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REQUIREMENTS ANALYSIS OF INQURY MODEL DEVELOPMENT BASED ON SCIENCE, ENVIRONMENT, TECHNOLOGY, SOCIETY (SETS)

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Abstract

Problems that occur that students' critical thinking skills are currently lacking so that many students do not apply concepts in everyday life, so it is very necessary to conduct a needs analysis related to the tools used by the teacher and the approach used by the teacher. The purpose of this study is to find out what problems are faced by teachers when developing learning tools based on the indicators that exist in each device. This research method is a percentage and descriptive data collection techniques using research instruments in the form of a questionnaire filled by respondents will be analysed quantitatively (Percentage) and descriptive (Qualitative). The results showed that 80% of teachers did not understand how to develop inquiry learning tools and use the SETS approach. So it can be concluded that the development of learning tools needs to be implemented to improve students' critical thinking skills.

Keywords: *Learning tools, Inquiry, SETS, Critical thinking*

Education at the vocational high school level really determines how students can get an understanding of learning materials and solve problems related to real-life facts associated with learning materials. The problem that often occurs is the lack of teacher ability to implement learning to solve problems associated with learning materials in schools. So that this causes a lack of understanding of students regarding learning materials besides that students' skills in solving problems in real life are very lacking. Karamustafaoglu, Sevilay. (2011)

Problems that often occur in schools today are very concerning regarding learning outcomes or students' critical thinking skills so that new innovations are needed to create education that is worthy of competition in the future, in the curriculum field it is necessary to make observations regarding any problems experienced by teachers in implementing active learning. and able to improve critical thinking skills and improve high school student learning outcomes. This is due to the lack of knowledge of teachers using learning approaches and models when providing classroom learning, if you pay attention it is very important to use an approach that can increase student learning activity, especially in science learning that requires proof and observation.

Initial observations that have been made in several schools in the district. Bengalon, using questionnaires and strengthened by interviews, concluded that the learning process at the school had not used approaches and learning models that were relevant to the material to be taught in class, and the learning tools used by teachers only took from the internet without being updated to suit the school environment. Some teachers stated that there was no need to develop learning tools because students simply read the textbook provided, so students would get sufficient information regarding the material being studied, so that until now students' abilities were only limited to understanding concepts while critical thinking skills were very low. Low critical thinking skills will cause students not to be able to solve problems that occur in the surrounding environment related to learning materials in schools, so it is very necessary to make new

innovations by providing information related to learning approaches and models that are relevant to the material for teachers who teach.

The following observations were made in several senior high schools in Kab. Bengalon related to inquiry learning tools with the *Environment, Technology, Society* (SETS) approach , *it* is clear that teachers only teach using makeshift tools and rely on textbooks and the internet. Regarding the inquiry model, 75% of teachers who do not understand how to describe syntax into learning tools are currently not using a practicum-based model. Regarding the *Environment, Technology, Society* (SETS) approach , there are still many teachers who do not understand and are not familiar with the approach so that it is not applied in the learning process. Siswono. 2008.

The *Science, Environment, Technology, Society* (SETS) approach in education in Indonesia is better known as the "Science, Environment, Technology and Society" approach. This approach focuses on problems from the real world that have components of Science and Technology from the perspective of students, in which there are concepts and processes, then students are invited to investigate, analysed, and apply these concepts and processes to real situations. The success of the teaching and learning process in order to realize educational goals is strongly influenced by many factors. Both technically and non-technically. Not only teachers and students play a role in the success of education, but more than that, other aspects must also be supported. One aspect that is very important in order to achieve educational goals is the approach to learning.

This approach is closely related to the inquiry learning model where the syntax is more directed to a discovery so it is very relevant, the guided inquiry model can help students to present natural phenomena, so students are easy to understand. In the guided inquiry learning process students are given authentic tasks. So that students are expected to choose problem solving methods independently, not just carrying out a series of standard steps. The inquiry model learning tool with the *Environment, Technology, Society* (SETS) approach is expected to be able to provide solutions for solving problems related to critical thinking skills and student learning outcomes.

Formulation of the problem

Based on the background that has been described, the formulation of this needs analysis is "What are the problems faced by teachers when developing *inquiry -based learning tools based on science, education, technology, society (SETS)* approaches to improve critical thinking skills and learning outcomes"

METHOD

This research is only limited to needs analysis (*needs assessment*) which is sourced from the results of initial observations in the field. The data collection technique in this study used a needs analysis instrument for teachers. Sudjana, Nana 2010 To find out the reality in the field related to the learning process that has been carried out so far, the researchers conducted observations in five randomly selected schools to explore potentials and problems that might arise in the learning process. These observations were carried out in 5 schools each. schools have different characteristics according to the environment and conditions of the school. Respondents who were selected with the criteria of Biology Science teachers in SMP each 3 people per school so that the number of research samples was 15 people. The research instrument in the form of a questionnaire filled out by respondents will be analyzed quantitatively (percentage) and descriptively (qualitative). Sugiyono. (2008), Sarah 2015.

The data analysis technique used the percentage of (Sugiyono, 2011).

N=(Teacher's answer)/(Number of samples) 100%.

RESULT

Based on the research that has been done related to teachers' understanding of science learning tools based on guided inquiry and teacher problems related to teachers' understanding of developing learning tools using the Inquiry model and SETS approach. For more details can be seen in the following table:

Table 1. Teachers' understanding of the Inquiry model of Science Biology learning tools and the SETS Approach

No.	Learning Media	Evaluation		
		Not enough (%)	Enough (%)	Good (%)
1	Syllabus	80%	20%	
2	RPP	85%	15%	
3	Handout	80%	20%	
4	LKPD	80%	20%	
5	Media	80%	20%	
6	Evaluation	85%	20%	

Source: Research Results, 2019

Based on the results of the research listed in the table, it can be concluded that teachers' understanding of Biology science learning with the inquiry model and SETS approach is in a poor position, where 80% of the syllabus components of teachers do not understand and 20% of teachers understand, the number of teachers who lack understanding of science learning tools Inquiry biology and the SETS approach cause low critical thinking skills and student learning outcomes, so a solution is needed to provide understanding to related teachers to improve critical thinking skills and student learning outcomes. The syllabus is a determination to make teaching tools and strategies and determine the media that will be used and adapted to the basic competencies that will be used during the learning process, if the teacher does not understand how to develop a syllabus well then the learning strategy that will be used will be problematic. The RPP component 80% of teachers do not understand and 20% of teachers understand, the number of teachers who do not understand the RPP of inquiry and the SETS approach, the learning outcomes and critical thinking skills of students are greatly decreased. Likewise with the next component 80% of teachers do not understand and 20% of teachers understand the above problems are of special concern in order to solve problems related to how to improve critical thinking skills and student learning outcomes. so that the learning process using the inquiry model and the SETS approach. Supported by the results of research by Dwijananti, P. and Yulianti, D. (2010), the results of the study show that the understanding of concepts and critical thinking skills of students who take biology learning using the guided discovery method is better than students who take part in the learning process. Conventional learning is reviewed based on the school level, most students show a positive attitude towards learning biology with the guided discovery method. Based on the research findings, learning biology with the guided discovery method can be used as an alternative learning method that can be applied to improve the quality of education. Karsli & Sahin. (2009).

Critical thinking skills can be developed through learning biology at school or college , which focuses on systems, structures, concepts, principles, and the tight link between an element and other elements. Haryono, 2006. Furthermore, Johnson, 2007 states that critical thinking is a life skills, not academic hobbies. Then added that critical thinking is a thinking hobby that can be developed by everyone, so this hobby should be taught in elementary, junior high, and high school. Realizing the importance of

developing students' critical thinking skills since elementary school, it is absolutely necessary to have biology learning that involves more students actively in the learning process itself.

Table 2. Teacher problems related to the development of Biology science learning tools based on the Inquiry model and SETS Approach

No.	Learning Media	Evaluation		
		Not enough (%)	Enough (%)	Good (%)
1	Syllabus	70%	30%	
2	RPP	85%	15%	
3	Teaching materials	87%	13%	
4	LKS	88%	12%	
5	Instructional Media	80%	20%	
6	Evaluation	86%	14%	

Sources of 2019 Research Results

Based on the results of data analysis related to teacher problems in developing Biology science learning tools based on the inquiry model and SETS approach, an average of 80% of the problems that occur in teachers who have not been able to develop learning tools starting from the syllabus, lesson plans, teaching materials, LKS Learning Media and Assessment of the six devices This is a very important thing in the learning process where the syllabus is the main thing as a guide in developing other tools, Sutanto. 2007. The development of inquiry learning tools and the SETS approach can improve students' critical thinking skills and learning outcomes. By being owned by students after receiving their learning experience. There are three kinds of teaching and learning outcomes according to Sudjana (2004), namely: (1) critical thinking ability; (2) learning outcomes (3) attitudes and ideals. Learning devices with the SETS approach to fermentation technology based on environmental problems in tempe-tofu production waste can improve student learning outcomes. The improvement referred to in this study is an increase in higher order thinking skills and cognitive achievement. The description above is related to the problems faced by teachers, so we need a biology learning device with an effective and practical SETS approach and Inquiry learning model. Karamustafaoglu, Sevilay. (2011), Karsli & Sahin (2009).

Based on the results of research that have been analysed, it can be ascertained that the importance of developing learning tools to improve critical thinking skills and student learning outcomes is in line with the results of research by Kuhlthau, 2012 research results related to critical thinking skills in this study include identifying concepts, generalizing abilities, analyzing algorithms and solve the problem. Based on the results of the critical thinking ability test in the experimental class, namely those who received learning using the guided discovery method, it showed a significant increase in critical thinking skills compared to the control class using conventional learning. Sandra, 2017. The results of the critical thinking ability test at all school levels showed a significant increase. Thus, learning using the guided discovery method has a significant effect on students' critical thinking skills.

CONCLUSION

Based on the results of the research that has been done, it can be concluded that 80% of teachers do not understand how to develop inquiry learning tools and use the SETS approach. So it is necessary to understand how to develop learning tools through the inquiry model with the SETS approach.

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