Preliminary analysis of learners in developing student book oriented research based learning models using 3D pageflip professionals on science lessons junior high school

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Abstract. Student’s Book is a book that students use as a guide activity in learning to facilitate students in mastering certain competencies. The purpose of this study is to describe the results of the preliminary analysis and analysis of learners. This research is a descriptive research using qualitative approach. The analysis was done by: preliminary analysis, analysis of learners and interviews. Based on observation results obtained: preliminary analysis was obtained 78.47% good category and it was found that students have average ability 76.52% good category in the analysis of graduate competence standard. In the Standard analysis of the learning process obtained 83.90% good category with active students in the learning process, and assessment analysis obtained 75% good category. Through analysis of learners, 77.83% students enjoyed it doing lab work, utilizing technology in learning. Based on the interviews that researchers did, it was obtained that the learning model used depends on the subject lesson, teaching materials used by textbooks, that in science subjects’ teachers still divide the time, 2 hours of lesson for Biology material by biology teacher and 3 hours lesson for Physics material by physics teacher. Therefore, the need to develop the book of students based on research-based learning using 3D pageflip Professional in learning science for junior high school.

1. Introduction
Education is one of the greatest aspects of its role in human survival and the development of a nation. Qualified and competitive education is essential in the era of globalization. Education is a conscious and planned effort to create an atmosphere of learning and learning process so that learners actively develop their potential to have spiritual power of religion, self-control, personality, intelligence, noble character and skills needed by him, society, nation and country [1]. Therefore, the attention of the government in the field of education should be more improved, so that learners are led to have the competence of thinking and communicating and problem-solving skills to compete in this competitive world of work.

Realizing the importance of education, the government has taken various actions in improving the quality of education. One of them is an improvement of the curriculum, which is taken from the curriculum of the education unit level and now the curriculum of 2013. Curriculum 2013 emphasizes the development of knowledge, skills, and attitude of learners in a holistic (balanced) manner. In the learning process is preferred using a scientific approach (scientific approach) designed for learners, so that learners are more capable in observing, asking, reasoning, processing information and communicating to learning. In the learning process scientific approach is able to apply learning that is not dominated by educators but learners who must be active in learning.
Basically, the learning process is the process of communication between learners with educators but covers the interaction of all learning resources [2] through verbal language as a medium of material delivery. Educators as learning planners are expected to motivate students to always learn in various opportunities using various sources and learning materials. Educators should be able to help students effectively to use a variety of learning materials. This means that the teacher should be able to develop the best ways and habits of learning. Planning of the learning process involves the preparation of syllabus and learning implementation plan which contains at least the learning objectives, teaching materials, teaching methods, learning resources, and learning result assessment [3]. An educator is needs creativity to be able to develop innovative, varied, interesting, contextual, and appropriate teaching materials for certain level of the learners' needs [4]. Therefore, to create innovative learning the teaching materials used must be effective. Educators are required to make learning more innovative so as to encourage students to learn optimally, both in the classroom and outside the classroom.

The 2013 curriculum has been implemented in some favorite schools since the new school year 2013/2014. The subject of natural science is one of the subjects developed in the 2013 curriculum as an integrated science lesson. Integrated science learning provides opportunities for students to develop thinking skills, actions and development of scientific attitudes. One of competences of science teachers of Junior high school is to understand the relationship between various branches of natural science, and the relationship of science with mathematics and technology there are changes in the subject, the changing lesson is physics and biology combined into one subject which is science of nature [5].

Integrated science learning is a learning that connects or integrates various fields of natural science studies into a single unit. Integrated Science learning should also include the dimensions of attitudes, processes, products, applications, and creativity. Students are expected to have a holistic knowledge of science to deal with the problems of daily life contextually through integrated science learning.

The current reality of science lessons becomes a challenge for educators themselves so that the purpose of learning can be well conveyed to the students. As the current curriculum requires teachers to be more innovative in developing teaching materials for learning. However, some teachers face obstacles in creating innovative learning and they also found it hard to facilitate use of instructional media as one of the aspects of innovation. Teachers are still lack the ability to develop their creativity in planning, preparing and making teaching materials consist of rich innovations, interesting and conducive to students [4].

From the interviews, the researchers obtained information about the process of learning natural science in MTsN Sungai Penuh Model using student books, teacher books, and book packages. During the implementation of the book, some experienced an obstacle which is the ability of students who are uneven in understanding learning. To streamline the learning process in motivating students to improve learning achievement, teachers must be creative in floating teaching materials. One solution that can streamline the learning process in growing interest for learning to students is to use instructional media. This research ever conducted by Falton et al showed that the use of media in the learning process is significantly able to improve achievement [6].

Nowadays, there are many inventions from technological development, as well as in the field of education that introduces multimedia teaching materials. Multimedia teaching materials are multimedia-based learning media [6]. Making multimedia materials with software applications is hoped to increase interest and further motivation can be achieved in learning outcomes. One of the software that can be used to create interactive multimedia materials and innovative, easy to use and able to combine audio and visual media, is 3D pageflip professional software.

Pageflip Professional 3D Software is a flipbook Flash application that can be used to convert Pdf, MS Files. Word, MS, Power Point, and MS. Excel into flipbooks realistic form. pageflip Professional 3D Software can produce a display operated with usage without any knowledge or programming skills of Flash / HTML. Because of the function of the 3D pageflip professional software that can create varied animation to cultivate students' learning motivation and use that does not require special skills then this software is suitable utilized by the teachers to make the students book science lesson junior high school. This 3d pageflip professional software can be used to overcome problems to develop
innovations in learning [7]. In addition to media use, the learning model as one of innovation develops effective and efficient learning. One of the learning models that can be used in science learning is the Research Based Learning (RBL) model.

The Research-Based Learning model is a learning model through real problems as a context for learners to learn about technique and skills of problem-solving, acquire essential knowledge and concepts from the subject matter. The learning process in the Research-Based Learning model focuses on the learners as people learning. Research-Based Learning (RBL) is one of the methods of student-centered learning (SCL) in the learning process. Research-based learning is appropriately developed in Physics. This learning requires learners to participate in every learning activity. The teacher only acts as a facilitator. However, teachers should keep track of progress both in terms of knowledge, attitude, skills, and activities of learners.

Based on the results of interviews of researchers with science teachers MTsN Sungai Penuh model, it is found that the model of learning used by teachers is still not efficient and effective. If using media, the media used the usual presentation media, its use is still limited, simple and less innovative so that not a few students who have difficulty understanding the concept of the material being taught. if presented with interesting material, in this case, using 3D pageflip professional, will make students more enthusiasm in learning. It is proven from the research of the development of physics-based 3D pageflip based learning media for vibration and sound wave material, which explains how to make teaching materials using 3D pageflip professional [8].

Before developing a product, do some preliminary research on what is needed from the research. The analysis performed are the preliminary analysis and the analysis of the learners. The final preliminary analysis is the analysis of Graduate Competency Standards, standardized analysis of the learning process and assessment analysis. Competency Standards Analysis Graduates have competencies in three dimensions of attitude, knowledge, and skills. Then the standard analysis of the learning process includes learning planning and implementation of learning, the implementation of learning includes aspects of preliminary activities, core activities, and closing activities. For assessment, the analysis includes aspects of attitude, knowledge, and skills. Student analysis is done based on the three dimensions of attitude, knowledge, and skills which are aspects that must exist after the learning is done [9] [3] [10].

2. Research Method

This research is a descriptive research with the qualitative approach. Descriptive research is a form of research that is intended to describe the phenomena that exist, both natural phenomena and man-made phenomena [11]. Phenomena that can be relationships, similarities, changes, characteristics, activities, forms and differences between phenomena with one another phenomenon. Descriptive research can produce a description of the phenomenon studied, describes the process that occurs and presents various important information about the variable.

The population of this research is the MTsN science teacher of Sungai Penuh Class VII and grade VII students. Sampling is done with non-probability sampling, is purposive sampling where sampling with certain considerations, a purposive sampling technique is used when the researcher has a specific reason with respect to the samples taken [12] [13]. Research subjects are science MTsN Model Sungai Penuh teachers who have implemented the curriculum 2013. The data used are primary data obtained through questionnaires and interviews.

Data analysis technique used is likert scale. The likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of social phenomena [13]. The variables measured are translated into sub-variables and positive questions are formed which start from strongly disagree, disagree, agree and strongly agree. Sub-variables are converted as follows: 1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree. The questionnaire results were obtained by calculating the score given by the respondents. Scores are derived from the following equation:

\[ S_k = \frac{\sum x_k}{x_{\text{max},k}} \times 100 \]
Where: $S_k$ is the score obtained, $X_i$ is the score of each respondent and $X_{\text{max}}$ is the maximum score from the questionnaire for each indicator.

Scores obtained from each question is done data analysis. Data analysis using the provisions in the table 1.

| Table 1. Value Category |
|-------------------------|
| Category                | Criteria   |
| Bad                     | 0 – 20     |
| Not Good                | 21 – 40    |
| Pretty Good             | 41 – 60    |
| Good                    | 61 – 80    |
| Very good               | 81 – 100   |

(Modified from Ridwan [14])

3. Result and Discussion

The results of the research obtained from an analysis using instruments as follows.

3.1. Final Start Analysis

The initial analysis begins with the suitability of indicators of graduate competency, learning and assessment processes standards. The results of each indicator from the analysis of graduate competency standards are figure 1.

![Figure 1. Analysis of Graduate Competency Standards](image)

Figure 1 shows that the analysis of graduate competency standards obtained 76.53 with good categories. It is obtained from average of attitude competencies analysis 79.55, knowledge competencies 81.25, and skills competencies 68.75. Each competency in primary and secondary education units has competencies in three dimensions, namely attitudes, knowledge, and skills [9]. The results of the standard competency analysis show that student competency is still low, therefore it is still necessary to increase student competence in learning activities.
Figure 2. The Standard Analysis of Learning Process

Figure 2 shows the standard analysis of the learning process obtained by average of reflection and implementation of 83.71. This analysis is seen from the suitability between the planning stages and the implementation stage [3]. The planning stage obtained an average of 83.33, and the implementation stage obtained an average of 84.09. It demonstrates the need for media selection for learning resources so that learning is carried out in accordance with government criteria.

Figure 3. Assessment Analysis

Figure 3 shows the results from average of assessment of the three aspects of assessment 75 can be seen in figure 4. The assessment of the analysis includes the competency assessment of attitudes, knowledge and skills [10]. Attitude competency analysis obtained 75, average of knowledge assessment 75, skills analysis obtained 75, explaining that the three competencies need to be improved. From the results of graduate competency, learning process and assessment standard, the results of the initial final analysis can be seen in Figure 4.

Figure 4. The Final Beginning Analysis
Figure 4 shows that at the initial analysis stage, the average of these results is 78.47%. As explained in [9] [3] [10] the learning activities need to pay attention to the selection and determination of media, learning resources, methods, strategies and learning approaches to be used [15]. Based on the analysis carried out, in general it works well, but there are several aspects that need to be improved such as the use of learning resources, application of methods and learning models that are still not optimal, as seen in the three aspects of graduate competency standards 76.53, learning process standards 83.9 and assessments 75.

3.2. Analysis of Learners

Based on the instruments that are developed competencies can be seen from competency attitudes, knowledge and skills [9]. Figure 5 shows the results of the analysis of students.

Figure 5. Analysis of Learners

Figure 5 shows the results of the student’s analysis. Analysis of students is used to determine to what extent knowledge and skills possessed by students so that the data follows the learning activities [16]. The analysis of students needs to be done to determine the extent of the competency of knowledge, skills and attitudes that have been mastered by students. From the low provision of attitudinal competency attainment, but from the aspect of knowledge and skills it needs to be improved. [15] confirms that in the learning process need to pay attention to the selection and determination of media, learning resources, methods, strategies and learning approaches that will be used.

4. Conclusion

After the initial analysis includes graduate competency standards, standard analysis of the learning process and assessment analysis. The results obtained are the need for models, methods, strategies or learning media that are varied in the learning process and learning resources and able to explain and facilitate students so that three competencies namely attitudes, knowledge and skills competencies are fulfilled. From the result, the need to develop teaching materials which can increase student competency according to the 2013 curriculum guidelines and teaching materials that can facilitate the understanding of natural science material in achieving student competence.
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