



THE ANALYSIS OF SCIENCE LEARNING SOURCES REVIEWED FROM THE METACOGNITIVE ABILITY OF THE VII GRADE THE STUDENTS OF SMP NEGERI 2 BOJA

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Abstract

The object of learning in science was all natural objects that require in-depth exploration in learning. Media was needed to inform messages that had been designed by the educators so that learning was more realistic and fun. This study was designed with the research explorative type with the qualitative descriptive approach, involving a teacher and the students in class VII at two different science classes at SMPN 2 Boja. The technique of data collection used documentation study and questionnaire. To test the validity of data and put confidence in the data validity criteria (credibility) used the triangulation. The result of the study showed that the type of Science materials, in general, were in the form of teaching materials in print, visual and multimedia. Nonetheless, there had been no audiovisual Science teaching materials, for example, the film. The teachers' lack of knowledge about meta-cognitive made the meta-cognitive ability of the students was less good. The development of teaching materials had not narrowed to the achievement of specific competencies including meta-cognitive abilities of the students. It could be concluded that it was necessary to develop the type of teaching materials Audio Visual form of film in general often referred to as digital storytelling in science teaching to improve the students' meta-cognitive skills.

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INTRODUCTION

The object of learning in science was all natural objects that require in-depth exploration in learning. It was what makes learning IPA requires time and cost was not small to be able to explore with the maximum. The students were expected to be able to assess the difficulties of a problem, observe the level of self-understanding, use the various information to achieve the goals, and assess the progress of self-study in each lesson. The student would eventually have an awareness of what would be learned, the ability to plan the learning process and the ability to evaluate the learning outcomes. It was theoretically a concept of meta-cognitive ability (Jonassen, 2000).

Media could be one solution to overcome the inefficiency of time and cost in science learning. Media was needed to inform messages that had been designed by educators so that learning was more realistic and fun, as Skouge and Rao (2009) researchers about the use of digital storytelling in learning. Akhlis and Dewi (2014) had developed ICT-based IPA learning media. Nonetheless, the video used was a downloaded video that was not specifically designed for science learning, and thus there was a need for separate LKS to make videos available for learning. The idea that comes to the end of the research was, why not make an exclusive video tailored to the science material complete with the questions guide focused on the material to be learned? This video could later become a teaching material that visualizes every science learning object. Utilization Digital storytelling in learning could inform messages that had been designed by educators on the students through video learning process to enable more realistic and fun learning (Skouge and Rao, 2009). Thus, in the end, the students would have an awareness of what would be studied, the ability of learning process planning and ability to evaluate the learning outcomes.

The first step was to analyze to achieve the learning outcomes: (1) how the description of teaching materials in the SMP in general?; and (2) how was the description of science material of Class VII of SMP Negeri 2 Boja regarding the students' meta-cognitive ability?; (3) how the meta-cognitive ability of the students of SMP Negeri 2 Boja Class VII, especially in science subjects, was?

METHODS

Type of Research

This research belongs to the early stages of development research. Therefore, this research was designed with the type of exploitative research with the qualitative descriptive approach (Moleong and Lexy, 2007).

Research Subject

Selection criteria used to determine the study subjects in this study using test selection, quota selection, network selection and selection of comparison between cases. The selected subjects were IPA Teachers and VII grade the students of SMP Negeri 2 Boja Year 2016/2017.

Data Collection Procedures

Techniques used to obtain data in this study, were as follows:

1) Documentation Study

Documentation study was one method of collecting qualitative data by viewing or analyzing documents created by the subject himself or by others about the subject. Documentation study in this research was done through completion of completed raven test

2) Questionnaire

Questionnaires in this study were used to retrieve data about the existing science learning process and meta-cognitive images of the students.

3) Data Analysis

The data obtained were qualitative data. The collected data was analyzed by interaction analysis model, where the data reduction and data presentation components were performed simultaneously with the data collection process. Steps in the interaction analysis model: (a) data collection; (B) data reduction; (C) presentation of data or display data; and (d) data verification.

4) Data Validity

According to Moleong and Lexy (2007) " criteria of data validity, there were four kinds namely: 1. trust (credibility); 2. transparency; 3. dependency; 4. certainty (confirmability). This research used the criterion of data validity (credibility). Some techniques for achieving credibility were triangulation techniques, the extension of field attendance, peer discussions,

and reference checks. Triangulation that would be used in this research was source triangulation, which means compare and check the degrees of confidence of the information obtained through the result of the questionnaire that had been given to some the students and teachers of science class VII in SMP Negeri 2 Boja.

RESULTS AND DISCUSSION

Analysis of IPA in General

1) Types of Teaching Materials

The types of teaching materials used in science lessons in SMP class VII in general, among others were (1) printed materials in the form of teacher books and student books and student worksheet; (2) visual materials in the form of photographs or drawings, for example: pictures or photographs of living things, body parts of living things as well as other objects of science learning. Besides the example of other visual teaching materials were the presentation slides in the form of power point; and (3) multimedia teaching materials, for example learning websites.

There had not been any teaching materials of Audio Visual type such as film thus the possibility for the use of film as learning material in learning needs to be done. It completes the variety of types of teaching materials that Mulyasa (2006) suggested.

2) Purpose of Teaching Material Development

In general, the existing teaching materials were prepared for (1) facilitating teachers in implementing learning and (2) assisting the students in obtaining alternative teaching materials.

Nonetheless, not infrequently, teaching materials developed by teachers were not tailored to the characteristics of the students and the social

environment of the students. It was evident from the themes used in rare learning materials that were based on the local wisdom of the student's residence area. Whereas National Education Department, Depdiknas (2008) mentioned, one of the objectives of developing teaching materials was to provide instructional materials for the demands of the curriculum by considering the needs of the students, the teaching materials by the characteristics and settings or social environment of the students. Also, the development of teaching materials that exist thus far was still general, meaning it had not been able to facilitate the achievement of special abilities. It was not in line with Dick *et al.* (2009) which states that teaching materials contain content that the students need to learn either in the form of print or facilitated by teachers to achieve certain goals.

Analysis of Meta-cognitive Ability of Grade VII of SMP Negeri 2 Boja

Based on the results of questionnaires the students and teachers obtained a description of the meta-cognitive ability of the students as follows.

1) Awareness

The awareness that the students had in learning was quite well. It could be seen from the answers of the majority of the students who assumed that the teacher never gave a reason to learn the material. However, the majority of the students understood the benefits of the material learned, this was because teachers always asked the students to retell the material that had been studied. Picture of answer questionnaires both the students and teachers to the questions about the element of consciousness could be seen in Figure 1 and Figure 2.

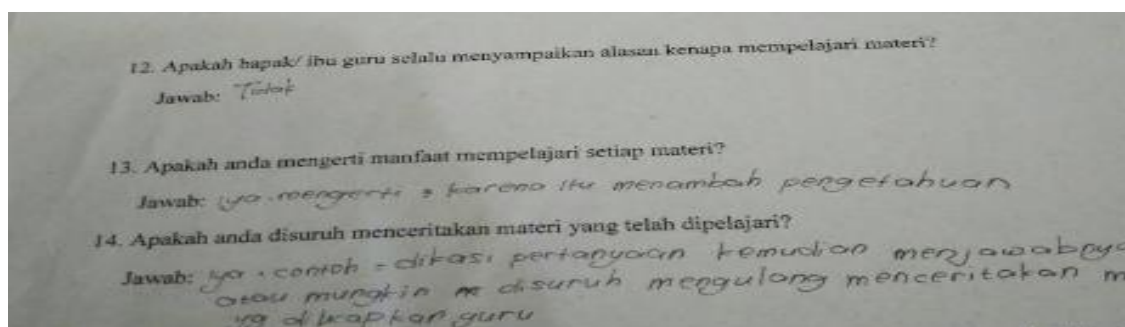


Figure 1. Students' awareness (students' questionnaire)

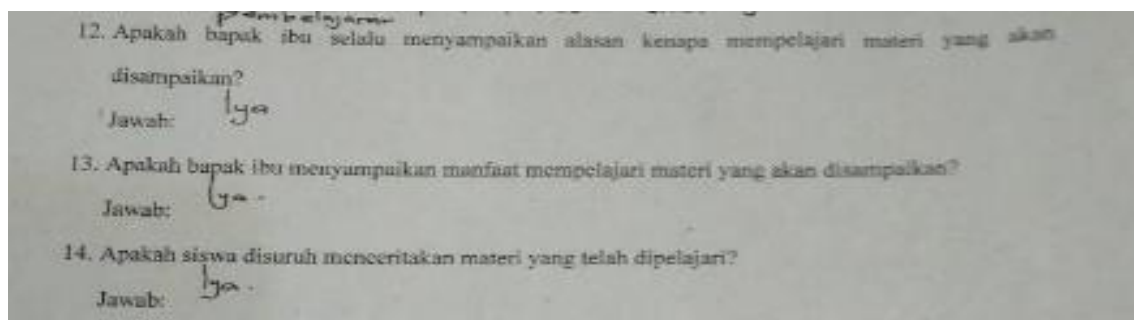


Figure 2. Students' awareness (Teachers' questionnaire)

2) Planning

The students' ability in learning planning was good enough; this was because there were controls that teachers give to the students by asking how the students learn the material. This teacher's statement was supported by 50% of the students who answered

Yes, when asked about the subject. Picture of answer questionnaires both the students and teachers to the questions about the elements of planning could be seen in Figure 3 and Figure 4.

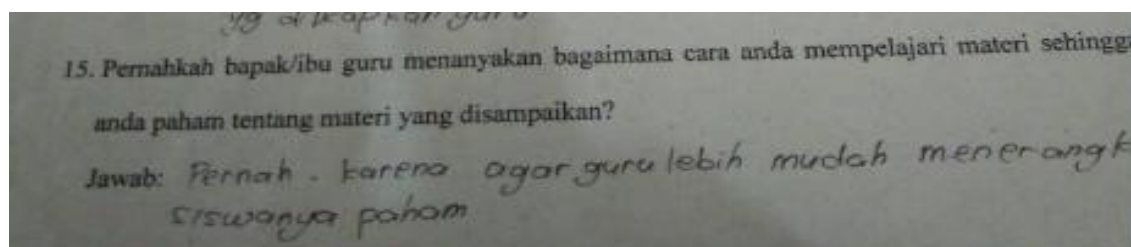


Figure 3. Ability of students' planning (Students' questionnaire)

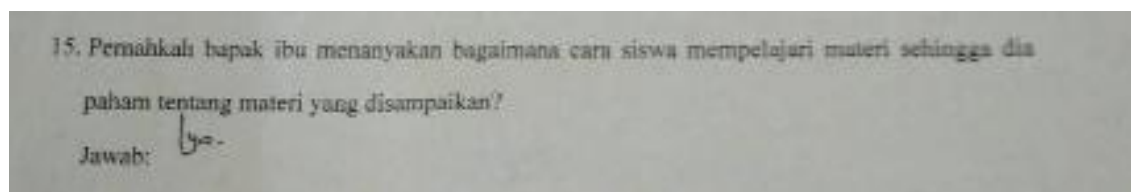


Figure 4. Ability of students' planning (Teachers' questionnaire)

3) Evaluation Capability

The students' ability to evaluate learning outcomes was good enough. It was evident from the students know the success rate that he achieved in a learning process. An image of the student questionnaire answer to a question about the element of evaluation ability could be seen in Figure 5.

Analysis of Science Materials Class VII SMP Negeri 2 Boja reviewed from the Meta-cognitive Ability of The students

National Education Department (2008) in the development guide of teaching materials had stated things that need to be considered in teaching materials. Type of teaching materials IPA class VII in SMP Negeri 2 Boja was a visual teaching material, namely, slide powerpoint developed by the teacher. Here was described the description of the resource.

1) Array of views

The order presented in the teaching materials had been by the main teaching materials of BSE Books Teachers and Student Books. Titles were presented using short terms and not at length. Nonetheless, in the arrangement of the display, there was no table of contents in the developed teaching materials. The cognitive structure was also implied, this makes it difficult for the size of junior high school children because no initial concept map of the material could be used as a guide the students in learning. It was exacerbated by the absence of a summary at the end of the resource section. Piaget states that learning would be more accessible to follow the students if there was a process of assimilation and accommodation in it (Blake and Pope, 2008). The

new knowledge was built on the old knowledge that the students already had. The last element in the arrangement of the display was the task of the students in the teaching materials that had been

developed the student tasks were separate or not merged with the developed teaching materials.

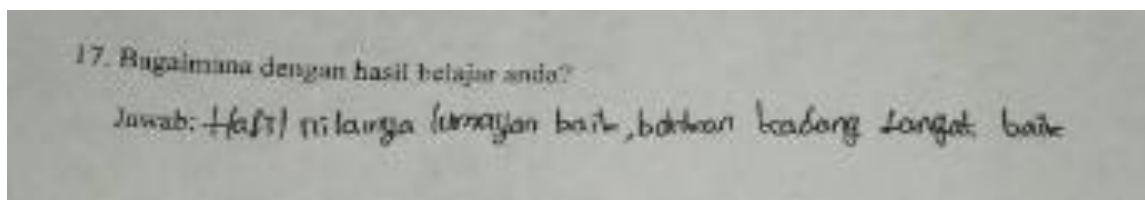


Figure 5. Ability of students' evaluation

2) Language used

The language used was easy to understand, using clear and not very long sentences. It was in line with the cognitive development of Piaget which states that the age of the seventh graders was at a stage of real operational development, making it more suitable to use images (Simatwa and Enose, 2010). Examples of language teaching materials that exist in SMP Negeri 2 Boja could be seen in Figure 6.

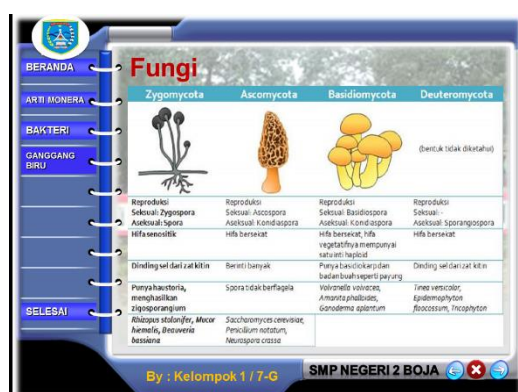


Figure 6. Language in teaching materials

This was in line with the results of research on the influence of language in helping the achievement of learning objectives such as communication effectiveness in learning to the character of curiosity, creativity and responsibility of the students (Wulandari *et al.*, 2013) and supported by Maharani and Dewi (2015) study result of learning influence each other with culture or student habit.

3) Instrument Testing Comprehension

The existing teaching materials were not yet integrated with the comprehension testing instrument. As stated by Ausubel that learning would be meaningful one of them with the assignment to test the students' understanding (Vallori, 2014). The research that supports this Ausubel statement was research on improving cognitive learning outcomes

through Guided Inquiry-based learning that emphasizes meaningful learning (A'yun *et al.*, 2015). The impact that the students feel was not trained to have the ability to evaluate the level of success in learning that became one indicator of meta-cognitive ability (Jonassen, 2000).

4) Stimulants

Most of the displays were in slide artists that fill the screen. Thus it was less pleasing to see. The students seem to be forced to accept material that had been neatly arranged by the teacher. The impact was the interest of the students to pay attention to the explanations given by the low teacher. Examples of elements of stimulants in teaching materials that exist in SMP Negeri 2 Boja could be seen in Figure 7.



Figure 7. Stimulant in teaching materials

Roger states that a fun learning process could cultivate the students' curiosity and creativity (Miller and Christopher, 2001). It was by the results of research which states that the learning process that provides freedom for the students could increase the curiosity, sense of student responsibility and creativity of the students (Dwijayanti, 2014) and independence (Pramana and Dewi, 2014). Another study was the result of

research Shannon (2008) which states that to create self-directed the students; then the learning process should give sincerity to the students.

5) Easy to read

The existing teaching material consists of a collection of statements that exceed the ideal limit of a sentence in a presentation slide of 5 sentences so that for classical sizes it becomes hard to read and was not friendly to the eyes (the letters used were not too small and were easy to read). It would make the students not understand what was learned, why he should learn the material and how he should learn. Meta-cognitive strategies play a role in the formation of student conceptual knowledge (Veenman *et al.*, 2006). Nugroho and Dwijayanti (2016) also stated that the students who had high meta-cognitive ability could understand the problem better.

6) Instructional materials,

Which include: selection of texts, review materials, worksheets. The study materials used in teaching materials were not flexible, not yet adjust the age of the students of class VII. At that age, the students were more interested in teaching materials that were packed with fun. Good teaching materials were by the characteristics and setting or social environment of the students (Moleong and Lexy, 2007). The use of traditional games in learning could foster characteristics and improve student learning outcomes (Dewi & Akhlis, 2016). Dienes states that involving game methods in learning would improve the students' cognitive abilities (Sriraman and English, 2005).

CONCLUSION

Based on the description of teaching materials in the SMP in general, it was the type of teaching materials in general in the form of printed materials, visual and multimedia materials, nonetheless there were no science teaching materials such as visual films such as films; Meta-cognitive ability possessed by the students of SMP Negeri 2 Boja Class VII especially on science less good course and description of teaching materials of Class VII of SMP Negeri 2 Boja in terms of meta-cognitive ability of student hence could be concluded need existence of development of instructional material which in particular could increase the students' ability of meta-cognitive. It could be done by developing a type of Audio Visual teaching materials in the form of films that were commonly referred to as digital storytelling

on science learning in science learning to improve the students' metacognitive abilities.

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