Student worksheet development using inquiry based learning model with contextual approach for physics learning based on the initial analysis of student

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Abstract. Learning is not only to develop knowledge but also holistic competencies of learner. Therefore, it is needed teaching materials that not only can develop the knowledge but also on the competence approaches also have an important role in supporting learning activities which is contextual approach of student's skills such as a student worksheet. In addition, the selection of appropriate. Contextual approach is a learning activity that can build knowledge through interaction and interpretation of the environment. The purpose of this study is to determine the analysis of developing student worksheet. In this research an initial analysis was carried out on students. Instruments of this research is the form of a questionnaire. Selected respondents in this study are students of the first grade class in SMAN 5 and SMAN 3 Padang. Based on the observation, several results can be presented. First, there is still a lack of interest of students in learning physics and so do knowledge and skills of student's in studying physics. The results of the initial analysis of these students will be the basis for developing student worksheet using the IBL model with a contextual approach to the second semester of high school in physics learning for the first grade class.

1. Introduction

Education is a part of an important element in life. Education should be provide an opportunities for students to be able to develop all their potential in every learning including physics learning. That potential is related to aspects of attitude, knowledge, and skills. Inversely proportional to the fact that there is a value of students' physical competencies which are still in the low category as evidenced by the midterm scores at SMA 5 and SMA 3 Padang.

Based on observation activities, it can be said that the students' lack of understanding of the learning material taught. This happens because of several factors, one of which is the lack of variation in the model and also the approach that used by the teacher in learning activities that can make students not able to develop concepts and solve problems independently.

The implementation of learning can be supported by using an appropriate learning model, one of which is an inquiry based learning (IBL) learning model. Inquiry based learning has been officially promoted as a pedagogy for improving science learning in many countries[1]. IBL is a process that allows teachers and students to ask questions about various topics[2]. So we can say that IBL is a learning model where students provide questions about various topics through scientific steps / procedures.
Before conducting teacher learning activities, they should prepare everything related to teaching and learning activities, including in choosing the approach to be used so that it can create meaningful learning. Selection of the right learning approach will help achieve learning goals. Contextual Teaching and Learning (CTL) is a learning approach that connects concepts in real life lessons so that meaningful learning can be created. CTL is an educational process that aims to help students see the meaning in the academic material they learn by connecting the academic subjects they learn with context in their daily lives, namely in the context of their personal, social and cultural circumstances[3].

Student Worksheets combined with contextual approaches are needed to connect and guide students in understanding the concepts, facts, and principles that exist in physics learning and are able to know their application in the real world[4].

The purpose of this paper is to describe the results of initial analysis of Student worksheet development using inquiry based learning model with contextual approach for Physics learning.

2. Method

The type of this research is Research & Development. Development research is an attempt to develop an effective product to use in schools, and not to study theory[5]. The subjects were 1st grade students in Senior High School 5 Padang. Data collection instruments used were questionnaire sheets and interview sheets for analyzing the needs and questionnaires of students for analysis of students.

The data analysis technique used for each analysis is using a Likert scale that used to measure attitudes, perceptions and opinions of a person or group of people against the potential and problems of an object, the design of a product, the process of making products and products that have developed[6]. Likert scale function is to measure opinions or perceptions of a person or group of people about social events or symptoms[7]. As for each value means 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree.

Each category analyzed in the needs analysis and student analysis are obtained using the following equation:

$$S_k = \frac{\sum X_i}{X_{max}} \times 100\%$$

Where S = score obtained, Xi = score of each respondent, Xmax = maximum score from questionnaire for each indicator.

The categories obtained from the analysis results for each indicator are 0-20 = not good, 21-40 = not good, 41-60 = pretty good, 61-80 = good, 81-100 = very good[7].

3. Results and discussion

3.1. Results of Needs Analysis

In the preliminary analysis activities there are three types of analysis carried out, namely performance analysis, graduation standard analysis, and analysis of learning difficulties. In the performance analysis there are two aspects have been analyzed, namely teacher identification and completeness of facilities and infrastructure
Figure 1. Performance Analysis Chart

Based on Figure 1, it appears that the results of the performance analysis on aspects of identification is in the good category. However, it is still lacking in some indicators, namely in terms of developing and using student worksheet, in terms of approaches which have not maximized the student center approach, in terms of using laboratory tools in learning, and in terms of evaluating learning outcomes that are not in accordance with the 2013 curriculum requirements. Furthermore, for the results of the performance analysis regarding the completeness of the facilities and infrastructure included in the good category. However, there is still a lack of indicators on the use of laboratories in physics learning.

There are several aspects in graduation standard analysis that can be seen in Figure 2:

Figure 2. Graduation Standard Analysis Analysis Chart

The results of graduation standard analysis consist of attitudes, knowledge and skills. Aspects of attitude analyzed consist of spiritual attitudes and social attitudes. Spiritual attitudes are in a very good category and social attitudes are in good category. On the other hand, the aspect of knowledge is in the sufficient category which means that students are still not optimal in finding facts and understanding the concepts of physical matter which physics learning should not allow the formation of an experience process carried out by the discovery process. The skill aspect is in an adequate category which indicates that students are not yet fully skilled when the physics learning activities take place.

Next, analysis of learning difficulties consists of three aspects, namely student worksheet, models, and learning approaches, each of which is in the sufficient category. Chart analysis of learning difficulties can be seen in Figure 3.

Figure 3. Analysis of Learning Difficulties Chart

Based on this data it is necessary to improve for each aspect in order to create learning that can make students able to develop concepts and solve problems independently.

3.2. Student Analysis Results

Figure 4. Student Analysis Chart
In figure 4. It can be understood that aspects of interest, learning motivation, learning style, attitude competencies and skills competencies of students are in the good category.

In the analysis of students there are aspects of interest, learning motivation, learning style, attitude competency in the good category. This indicates that students already have a good desire and self-control in studying physics. On the other hand, the aspects of knowledge and skills of students are in the sufficient category which means that students still do not understand the physical material that has been taught. This needs to be improved because students do not only need good wishes for themselves but also have good knowledge and skills both during and after studying physics.

4. Conclusion
Based on the two results of the preliminary analysis that has been done, there are some conclusions. First, the results of the preliminary analysis are still in the low category. This is due to the variety of models and approaches that have not yet been maximized in the study center activities. Second, the results of the analysis of students as a whole have been good but there are still two aspects that are in the sufficient category that still need to be improved.

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