of Elementary School Teacher in Java stated that the student are very happy or enthusiastic if teacher using a process skill approach in science learning. (4) 82,67% of Elementary School Teacher in Java stated that the student seem active doing assignment from teacher through the process skill activity. (5) There is still about 31 % of Elementary School Teacher in Java stated the doubt about facilities easiness which supports process skill approach activity. (6) 76,67% of Elementary School Teacher in Java stated that the process skill approach on science learning is still difficult to implement in Elementary School. (7) 37% of Elementary School Teacher in Java stated that there are still some restrictions in implementing the process skill approach on science learning in Elementary School.

**Keywords:** Science Pedagogic, Process skill, Active learning

## 1. Introduction

Pedagogic within Great Indonesian Dictionary on IV Edition 2008 is meant as educative. While pedagogy is an education science or teaching science. Then, the science pedagogic can be meant as how to educate student using science/Natural Science. Process skill is one of very relevant learning approach with learning of science/Natural Science. Sapriati, A & Budiastra, A.A.K ((2009: 4.1) stated that the process skill approach consists of basic process skill approach and integrated process skill approach.

In implementing the process skill approach, the professional teacher should be guided to 4 (four) competencies required, such as: (1) Pedagogic competency, for example in learning design should be fit with learner condition (student's characteristic), (2). Personality competency, for example in learning process, "Teacher could be able to become the figure, charismatic, and wisdom in handling every problems, (3). Professional competency, teacher should master the substance of science related with field of study taught, teacher should be skilled in implementing the process skill approach in teaching science/Natural Science. Social competency, teacher should be able to communicate and interact effectively with learner, educator, and administrator, and also communicate effectively with parent/guardian and surrounding people. The process skill approach is one of relevant approach with science learning, because feature of science or Natural Science would be growth with observation and experimental results. While process skill of science includes skills to observe, classify, measure, communicate, inference, predict, formulate hypothesis, name the variable, do experiment, interpret data, and investigate.

Research result by Haryono (2006) showed that: (1) science process skill of student and teacher of Elementary School are generally low (4,08% and 65,79%, (2) science process in Elementary School is generally developed with integrated by deductive pattern learning, (3) science process skill increase-based learning model

is defined as a learning process which translates the science process skill into sequence of learning process in classroom, (4) science process skill-based learning model is significantly effective to improve the student science process (from 46,08% become 67, 27%). Research result of Cipta Ningsi Tarinje, O. (2012) showed that the process skill of early childhood can improve by supervised inquiry method. Furthermore, the research by Deden (2013) showed that using experiment method can improve the science process skill of student at Elementary School class 6 in Ramben State Elementary School 47, Kapuas District, Sanggau Pontianak Regency.

Based on the background above, then the problem will be answered on this research are: (1) Are as a teacher often implementing the process skill approach in science learning at Elementary School?, (2) Can the process skill approach motivate the student to be active in the science learning?, (3) What about the student response if you implement process skill approach in science learning at Elementary School?, (4) Is the elementary school student can learn actively doing their assignment through the process skill approach? (5) Is there any facilities in your school that could accommodate the process skill approach? (6) What is your opinion about the process skill approach difficult to be implemented in elementary school science learning? (7) Is there any difficulty or obstacles in the process skill approach in elementary school?. This research is aimed to identify: (1) Process skill approach which has been used by Elementary School Teacher in science learning; (2) Teacher's opinion that process skill can motivate the student to be active in science learning; (3) Student behavior during the teacher implemented the process skill approach in science learning at Elementary School; (4) Student activeness in doing an assignment of the science process skill which selected by teacher; (5) Facilities easiness to support the science process skill in the place of teacher teaching; (6) Response of teacher that the process skill approach on science learning in Elementary School; (7) Yes or no restrictions during the teacher implemented the process skill within science learning in Elementary School. For supporting the explanation above, the following section will discuss some related theories, as follows:

## 2. Pedagogic of Science

Ghofur. (2012) stated that pedagogic is the science which discusses an education, that is an education science. Other opinions, Sadulloh, U (2010) stated that pedagogic is the science which discusses an education, that is the science of child education. Pedagogic is derived from Greek, "paedos" means as the son and "agogos" means sending, or guiding. According to Suwardono (2015), "Pedagogic" is an education study, it literally means a helper of son in ancient Greek time which their work is sending their son of employer going to school. Then metaphorically, pedagogic is an expert which guides the children into certain life goals, or now this term is called as educator. Then it can be concluded that pedagogic is the science to educate children. While the science is derived from latin "scire" which means a knowing. Science is only doing its study on natural, through observation. Therefore, science pedagogic is the science to educate children for knowing the natural symptoms. If pedagogic is related with Act No. 14 of 2005 about Teacher and Lecturer, "It was stated that teacher is a professional educator with the main duty to educate, teach, guide, direct, train, asses, and evaluate to learner on early childhood education with path of formal education, elementary and secondary educations, then the teacher must understand the pedagogic. Professional teacher should be constantly oriented on 4 (four) competencies required, such as: (1) Pedagogic competency, for example in learning design should be fit with learner condition (student's characteristic), (2). Personality competency, for example in learning process, "Teacher could be able to become the figure, charismatic, and wisdom in handling every problems, (3). Professional competency is the teacher must mastery the substance of science related with field study taught, (4). Social competency, teacher should be able to communicate and interact effectively with learner, educator, and administrator, and also communicate effectively with parent/guardian and surrounding people. Achjar Chalil and Hudaya,L (2008: 94) professionalism quality of teacher can be shown by some attitudes, such as: (1) Intention to be always performing the near ideal standard behavior, (2) Always improving and keeping the professional image, (3) Always pursuing opportunity to develop professional which can improve their knowledge and skills, (4) Pursuing professional quality and idea, and always effort to appears prime, and (5) proud of their professional. In its development, the science is meant as systematic knowledge based on observation and experimentation. Therefore, teacher in teaching should know well the relevant learning approach with features of science to improve science pedagogic.

## 3. Process Skill Approach

Rustaman (2003) stated that the process skill is the skill involving cognitive and intellectual, manual and social skills. Cognitive skills is involved because by doing process skill, the student use their mind. Manual skills are

clearly involved in process skill because they involve the using of instrument and material, measurement, arrangement or assembling of tools. Social skill is also involved in process skill because they are interacted with their peer in doing their teaching and learning activities, for example discussing the observation result, experiment result, or in communicating process skill result is important to be developed through direct experience as learning experience. Through direct experience, individual can be more appreciating the process or activity as being done. It can be showed from some research result, such as the research result of Setiawan, H. (2013) which conducted at Class III of Elementary School showed that: (1) process skill in capability to observe from first cycle until third cycle have been improved from 63,34% into 90,00% on third cycle. (2) process skill of capability to classify from first cycle until third cycle have experienced an improvement from 70% into 90% on third cycle. (3) process skill in capability to communicate from first cycle until third cycle have experienced an improvement from 65% into 90% on third cycle. (4) process skill in capability to conclude from first cycle until third cycle have experienced an improvement from 60% into 83,34% on third cycle. Here are some researchs finding from Suja, I W. (2006) showed the inclination to mastery the process skills of observation, interpretation, classification had been better developed, and the student are asked to think critically and systematically. Conclusion from the research result of Amparodo, M,F (2014) showed that the process skill approach can improve the student learning result about properties of light at Class V of Limboto Barat State Elementary School 11 Gorontalo Regency. Based on the explanation above can be said that process skill approach can motivate the student in learning. Therefore, process skill approach is one of relevant approach with science pedagogic.

#### **4. Student Learning Motivation**

Motivation meaning is derived from the word "motif" which means as power to do which supports an individual to do something. Wardani, IG.A.K, et al (2014: 5.26) stated that motivation is meant as a driving force. The driving force is strong related with the stimulus given. In context of learning in the classroom, learning motivation can be meant as an effort to encourage student to learn all learning material given to student by teacher. Certainly, who has rolled to motivate student in order to like studying is activity or assignment given by teacher, this is included as approach in learning. Learning approach which can motivate student in learning are the approach which asks activities, one of them is process skill approach. In contrary, if student don't want to study, certainly it has the caution. The student may be sick or dislike a certain learning material. As the teacher, we should know the caution of student not want to study. The motivation itself has two forms, such as intrinsic and extrinsic motivations. Intrinsic motivation is the motivation from him / herself. Extrinsic motivation is the motivation from out of him / herself. The process skill approach conducted by teacher is as one of example of extrinsic motivation which can motivate student to be more active learning. This is lining with opinion of Djamarah (2002: 117), motivation is an active and functioned motifs because there is stimulation from outside. Usman (2010: 29) is also stated that the motivation has raised as a result from individual inside because there is errand or coercion from other people, so that he/she wants to do something or learning. Errand or coercion of the people meant is assignments from teacher by some process skill activities, such as observing, classifying, measuring, communicating, interpreting, predicting, formulating hypothesis, naming variable, doing experiment, interpreting data, and doing investigation. Therefore, based on explanation above, it can be said that student will be more active motivated if there is a challenging assignment, such as the process skill approach.

#### **5. Method**

The method used to answer the problem above is by survey. The survey is used because it can collect information about process skill approach in science learning at Elementary School. The main source of this research is Elementary School Teachers. This research populations are Elementary School Teacher in Java Island with background of non-PGSD undergraduate which are taking course in Open University, The sample is taken randomly, every province is taken two (2) regencies. Every regencies are chosen randomly starting from student on semester one (1) until student on semester three (3) as much 80 students. East Java is represented by 80 teachers from Bondowoso and Situbondo regencies, Central Java is represented by 80 teachers of Elementary School; from Jepara and Kudus regencies, West Java is represented by 80 teachers from Depok and South Tangerang regencies, and also Special Capital Territory of East Jakarta. There are 240 teacher of Elementary School which have background as non-PGSD undergraduate as a total samples.

The research had been conducted during those Elementary School Teachers joined with tutorial supervision on test period of 2015.2 which was started on the end of September until middle of November 2015. Sampling

technique is conducted by giving direct questionnaire to each Elementary School Teachers who have been joining with face to face tutorial in each learning group. On that day, the questionnaires completed should be collected, so total sample is met in accordance with the total had been determined.

For answering the research problem which had been conducted, after data collected is analyzed descriptive-quantitatively. In accordance with answering of problems, the data is good enough to analysis by taking percentage from total data obtained. Then it is presented into diagram.

## 6. Result and discussion

Based on the result obtained from teacher's opinions which in accordance with the research goals which expected, including: (1) The process skill approach which had been conducted by Elementary School Teacher within science learning; (2) Teacher's opinion that the process skill can motivate student to be active in science learning; (3) Student behavior during teacher implementing the process skill approach in science learning at Elementary School; (4) Student activeness in doing of science process skill duty which selected by teacher, (5) Easiness of facilities to support the science process skill approach at the place of teacher teaching, (6) Teacher's response that the process skill approach is difficult to implement on science learning at Elementary School; (7) There is or not restriction during the teacher were implementing the process skill in science learning at Elementary School, then the percentage of data obtained is showed in figure as follows.

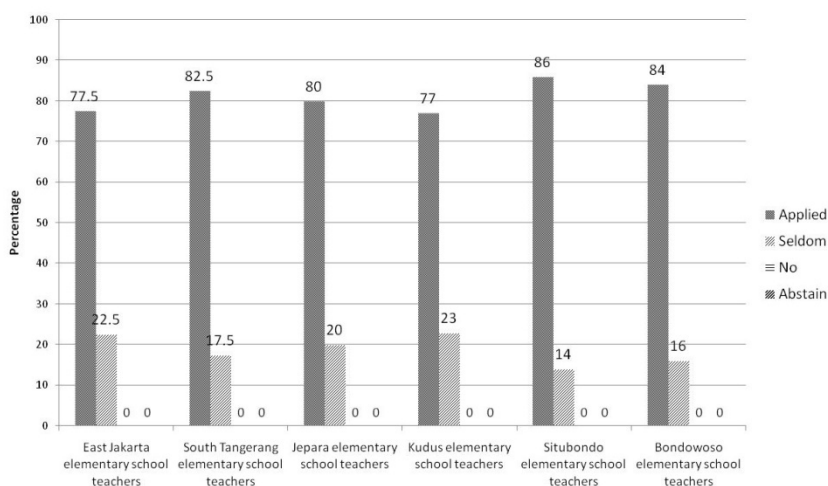


Figure 1. Percentage of Elementary School Teacher which is implemented the process skill approach in science learning

Based on the figure above showed that 81,17% of Elementary School Teacher in Java have implemented the process skill approach in science learning. It means that Elementary School Teacher in Java who have background non-PGSD undergraduate have implemented a relevant approach with science features, such as developed from observation and experimentation.

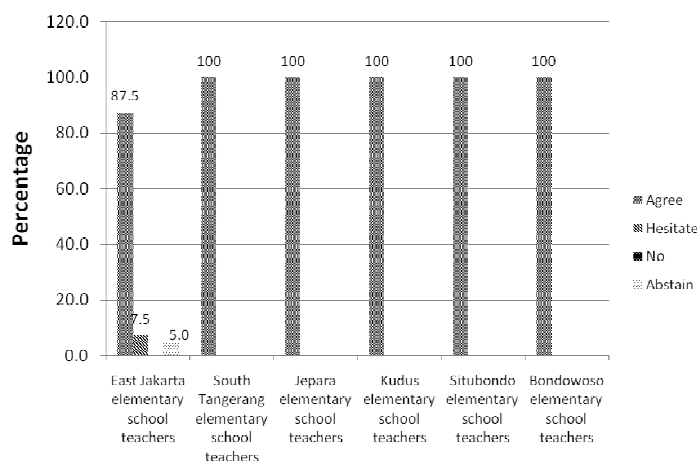


Figure 2. Percentage of teacher's opinion that process skill can motivate student to be active in science learning

Based on the figure above showed that 97,92% of Elementary School Teacher in Java give an opinion that the process skill can motivate the student to be active in science learning. This is lining with opinion of Usman (2010: 29) stated that the motivation is raised as a result from individual inside because there is other instruction in form of activity of process skill, thus he/she wants to do something or learning.

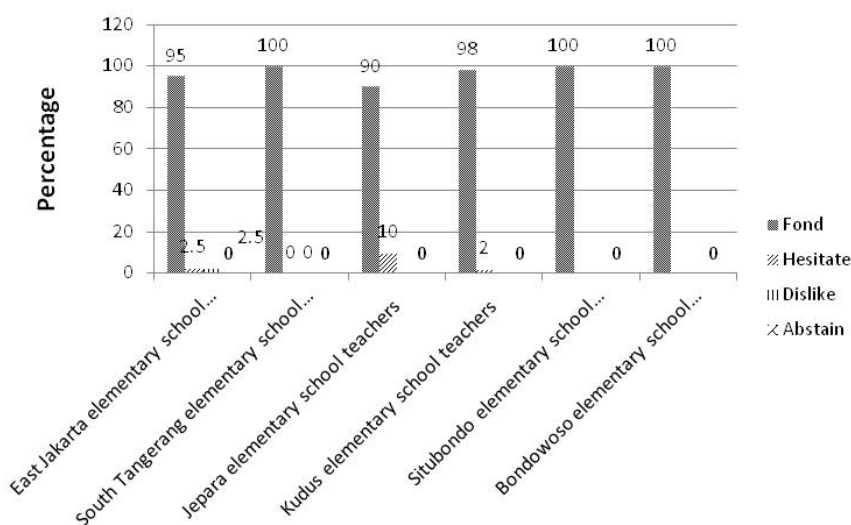


Figure 3. Percentage of student behavior during the teacher implemented the process skill approach in science learning at Elementary School

According to figure above is really 97,17% of student is very happy or enthusiastic if teacher uses the process skill approach within science learning. This means that student or learner are preferring concrete things or they observed directly through duties from teacher.

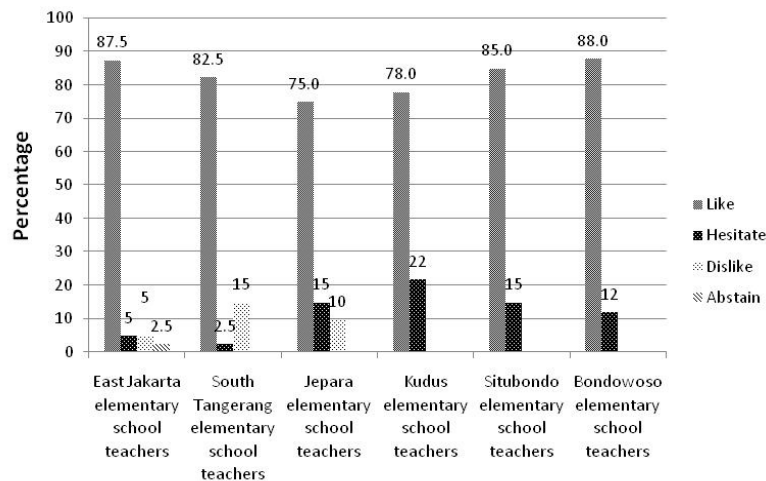


Figure 4. Percentage of student's activeness in doing assignment of science process skill selected by teacher

Based on figure above 82,67% of student is appearing active doing the assignment from teacher through the process skill activities selected by teacher. This can be said that by assignment as one of way to make student to be active learning.

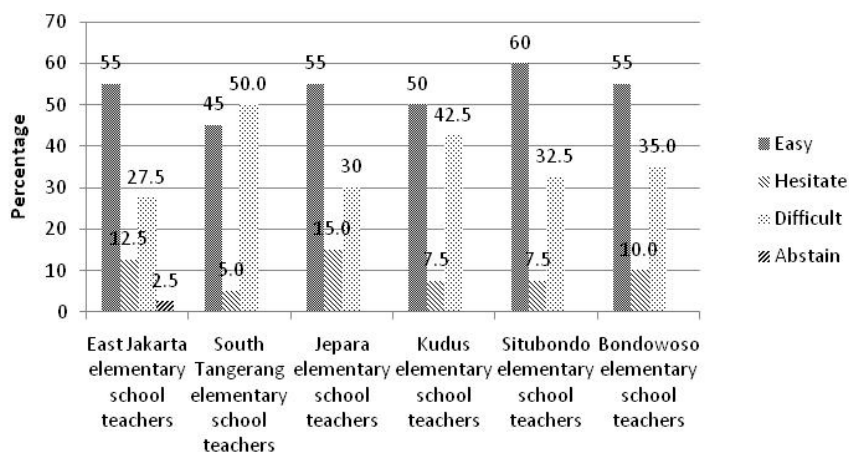


Figure 5. Percentage of facilities easiness to support science process skill approach at the place of teacher teaching

According to figure above is still exist about 31% of Elementary School Teacher said doubt about facilities easiness which support the process skill approach. This showed that there is not still using environment as science facilities learning Especially Elementary School Teacher in South Tangerang area as much 50% said the doubt.



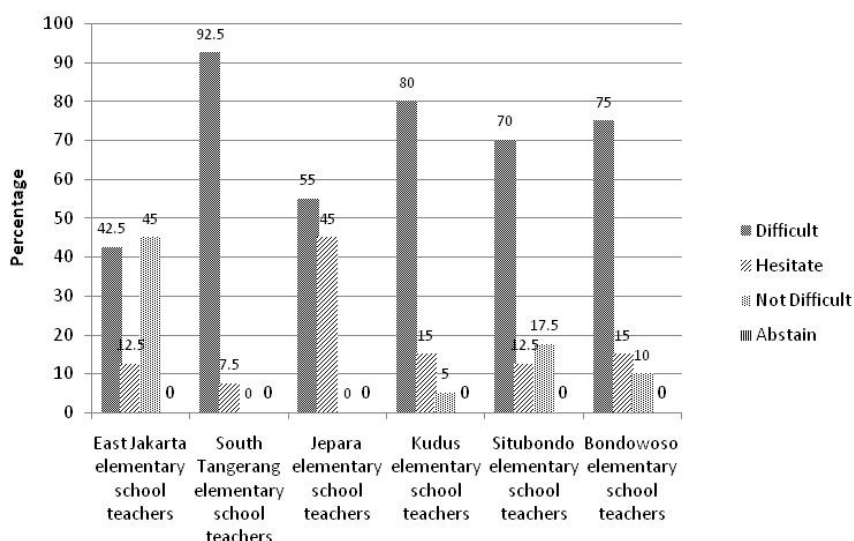


Figure 6. Percentage of teacher's response that process skill approach is difficult to implement on science learning in Elementary School

Based on figure above, 76,67% of Elementary School Teacher said that process skill approach on science learning is difficult to implement in Elementary School. Specially for Elementary School Teacher in South Tangerang area are almost 100% answered as difficult. Based on result of questionnaire is difficult to implement the process skill approach on science learning because the facilities in the school is less supporting. This is related with diagram 5 about facilities easiness. It means that Elementary School Teacher in South Tangerang are generally not able to use environment as science learning sources. Safnowandi (2012) stated that if teacher were implementing the process skill approach, it is important to pay attention the classroom management. Classroom situation can encourage or reduce the learner activities. Classroom situation must be managed as good as possible in order to stimulate learner learning activity and creativity. Therefore, a good classroom management can make the process skill approach run well.

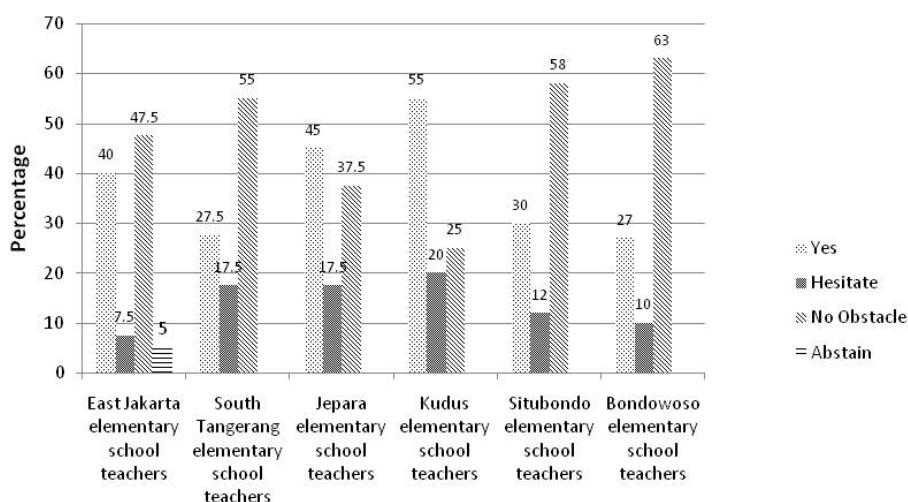


Figure 7. Percentage of exist or no restriction during teacher implemented the process skill in science learning at Elementary School.

Figure above showed that there is still about 37% of Elementary School Teacher said that there is restriction in implementing the process skill approach in science learning at Elementary School. Based on the result of questionnaire above, restriction of implementing the process skill approach is caused by less supporting facilities and less time, so the learning is not completed. Therefore, teacher should be clever to manage

classroom and time for learner learning. In implementing the process skill approach, the professional teacher should be guided to 4 (four) competencies required, such as: (1) Pedagogic competency, (2). Personality competency, (3) (4). Social competency which has been elaborated above.

Based on the elaboration above, it can be said that to improve science pedagogic quality should be exist the motivation for student in order to be always creative and active in learning through giving assignments in form of science process skill activities.

## 7. Conclusion

Based on this can be concluded as follows. First; 81,17% of Elementary School Teachers in Java have implemented the process skill approach on science learning. Second; 97,92% of Elementary School Teachers in Java stated that the process skill can motivate student to be active on science learning. Third; 97,17% of Elementary School Teachers in Java stated that they are very happy and enthusiastic if teacher uses the process skill approach on science learning. Fourth; 82,67% of Elementary School Teachers in Java stated that student seems to be active doing assignment from teacher through the process skill activity. Fifth; there is still about 31% of Elementary School Teachers in Java stated that they are doubt about facilities easiness which supports the process skill approach. Sixth; 37% of Elementary School Teachers in Java stated that process skill approach on science learning is still difficult to implement in Elementary School. Seventh; 37% of Elementary School Teachers in Java state that there is still restriction to implement process skill approach on science learning in Elementary School.

Based on the finding results, the researcher gives some suggestions as follows. Professional teacher should be always guided for 4 competencies which required, (2) teacher should pay attention the student's characteristics and manage the right time in implementing the process skill approach; (3) teacher should be always supervising during the student doing assignment from teacher; (4) Teacher should be always motivating the student in order to be active in learning, and specially for Elementary School Student needs to be exist of reinforcement for achieved student for improving pedagogic, including science pedagogic.

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