



Islamic Journal of Integrated Science Education (IJISE)

Program Studi Tadris IPA
Institut Agama Islam Negeri Kediri
e-ISSN : 2986-0865

<https://jurnalfaktarbiyah.iainkediri.ac.id/index.php/ijise>



Analysis of Questioning Skills through Science Learning Practices in Microteaching Courses

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Abstract: Study aims to describe the mastery of the questioning skills of prospective elementary school teacher students at the Purworejo Muhammadiyah University. Sources of data in this study were student teacher candidates for elementary school in Muhammadiyah University. The data collection technique used is observation. The analysis used in this research is qualitative data analysis. The indicators of mastery of questioning skills include basic questioning skills and advanced questioning skills. The results showed that Prospective elementary school teacher students at Purworejo Muhammadiyah University had more mastery of basic questioning skills compared to advanced questioning skills. The data were obtained by using the observation method on micro learning activities by Prospective elementary school teacher students at Purworejo Muhammadiyah University. The basic teaching skills, especially the questioning skills, were analyzed and observed directly in the implementation of microteaching activities. Based on the research that has been done, it is found that the mastery of basic skills in teaching is very necessary, especially the skills in asking questions. Asking is a verbal utterance that asks for a response from someone you know. Responses can be in the form of knowledge or things that are the result of consideration.

Keywords: learning practices, microteaching courses, questioning skills, science learning

Article History:

Received: 20 May 2022; Revised: 26 June 2022; Accepted: 11 July 2022; Published: 30 July 2022

Citation (APA Style):

Asti, N. R., & Ngazizah, N. (2022). Analysis of Questioning Skills through Science Learning Practices in Microteaching Courses. *Islamic Journal of Integrated Science Education (IJISE)*, 1(2), 122–130. <https://doi.org/10.30762/ijise.v1i2.367>



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INTRODUCTION

Teaching is a complex task and requires a variety of teaching skills. Teaching skills are absolute skills that must be possessed by teachers in the teaching and learning process (Bahri, 2006). Of the eight basic teaching skills, the questioning skill is the dominant and strategic skill, because the interaction of teachers and students in the learning process mostly uses questions and supports other basic skills (Windyantika & Ngazizah, 2021). Effective use of these skills can enable students to participate in learning. Effective questioning by the teacher directs students to understand the content of the lesson, increases curiosity, stimulates imagination, motivates students to acquire new knowledge, directs students' attention, keeps students engaged in the learning process, provides space for students to express themselves, and improves student participation (Tofade et al., 2013). The ability to ask question of a good teacher can be observed from the types of questions asked and the effective technique of questioning. Good questions are questions that can improve students' thinking skills, namely high-level cognitive questions (Feng, 2013). While effective teacher questioning techniques can be observed from the use of clear questions, giving sufficient waiting time, distributing questions evenly, responding to student answers, and eliminating habits that interfere with the discussion process (Wanelly & Fitria, 2019).

States that questioning skills are an integral part in order to improve the quality of learning processes and outcomes, which are also part of success in instructional management and classroom management (Ma, 2008). Through observing the activities of asking students, the teacher can detect barriers to the thinking process in students. Thus the teacher can improve the quality of learning in accordance with the characteristics and level of understanding of students. Asking questions is a simple method that is quite effective in improving students' thinking skills and also the quality of learning outcomes, but there are still many teachers who fail to implement it. Like the research conducted by (Widodo, 2006) on the profile of teacher and student questions in science learning, which found that the questions asked by teachers were questions at a low cognitive level (memorization and understanding) and asked more closed questions than open questions. Based on the results of this study (Widodo, 2006) suggests that the small number of teacher questions that are open and require high-level thinking shows that science learning in schools still has not trained students to develop high-level thinking and reasoning and these results also indicate that the increase in teacher's ability to ask questions is still needed.

Skill is something that humans have in their ability to an object, and asking questions becomes an ability that is in humans to get information about something. Some say that "thinking itself is asking". According to (Djamarah, 2006), the purpose of questioning skills, among others: (1) Increasing children's attention and curiosity about the topic; (2) Focusing attention on a particular problem concept; (3) Developing active learning; (4) Diagnosing children's learning difficulties; and (5) Developing children's thinking skills. Basically, humans have the ability to ask questions, both asking basic questions and looking at critical questions to get the right answer. Basic and advanced questioning skills have differences between the two. Teachers should better understand the meaning of basic and advanced questioning skills.

Elementary school is a basic education institution whose students are aged between 6-13 years and have the characteristics of always wanting to know and need a mentor who can be used as an idol. In general, elementary school students idolize their teachers who are classroom teachers. Class teachers in elementary schools cover all subjects, except religion and sports. Thus the classroom teacher will teach science to elementary school students. Science is the science of the universe which obtains its products through the scientific method and will form a scientific attitude that is very instrumental in shaping the personality or character of students by using innovative learning strategies (Ergül et al., 2011).

METHOD

This research uses a qualitative approach, with the aim of researchers being able to describe clearly and in detail, and obtain in-depth data from the focus of research on the analysis of questioning skills through learning practices in microteaching courses (Sugiyono, 2016). The researcher will try to explain the reality of the elementary teacher candidate's questioning skills through the practice of learning science in the microteaching course. The primary data sources in this study were Prospective elementary school teacher students at Purworejo Muhammadiyah University and secondary data were obtained from written assessments. The data collection technique in this study is observation. Observation is a technique or method of collecting data by observing ongoing activities. These activities can be related to the way teachers teach and students learn (Sukmadinata, 2010). The type of observation used is non-participatory observation. The researcher does not participate in the activity assessment, the researcher only acts as a practitioner.

FINDING AND DISCUSSION

The teaching and learning process is the core of the overall educational process with the teacher as the main role holder. The teaching and learning process is a process of interaction between two human elements, namely students as learning parties and teachers as teaching parties. The teaching and learning process is a process that contains a series of actions of teachers and students on the basis of reciprocal relationships that take place in educational situations to achieve certain goals. The interaction or reciprocal relationship between teachers and students is the main requirement for the ongoing teaching and learning process. The teaching and learning process is said to be good, if the process can generate effective learning activities. So that you can get good and maximum learning outcomes. Therefore, before the teaching and learning process, teachers must prepare themselves well to be more mature or master the material during the learning process. Success in the learning process as a whole depends on the success of a teacher in delivering subject matter to students or students. Therefore, teachers are highly required to master the subject matter that will be delivered to students in the learning process so that teachers do not experience difficulties when delivering subject matter in class. Learning materials are knowledge, skills, and attitudes that must be mastered and possessed by students (Howes et al., 2008).

From the results of observations about the teacher's skills in basic questioning and advanced questioning skills, the researcher describes several things, namely the teacher's skills in questioning basically are quite good. When the teacher delivers the material and gives questions to students, students tend to be silent and sometimes there are those who don't understand what they want to ask so that the learning process tends to be less effective.

The teacher's skills in asking basic questions in the learning process are seen from the teacher's ability when delivering subject matter in class. During the learning process, the teacher often asks questions to students, but students tend not to be able to answer and remain silent when the teacher asks questions. Therefore the teacher's skills in questioning, both basic questioning skills and advanced questioning skills are very important in the learning process so that students are more active and participate in the learning process so that students are not silent and students can answer questions from the material that has been conveyed by the teacher (Chin, 2006).

From the results of observations about the teacher's advanced questioning skills, the researcher describes several things, namely the teacher's skills in asking questions are basically good enough but still not optimal. Questioning skills are differentiated into basic

level questioning skills and advanced questioning teaching skills. Advanced questioning skills are a continuation of basic questioning skills and serve to develop students' thinking skills and encourage them to take their own initiative (Aydogan Yenmez et al., 2017).

Components of questioning skills, advanced questioning skills, changing the level of cognition guidance in answering questions, questions raised by teachers can contain different mental processes from low mental processes to high mental processes (Chin, 2007). Therefore, in asking questions, teachers should try to change the cognitive level guidance in answering questions from the lowest level, namely evaluation of memory, understanding, application, analysis, and synthesis. Arrangement of the sequence of questions, to develop the level of cognition from lower to higher and more complex, the teacher should be able to arrange the order of questions asked to students. The use of tracking questions, if the answers given by students are judged correct by the teacher, but can still be improved to be perfect, the teacher can ask tracking questions to these students.

Increasing the occurrence of interaction, so that students are more visible personally and are more responsible for the progress and results of the discussion. The teacher should reduce or eliminate the role as a central questionnaire by preventing questions from being answered by a student (Parker & Hurry, 2007). If students ask questions, the teacher does not immediately answer, but throws it back to other students.

The skills of elementary school teacher candidates in advanced questioning skills are still not optimal in changing the guidance of students' cognitive levels during the learning process. During the learning process, the increase in interaction is still not optimal because when the teacher asks questions to students, students tend to be silent and participate less in the learning process. So students are still less active in asking questions in the learning process.

This is seen because when the teacher gives questions to students. Students tend to be silent and cannot answer questions by the teacher and the teacher immediately answers the question. Even though the teacher must be able to explore the abilities and creativity of students in learning so that students can be encouraged to be more active and effective and think for themselves and find answers when the teacher asks questions during the teaching and learning process.

Based on the characteristics of elementary school students and the application of Piaget's theory in science learning in elementary school, it should be: (1) through actions; (2) through repeated practice; (3) using real objects; and (4) based on direct experience; then

science learning in elementary schools should be carried out according to the essence of science is science as a product, science as a process, and science as a form of scientific attitude and in accordance with the values of science. Science learning in elementary schools uses the scientific method by developing basic process skills for lower grade elementary schools, integrated process skills for high grade elementary schools. By using the scientific method, scientific attitudes can be formed in students, namely passionate, curious, and careful in observing and measuring, open, objective, honest, skeptical, obeying principles, critical, and coherent in thinking, diligent, tenacious, and full of responsibility (Valent & Ngazizah, 2021).

Natural science is basically looking for a causal relationship between observed natural phenomena. Therefore, the science learning process should develop the ability to reason and think systematically in addition to the declarative abilities that have been developed so far. One of the innovations as an effort is to look for science learning models that have a contribution to improving the quality of science education.

To obtain optimal results from a learning process as described above, various efforts need to be made, for example, teachers need to be well prepared to build professional teacher competencies so that they are expected to be able to manage classroom learning well and improve the quality of education. Awareness of all parties, policy makers in the field of education, education managers, education implementers, and education observers is very much needed in realizing the new paradigm of education in Indonesia so that the quality of education can increase. As is known, the goal of learning science is to build scientific ideas after students interact with the environment, events, and information from their surroundings. The view of constructivism as the latest science education philosophy assumes that all students have ideas or knowledge about the environment, knowledge, facts about natural phenomena around them, although this sometimes seems naive and misconceptions. They (students) often defend the naive idea or knowledge firmly, because the idea or knowledge is related to other ideas or prior knowledge that have already been built in the form of a cognitive structure.

Science learning as above requires teachers to change their views on teaching, from the teacher as a learning center (teacher centered) to students as a learning center (student centered). The teacher functions to guide in order to facilitate learning events. So, when teachers provide learning experiences, teachers need to consider the experiences and ideas that students have (Warsiti, 2011). This is necessary because students come to school not

with an empty mind, but with various ideas, experiences, goals, and concepts (Umar, 2013). This view considers learning as an effort to build understanding, while teaching is an effort to guide and facilitate the learning process. The current science curriculum is designed in such a way that it provides a variety of learning experiences ranging from those concerning declarative knowledge to procedural knowledge (Parmin, 2012). The learning process developed to achieve the student learning experiences mentioned above can be achieved by emphasizing active and flexible student learning activities (Prasetyo, 2011).

CONCLUSION

Based on the results of the study, the researchers concluded that: *first*, the questioning skills of prospective elementary school teacher students at Purworejo Muhammadiyah University have not been fully mastered. Questioning skills in practice use more basic questioning skills, with components: expressing questions in clear and concise language, have clear goals and do not cause multiple interpretations, formulate questions towards the answers requested, encourage students to think critically, and the expected answers are not just yes or no, ask questions classically first then individually by calling or appointing students, asking questions randomly and rotate students evenly, giving time for students to think, providing guidance to students in order to find the correct answer by expressing questions in simpler language when needed, creating a climate of intimate relationships between teachers and students and students with students, and respecting students as personal and social beings who have essence and self-respect. *Second*, related to the obstacles experienced in the mastery of questioning skills in learning practice in the form of lack of mastery of advanced questioning skills, such as: asking questions that change the cognitive level of students in answering a question.

Natural science or natural science is basically looking for a causal relationship between observed natural phenomena. To obtain optimal results from a learning process as stated above, various efforts need to be made, for example, teachers need to be well prepared to build professional teacher competencies so that they are expected to be able to manage classroom learning well and improve the quality of education. The learning process was developed to achieve student learning experiences by emphasizing active and flexible student learning activities.

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