Analizing Elementary School Teacher’s Understanding (ESTU) in Scientific Communication skills (SCs)

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Abstract. The purpose of this research is to analyse the understanding of science communication on elementary school teacher. This research method is descriptive quantitative. The research subjects are 30 elementary school teachers from 6 elementary schools FKIP Riau University Partners. The results showed that the understanding of elementary school teachers about science communication on the aspect of predicting 12 teachers are in the very good category, on the aspect of questioning 18 teachers are in the very good category, and in the aspect of presentations 10 teachers are in the very good category. Based on these results, it can be concluded that the SCs skills of teachers are already in the very good category.

1. Introduction

Teacher is role models by students after parents. Therefore, a professional teacher must be able to provide learning that is easily understood by students. Hidayah & Sugarto [1] stated that a professional teacher must have 4 basic competencies, namely: a. communication competence, namely the competence to convey material to students, b. Collaborative competence, namely the cooperate competence with related parties / individuals in order to improve practice, c. competency technology, namely the competence to utilize information technology devices in learning, d. evaluation competence, namely the competence to assess student achievement. Science educators from various countries have identified communication skills as a necessary competency for scientific literacy skills in the 21st century [2,3]. Science communication skills (SCs) is urgently needed in facing the challenges of the 21st century [2,4]. Communication skill is skill in conveying or sharing ideas about the knowledge that has been acquired [5]. In line with that, Kivunja [6] said that communication skill is the ability to convey and provide information and speaking and writing skills. Communication skills, including listening, writing, speaking and interpersonal skills, must be present in the teacher to facilitate students' understanding of the material being taught and have the ability to respond to learning effectively [7,8]. Communicating allows someone to learn and apply adaptive strategies to cope with problematic situations [9,10].

SCs are closely related to someone's thinking ability, which is part of science process skill. SCs also influence a person's problem-solving and decision-making skill. Nielsen [11] emphasized that SCs in science learning can be used as a source for creating, maintaining, and expanding knowledge. Increasing SCs is not easy, Lunenburg [12] describes 4 obstacles someone in SCs, namely a. Process barriers are caused by teachers not fully understanding messages in the form of learning materials delivered to students, b. Physical barriers include distance between communicating person, too busy atmosphere, and interference with communication media, c. Semantic barrier in the form of language
barrier. Inappropriate word selection and using different language between teachers and students can lead to differences in understanding, and d. Psychosocial barriers are psychological and social barriers that include empathy, habits, customs, hopes, needs, perceptions, and culture. And the results of research by Urwani et al [13] confirmed that the obstacles to students' scientific communication, namely psychological, physical, semantic, and process barriers. The same thing was also explained by Pal et al. [14] that the factors that influence communication, namely language, emotions, anxiety, fear, differences in understanding, information levels exceeding limits, and gender differences.

SCs are not always a difficult thing to do. It is explained by Göksoy [15], that communication skill can be developed through social activities, seminars, training, meetings, and reading research, books, or articles. Student SCs indicators can be seen from the students' abilities: a. observing, b. Analyze experimental / research data and implementation in form of tables, graphs and pictures, c. explain the results of the experiment / research, and d. discussing the results of activities of a problem or event. In the current New Normal era with home learning conditions, students' SCs can be developed optimally. This can be realized through the teacher's questioning skills which are integrated into the student worksheets. Therefore it needs a problem solving in SCs with ESTU analysis by providing a score based on aspects (prediction, question, and presentation). The hope is that by analyzing the aspects based on the SCs aspect, it can be seen which aspects fall into the category that must be improved or repaired.

2. Research Methods
The research method used in this research is descriptive quantitative. This research was conducted in March 2019-March 2020. The research subjects were 30 elementary school teachers at Mitra FKIP, Riau University. The research was conducted by providing assistance to teachers in elementary schools in creating learning scenarios and student worksheets.

The instrument of data collection is using observation and interview sheets. The SCs indicators used are prediction, question, presentation. During the mentoring activity, the teachers were visited in turn to develop science learning tools in elementary schools. After the instrument is made, the teacher implements it in each class. ESTU in SCs were observed during the learning instrument development process and when the tools they created were implemented. The mentoring program that the researchers developed is called the KKG Pintar. ESTU analysis in SCs begins with scoring on the SCs aspect (prediction, question, and presentation).

The obtained score formula is divided by the maximum score multiplied by 100. Analysis of student and teacher observation sheets by 1) determining the number of activities of students and teachers carried out, 2) calculating the percentage of activity of students and teachers carried out, 3) interpreting scores into five categories

| Category | Aspect SCs (Predictions, Questions, and Presentations) |
|----------|--------------------------------------------------------|
| 86-100   | Very good                                              |
| 76-85    | Good                                                   |
| 61-75    | Enough                                                 |
| 56-60    | Less                                                   |
| ≤ 55     | Not good                                               |

3. Results and Discussion
The results of the findings ESTU in SCs can be interpreted in three parts, namely prediction, questioning and presentation. The results of the capabilities of the SCs are shown in the following table
Table 2. The results of students’ scientific communication skills from predictions, questions and presentations

| Category     | Aspect Predictions | Aspect Questions | Aspect Presentations |
|--------------|--------------------|------------------|----------------------|
| Very good    | 12 Teachers        | 18 Teachers      | 10 Teachers          |
| Good         | 16 Teachers        | 12 Teachers      | 19 Teachers          |
| Enough       | 2 Teachers         | 0 Teachers       | 1 Teacher            |
| Less         | 0 Teachers         | 0 Teachers       | 0 Teachers           |
| Not good     | 0 Teachers         | 0 Teachers       | 0 Teachers           |

Figure 1. Display the results of students’ scientific communication skills

Table 2 or Figure 1 explains that in general the ability of the SCs (predicting, asking, and presenting) teachers is already in the good and very good categories. From the three aspects of SCs that are measured, the aspect of the ability to ask showed the highest score in the very good category (18 teachers). This is because during the learning process the teacher always responds to students. This is in accordance with Javid & Babelan [16], which emphasized that creating effective communication in the classroom can be done by the teacher attracting students' attention through giving responses to students. Questioning skills are basic skills in teaching. The course of the learning process depends on the types of questions the teacher asks students.

In general, there are 3 types of questions that can improve student SCs, namely: a. productive question, productive question is question that encourage students to do activities first (conducting experiments, observations, investigations, and/or exploration) to get the answer. Imaginative question, imaginative question is question whose answer are not visible but are the result of the answerer's imagination. And open-ended questions, open-ended questions are questions that encourage a person to find more than 1 correct answer. These three questions can be submitted orally or in writing (student worksheet).

As for the presentation aspect, the score for the very good category is low (10 teachers) compared to the other 2 aspects. Besides that, there are a enough number of categories as many as 1 teacher and the predictions aspect obtained by a enough number of categories for 2 teachers. Presentation skills are closely related to a person's level of mastery of the substance that will discuss. The level of mastery greatly affects the level of someone's self-confidence. Presentation skills can be improved through experience and habits. Therefore, getting used to presenting work results can increase SCs. Especially in the current New Normal era where there is still no face to face intensely so it is necessary to apply material to be conveyed to students by teacher presentation skills through video recordings and inquiry implementation [17,18,19].
4. Conclusion
Based on the results and discussion, ESTU in SCs carry out predictions, ask questions and presentations is good and very good category. In the aspect of the ability to ask, it shows that the category score is very good, the highest score is 18 teachers, while in the presentation aspect the lowest score is 10 teachers but still in the good category. Thus the KKG Pintar teacher mentoring scheme can facilitate ESTU in SCs in the good and very good categories.

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