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Profile Understanding Student S-1 PGSD-BI-UT Surabaya in Implementing Practices of Natural Sciences

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ABSTRACT

The low achievement of elementary school students especially in science subjects. Many components are related to science and one of them is the teacher. Factors sourced from the teacher must receive serious attention such as low knowledge, commitment, performance and educational background of teachers. To improve the knowledge-based society, the Open University Distance Learning Program Unit (UPBJJ) Surabaya in collaboration with the district/city government in East Java opened the S-1 Primary School Teacher Education Program in various disciplinary inputs which became known as S1 PGSD-BI which I then call as a teacher. This study aims to describe the understanding and skills of science students in the implementation of science and the use of science in laboratory UT-UPBJJ Surabaya. The expected result of this research is to improve teachers in performing their duties professionally which in turn will lead to the improvement of science process skills and student learning outcomes. The method used in this research a quasi-experiment. The results of the first stage of the study were obtained based on questionnaire and observation of teachers in carrying out the science practice is as follows: the competence of mastering the science laboratory material showed (79.2%) the teachers have not been able to optimally practice the science, especially on the topic, Wave, and Optics. Similarly, on the topic of Living and Environment, especially on the subject of "Detergent Effect on Germination" (62.5%) of Primary School Teachers is less well controlled. However (87.5%) teachers can master fairly well on Topics of Life, Food, Electrical, and Magnetism. Similarly, the competence of teachers' science process skills (63.8%) in observing, classifying, inference, application and communicating well enough and (75%) teachers lacking in predicting and planning experiments. From the questionnaire, it was identified various things that caused the teachers to feel reluctant to carry out the science lab in the classroom/laboratory, among others: the limited time of practicum implementation, the absence of labor that can help the implementation of the lab besides the lack of equipment and practicum materials, the low understanding of the teacher on the concept and use of tools practice tools and lack of teacher intensity in the laboratory training.

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1. INTRODUCTION

Government Regulation No. 19 of 2005 on "National Education Standards" and Government Regulation No. 74 of 2008 on teachers mandates that teachers are required to have academic qualifications, competencies, and certification of educators [1], [2]. This is also supported by the Minister of National Education Regulation number 10 of 2009 on "Certification for Master in Position" [3]. The existence of the above regulations has given fresh air for the educational world associated with the certification of educators (teacher income) that must be balanced with the academic competencies that have been determined. Teachers are professional educators with the primary task of educating, teaching, guiding, directing, training, assessing, and evaluating learners in early childhood education on formal education, primary education and secondary education. Elementary school teachers/classroom teachers with the competency standards of grade teachers (SKGK) Elementary School graduate of bachelor - primary school teacher education (S-1 PGSD) must have four competencies, namely: (1) Mastery of study area, (2) Understanding learners, (3) Mastery of learning and (4) Development of personality and professionalism. The above competencies can be aligned with: pedagogic competence, personality competence, professional competence, and social competence. Most primary school teachers (57%) do not yet have sufficient competence to perform their duties [4].

Similarly, the problem of science education in Indonesia is marked by the still low student achievement in science subjects. The UNDP report announces that Indonesia is ranked 110th among various countries in the world (http://hdr.undp.org). The monitoring results from The Third International TIMSS-R position of the Indonesian state were ranked 32 out of 38 countries [5]. In addition, the low quality of science education is also due to the teacher's educational background that is not in accordance with the field (mismatch), so that teachers in the implementation of science learning is not in accordance with the essence or essence of science. Science learning should take place in the form of processes and products. This means that science learning is not enough to be done with the delivery of information about the concept but also must be balanced with real activities in the field.

Designing science learning that suits the characteristics of science is very demanding teacher creativity is needed. The element of teacher creativity is very important because it relates to the ability of teachers to create conditions that can facilitate student learning [6]. Science learning is inseparable from practicum activities. Woolnough and Allsop [7] presents four reasons for the importance of experiments of science. First, the lab can generate motivation to learn science. Second, the lab develops the basic skills of experimenting. Third, the lab becomes a science-learning vehicle. Fourth, the practicum supports the subject matter. Scientific process skills include: observing, interpreting, classifying, using tools and materials, applying concepts, planning experiments, communicating and asking questions.

Based on observations in 2016, many problems are encountered related to science learning in the classroom both theoretically and practically. Many teachers teach at the primary school level whose teaching is irrelevant to the education of the diploma (mismatch). Teachers lack good control of science material/practice. In addition, classroom teachers in elementary schools should teach all the subject matter except for Religious Education and Penjaskes, so that too many studies must be mastered in relation to the burden of teaching. Teachers do not have time to prepare lessons in their classes. Teachers only provide teaching materials and training questions as preparation for the examination in class and do not train students to form activities to master the concept of subject matter. As a result of science learning conducted in the class is not optimal or can be said to be so. Scientific learning related to technological development requires teachers to have creativity and innovation in their learning to follow the development of technology [8]. Given mismatches of qualifications from science teachers in basic schools, the quality of teachers' mastery in the natural sciences should be improved so that they become teachers who are skilled in managing to learning.

Open University - Surabaya as an educational institution opened the Strata 1 (S-1) Program of Primary School Teacher Education Program Input Various Disciplines of Science which became known as S1 PGSD-BI. Based on the above problems, this study aims to describe the understanding and skills of the science process of S-1 PGSD-BI students in carrying out practicum of science.

2. RESEARCH METHOD

The research in this research uses a quasi experimental method with flow and stages in the research which is illustrated schematically as in figure 1. The researcher wants to know the influence of the teacher of the elementary school teaching which is irrelevant with the education of the diploma (mismatch) in understanding the material and the skill of their science process in carrying out the lab science.

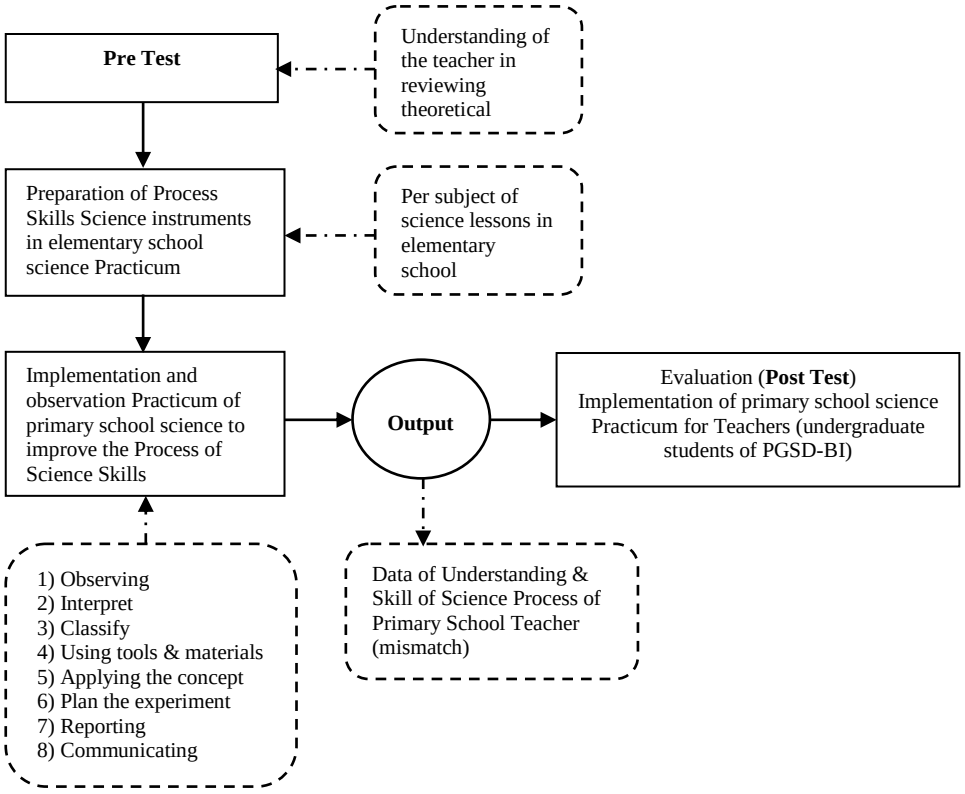

Figure 1. Stages of implementation of science practicum in Primary School based Skills Process of Science

The technique of data analysis this research use descriptive analysis (percentage). Descriptive analysis techniques are used to obtain information on preliminary data (pre-test), the implementation of science practicum in primary schools for teachers who are not in accordance with the certificate (mismatch) and the results of the evaluation (post test) on the implementation of science practicum in primary schools for improvement science process skills. The questionnaire data in this study is needed to obtain a factual overview of the level of understanding and practicum of science in primary schools for mismatch teachers. The implementation of science practicum in elementary school for undergraduates of S-1 PGSD BI is shown in figure 2.

Figure 2. The implementation of science practicum in elementary school for undergraduates of S-1 PGSD BI.

3. RESULTS AND ANALYSIS

3.1. Competence of mastering the concept and practice of natural science

Based on the pre test result, it is known that 79.2% of students of S-1 PGSD-BI do not understand well the concept of science and practice, they assume that science learning given only refers to a text book. Students also have not been able to integrate the relationship between natural science or science learning concepts with class activities in the class.

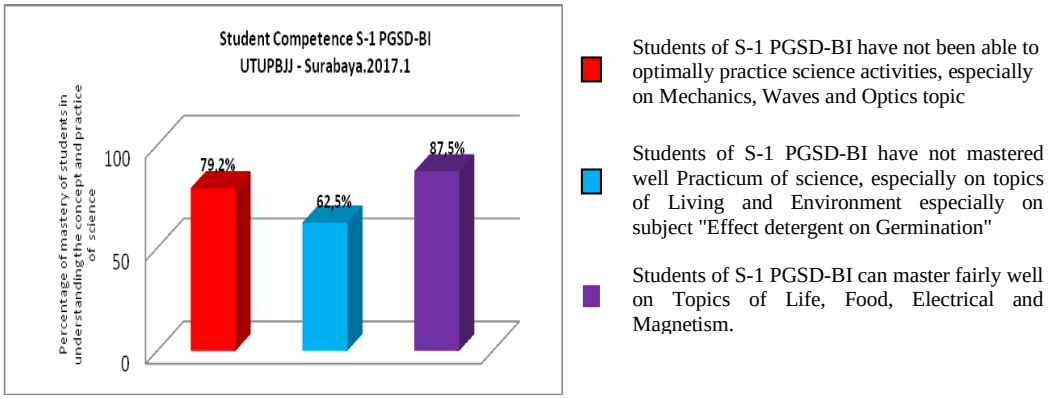

Figure 3. Student Competence S-1 PGSD-BI in understanding the concept and practice of science.

Especially in the study of mechanics, many students who have not been able to understand well the meaning of straight motion regular or straight motion changes regularly. Even when asked to plan a mechanical practice (topic of motion) students have not been able to optimally perform it, even the names of tools in practicum mechanics (on the subject of irregular straight motion and irregular straight motion) have not been recognized. Students also have difficulty understanding the wave topics, they have not been able to distinguish the meaning of transverse or longitudinal waves, even for understanding the concept of the frequencies and the speed in which they wave together. They are still having difficulty in designing the practice of waves. In the science practicum with Optical topics as well as the topic of the wave, students also can not master the concept of propagation of light in optical systems, both for mirrors, convex and concave lenses. The analysis in determining the final image of the optical system is also still difficult to explain. Similarly, on the topic of Living Beings and the Environment, especially on the subject of "Detergent Effect on Germination", 62.5% of students have not been able to master well in draft and practice. This is very worrying because the mastery of the concept of science when learning or practicum can be conditioned learning activities or lab work becomes better planned, more independent, and complete with clear learning outcomes. In addition, conceptual and practicum can improve learning outcomes [9] and enhance learning activities [10]. But students (87.5%) can master well enough on the topic of Life, Food, Electricity and Magnetism, understanding and practicum planning are often seen in daily life so that students do not have difficulty in explaining the concept and design the practicum.

3.2. *Competence of Scientific Process Skills of Student S-1 PGSD BI 2017.1*

The result of observation of science process skill of S-1 student of PGSD-BI (teacher) in practicum activity as shown in Figure 4.

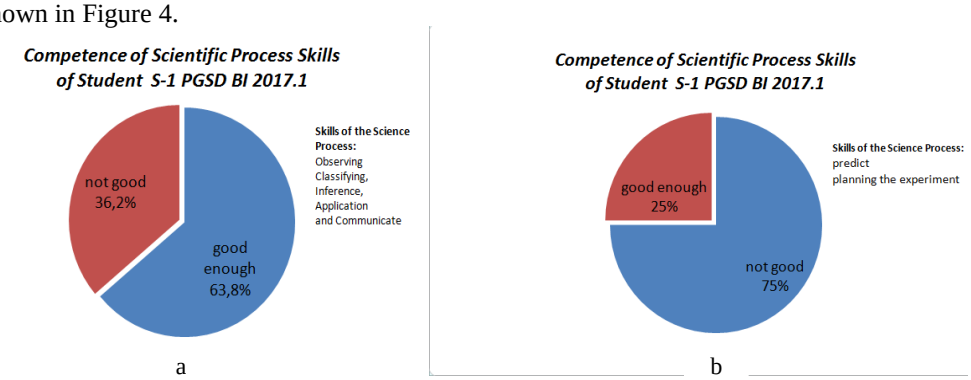

Figure 4. Competence of Scientific Process Skills of Student S-1 PGSD BI 2017.1
(a) Observing-Communicate (b)Predict – Planning The Experiment

Practicum of science done by the student with tutor mentoring can be said to run quite well, where on the third-day activity till the seventh day, students have been able to design good science practice. Competence of students related to the skills of the science process, 63.8% of students carrying out science practicum is good enough in dealing with problems, classifying, inference, application and communicating observation data and (75%) students lacking in predicting and planning practicum of science, this happens because the level of understanding of students from various fields of science (mismatch) in studying science that has not been optimal. Many classical factors and reasons that make students who mostly become elementary school teachers do not practice science in the classroom. From the questionnaire, it was identified various things that caused them as class teachers to be reluctant to carry out science labs in the classroom / laboratory such as: the limited time for practicum implementation, the absence of laboratory who can assist the practicum implementation besides the lack of equipment and the practicum materials, the low understanding of the concept and the use of practicum tools and their lack of intensity in participating in laboratory training.

4. CONCLUSION

Based on the results of the research, the competence of mastering the science lab materials in the S-1 students of PGSD BI has not been optimal. Students (79.2%) have not been able to optimally practice science activities in elementary schools, especially on the topic of mechanics, Wave, Optics and 62.5% on the topic "Living Beings and Environment" especially on the subject "Detergent effect on the principal germination discussion ". However (87.5%) students can master fairly well on the topic of Life Characteristics, Food, Electricity and Magnetism. The competence of students' science process skills (63.8%) in observing, classifying, inference, application and communicating is good enough and (75%) lack of control in predicting and planning experiments. From the questionnaire, it was identified that the students as class teachers did not practice science in the classroom because of the limited time, the lack of equipment and practicum materials, the absence of labors, the low understanding of the concept of science and the lack of intensity in their laboratory train

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