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# THE TEACHERS' PROBLEMS ON THE DEVELOPMENT OF BIOLOGY LEARNING MATERIALS THROUGH GUIDED INQUIRY LEARNING MODEL

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***Abstract***

*Biology learning in the senior high school level is a subject that needs proof of each sub-material. In order to achieve maximum learning objectives, then the teaching support materials needed to guide the teacher in the learning process. The lacks of the teacher's ability to develop guided inquiry-based learning materials still dominate. This study aimed to determine the teachers' weakness and the obstacles they faced in the process of preparing and developing the learning materials. The research method used were survey and interviews which included a questionnaire containing the teacher's understanding of the learning materials. As for the results of the study related to the teacher's understanding of learning materials, 80% of teachers did not understand, and 20% of teachers who understood the learning materials used during the practicum. Then the teachers' obstacles related to developing learning materials, 80% of teachers do not understand how to develop the learning materials and implementing inquiry learning models, and 10% of teachers did not understand how to develop learning materials, and 10% of teachers understand enough to develop guided inquiry-based learning materials. With the problems that lie in the ability of the teacher to develop the learning materials, the need to provide training to the teacher is related to develop learning materials and guiding teachers to develop inquiry-based learning materials.*

***Keywords:*** *learning materials, biology, inquiry*



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## INTRODUCTION

Education is an effort or activity that is carried out deliberately, regularly and plans with the intention of changing or developing the desired behavior. education is a crucial process for the development of individuals and the development of society. the progress of a society can be seen from the development of education (Sanjaya, 2009). Gray (2011) states that education is much older than human age because the culture has existed long before humans came to know education. As applied in life, education is said to be a set of every process of the human generation, both in individuals and cultural groups, so that people gain skills, knowledge, rituals, beliefs, and cultural values.

Biology learning with active, creative, effective and fun learning methods (PAKEM) as well as how to make plans and implement biology learning using the PAKEM method, has been introduced to high school biology subject teachers, so that high school Biology teachers can disseminate and apply knowledge and skills teach with the PAKEM methods that they obtained, in each school so that it can really improve the quality of Biology learning in schools. Learning biology in schools can be said to be "unique" because both the subject and the object of learning have distinctive characters.

The object of learning biology in addition to dealing with real nature is also related to life processes. So that students can understand it, the methods and approaches used in the learning process must be adapted to the characteristics of the object and the subject of learning. Phenomena taught through biology are natural phenomena that may have been faced by students. Therefore, biology cannot be understood if it is only memorized. Understanding of biological concepts can be analogous to a variety of simple activities that can be observed/carried out by students (Saptono, 2007).

Every education should experience a new innovation, which is a provision that is specifically designed. Rules and procedures for an innovation specifically designed to teach specific skills, beliefs, and concepts to be better. Much has been done by the government for the creation of new innovation, among others, high-quality schools starting from the basic level, both the facilities and infrastructure needed, as well as qualified teaching staff (Gray, 2011).

Based on the facts that there are many schools that are not able to provide good quality, it can be caused by several factors, namely: incomplete facilities and infrastructure, an environment that does not support and teachers who are not professional teachers in teaching and in compiling biology learning materials. This causes a lack of knowledge acquired by students both intellectually and mentally. It is important for a teacher to analyze the concept of the material and plan learning carefully before doing learning in class. The planning of learning materials that is done so as to enable teachers and students to carry out the learning process is referred to as a learning device. Based on the various descriptions above, we need to examine the problems that are often experienced by teachers as educators in the preparation of learning materials that are used primarily in learning biology.

Biology is a subject included in the domain of the natural sciences. Science is concerned with a systematic inquiry about nature, so learning is not only a mastery of a collection of knowledge in the form of facts, concepts or principles but also a process of discovery. Learning biology in secondary schools is expected to be a vehicle for students to learn about themselves and their natural surroundings, as well as the prospects for further development in daily life.

Learning biology is very much material that requires proof. To achieve these learning objectives requires a learning model that is experimental or proves a theory to improve the creativity and cognitive outcomes of students. By using the guided inquiry learning model already includes learning objectives that refer to an experiment and proof of the theory. Guided inquiry is a series of learning activities that emphasize the process of thinking critically and analyzing to find and find answers for themselves on a problem in question. The thought process itself is usually carried out through question and answer between the teacher and students. This learning strategy is also commonly called the heuristic strategy, which comes from Greek, namely *heuriskein* which means I found it (Sanjaya, 2009).

If analyzed carefully the learning occurs is not as optimal as expected because of the inability of teachers to plan, implement biology learning materials and efforts to overcome problems related to planning and implementing learning materials. That is, if the teacher's understanding is lacking, then the planning, implementation, and efforts made by the teacher to overcome the problem are also not resolved, this indicates that so far, the teacher is only learning by the lecture method (traditional learning). This is the result of observations at high schools in Samarinda City. Such conditions will certainly adverse students towards the achievement of competence, especially related to attitudes and skills. a problem that is being faced and is believed to have not

been facilitated by high school teachers to fulfill the bill of the current curriculum. That is caused by the lack of references in literature and literature regarding planning and implementation of learning materials through guided inquiry models. Based on the problems experienced by biology subject teachers in high schools, this research takes the focus of developing learning materials with guided inquiry learning models for material representation biology subjects in high school (digestive system material, sub-material of substances in food ingredients).

Based on these things, this study purposed to: (1) find out how Biology teachers' understanding of learning materials based on guided inquiry learning models to improve students' abilities in compiling scientific work; and (2) knowing how to overcome teacher problems related to obstacles in the process of developing high school biology learning materials.

## METHOD

This research type is a descriptive study of teacher problems in the development of guided inquiry learning materials. The research method used in this study was a survey and interview which included a questionnaire containing the teachers' understanding of the learning materials. The location of this research was conducted at SMAN 1 Samarinda, SMAN 2 Samarinda, and SMAN 5 Samarinda. This research was conducted for 3 (three) months, starting from January - March 2016.

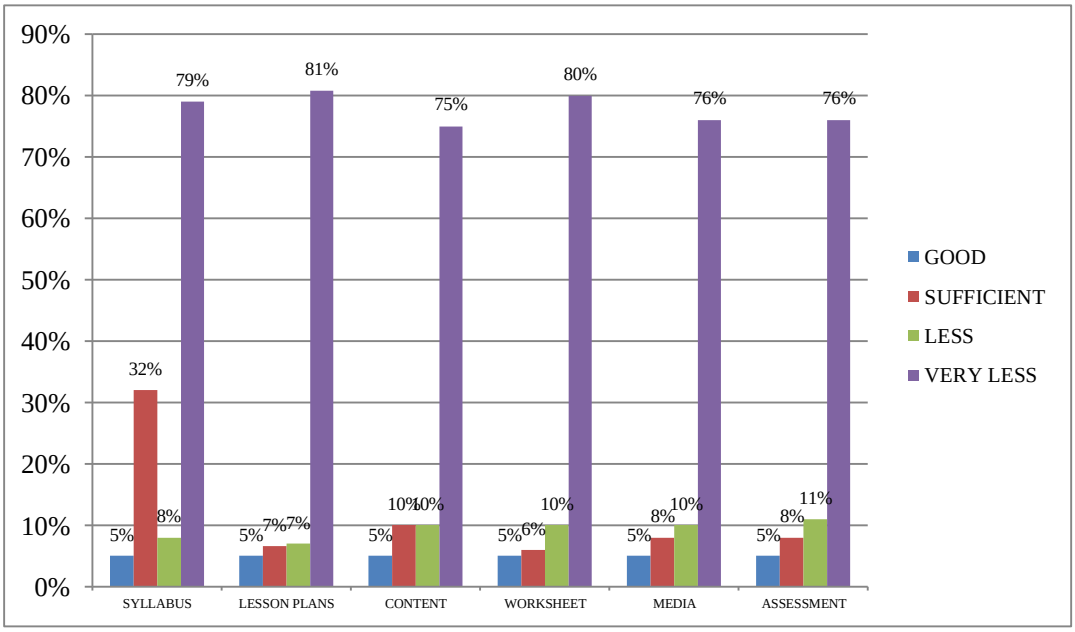
The subjects in this study were biology teachers at SMAN 1 Samarinda, SMAN 2 Samarinda, and SMAN 5 Samarinda. The number of teachers involved was 9 (nine) people. These teachers will fill out a questionnaire that has been designed by researchers based on assessment indicators in this study in order to determine the feasibility of teaching materials used by teachers so far starting from the implementation of learning plans and alternative assessments based on guided inquiry learning models for digestive system material (food content test ) in XI Grade of High School in the 2nd Semester.

Data analysis technique used in the form of needs analysis with a focus on 2 (two) indicators, namely: (1) the obstacles faced by teachers in the planning and implementation of learning materials through the guided learning model in high school biology learning; and (2) efforts made to overcome the problems faced by teachers related to the planning and implementation of learning materials through the guided inquiry learning model in high school biology learning.

## RESULTS AND DISCUSSION

The results of research conducted in high schools in Samarinda City related to the problems of teachers in making guided inquiry model learning materials, summarized in Figure 1.

**Figure 1. Recapitulation of Teacher Constraints Related to Planning Learning Tools with the Guided Inquiry model**



The results of research related to the constraints of high school biology teachers in Samarinda in the planning of learning materials related to the guided inquiry-based learning model show the overall planning of learning materials, most of the teachers are in the very poor category and can not be seen in Figure 1.

Barriers at the planning stage illustrates that one of the root problems is that teachers do not have a good understanding of the syllabus where the teacher is in the very poor category 79 %%, the RPP category is very less 81%, the category of teaching material is very less 75%, the learning media category very less 75%, LKS category very less 80% and category evaluation very less 76%. As a result of the teachers' understanding which is very lacking so that in planning learning materials related to the inquiry-based learning model guided teachers face obstacles. If examining the content of teaching materials in the 2013 Curriculum and syllabus for biology subjects in high school, it will be clearly seen that many teaching materials are highly recommended to use guided inquiry-based learning models. Characteristics of teaching materials that are suitable for implementing guided inquiry-based learning models are teaching material that contains proof or can be experimented (Atay, 2007).

So, the main barrier faced by teachers in planning learning materials related to guided inquiry learning models lies in two things namely in understanding related learning models through guided inquiry, with an understanding of teaching material in the 2013 Curriculum and Syllabus that is suitable for implementing guided inquiry-based learning models in learning biology in high school.

The following are statements as a result of Hadi's (2011) research on the importance of learning planning. The results of the study stated that teachers who teach certainly have a teaching plan. The teaching plan is a set of instruments that will be tested in the teaching and learning process. As a researcher, a learning plan is a research proposal containing propositions to be tested. So, the learning plan is a hypothetical proposition that will be tested by the teacher through learning.

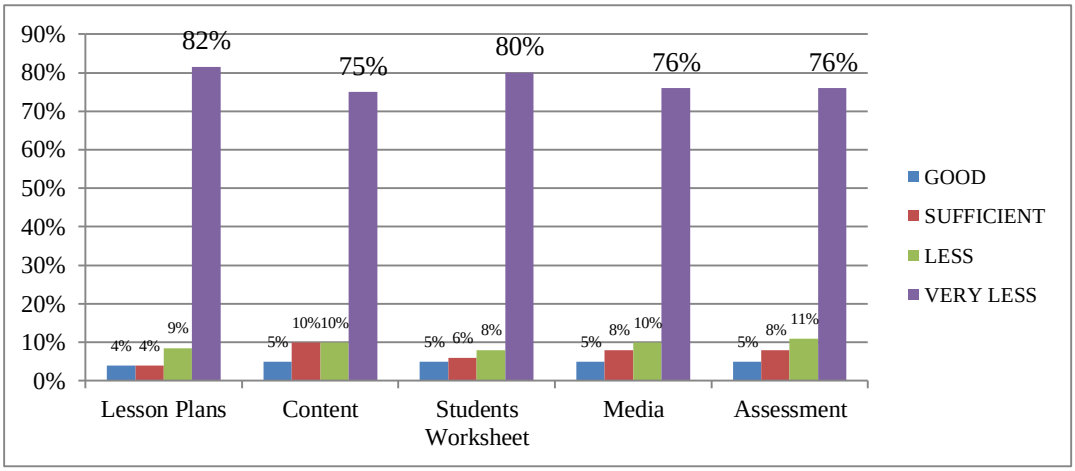
The learning plan prepared by the teacher is based not only on content standards (competency standards and basic competencies) but there are also other variables to consider. The variables that also determine the quality of learning plans are student learning outcomes data, student reflection, teacher reflection, teacher learning theories and philosophies, curriculum context, current science and technology findings that teachers know, current issues, student conditions, school conditions. These 9 variables have at least three important variables and most determine the quality of the learning plan, namely student learning outcome data, student reflection, and teacher reflection (Balay, 2015).

The results of this related research, indicate that the role of learning planning is very important, because through this planning the teacher has a handle in directing the implementation of learning. Teachers' understanding of the appropriate learning model to overcome the problems experienced by students is very important so that teachers can plan learning that is focused on overcoming problems that have been diagnosed on students. If the understanding is not owned by the teacher, then it is certain that the teacher cannot make learning plans in accordance with the syntax of the learning model (Depdiknas, 2001).

The results of the research and related research results indicate that the learning implementation plan is the first indicator as a manifestation of the understanding that the teacher has regarding pedagogical and professional competencies. Pedagogical competence is related to the selection of learning models that are detailed in the syntax outlined in the learning scenario of the lesson plan, and professional competence is the ability of the teacher to choose a learning model that is suitable for the learning material so that you are very closely related to the teaching material and the learning model.

The results of research on the barriers of high school biology teachers in Samarinda in the implementation of learning materials related to the guided inquiry-based learning model show that the overall implementation of the learning materials, most of the teachers are in the very less and less categories. The results of research related to the planning constraints of the implementation of learning materials, lesson plans, teaching materials, worksheets, learning media, and assessment can be seen in Figure 2.

**Figure 2. Recapitulation of Teacher Barriers Related to the Implementation of Learning Materials through the Guided Inquiry Model**




Barriers at the implementation stage illustrate that one of the root problems is that teachers do not have skills, namely the skills of teachers are in the very poor category. Teacher skills in preparing lesson plans in the category are very less 82%, teaching materials in the category are very less 75%, learning media in the category are very less 76%, the student worksheets category is very less 80% and the preparation of assessment instruments in the category is very less 76%. As a result of the teachers' understanding which is very lacking so that in planning the implementation of learning materials related to the guided inquiry learning model, the teacher faces obstacles (Mohan & Mohan, 2013).

Here are the results of research related to learning routines so that the application of inquiry models by teachers in learning problems. Application of inquiry there were several difficulties (1) inquiry is a learning strategy that emphasizes the thought process based on two wings of equal importance, namely the learning process and learning outcomes, (2) has long been embedded in culture student learning that learning is basically receiving learning material from the teacher so for them the teacher is the main source of learning, (3) relating to our education system which is considered inconsistent. For example, the education system recommends that the learning process should use learning patterns that can develop thinking skills through the active student learning approach or what we know as active student learning (Kwakman, 2003).

Learning with the inquiry models that require the active involvement of students is expected to improve students' learning achievement and attitudes towards science lessons, especially students' mathematical understanding and communication skills. Learning with the inquiry model is a learning approach that seeks to instill the basics of scientific thinking in students, so that in this learning process students learn more by themselves, develop creativity in solving problems.

Students are really placed as learning subjects, the role of the teacher in learning with the inquiry approach is as a guide and facilitator. The teacher's task is to choose the problem that needs to be conveyed to the class to be solved. But it is also possible that the problem to be solved is chosen by students. The teacher's next task is to provide learning resources for students in order to solve problems. Teacher guidance and supervision are still needed, but intervention in student activities in problem-solving must be reduced.

The results of the study show a link between the obstacles faced by teachers when planning and implementing learning materials related to inquiry-based learning models. This means that if the planning of teachers is in the category of very less or less, then in the implementation of learning materials related to inquiry-based learning models guided teachers face obstacles (Mulyani, 1998).

The main problem root so that the problematic teacher at the implementation stage is the problematic result at the planning stage. The root of the problem at the planning stage is an understanding related to the guided inquiry-based learning model and an understanding of the teaching material that is appropriate for applying the guided inquiry learning model. As a result, the teacher has never applied the guided inquiry-based learning model and if the teacher has never applied the guided inquiry-based learning model then the teacher has never reached the skill stage (Nurhani, 2014). The results of research related to

the efforts of High School biology teachers in the Samarinda City in overcoming obstacles related to the planning and implementation of learning materials related to the guided inquiry learning model of the planning stage (Figure 3).

**Figure 3. Recapitulation of Teachers Efforts to Overcome Obstacles in Planning and Implementing Learning Tools Learning Models through Inquiry**

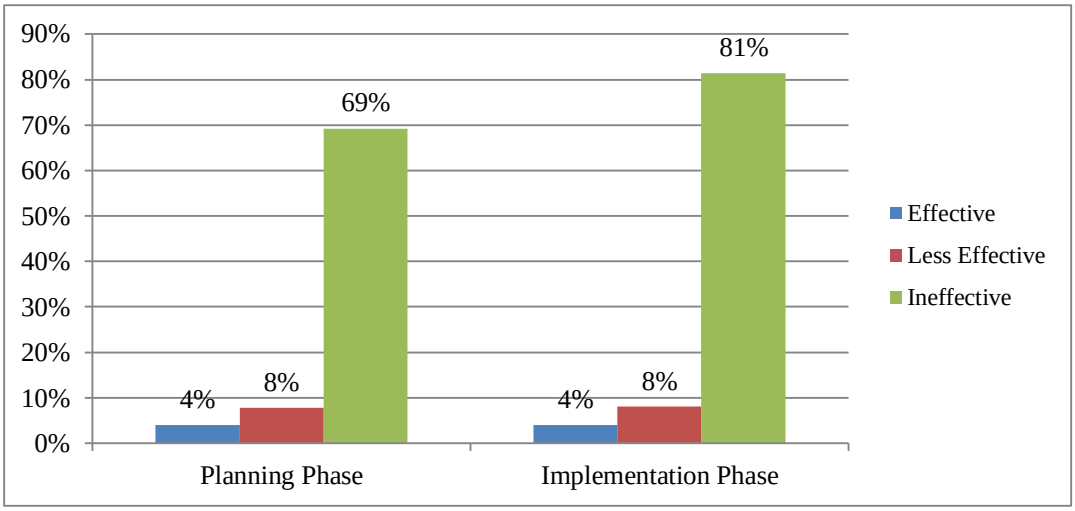



Figure 3 shows that the efforts made by teachers are in a less effective category. The results of this study indicate the relationship between the obstacles faced by teachers at the planning stage, the implementation stage and efforts to overcome the problems of learning materials related to guided inquiry-based learning models. The main problem root so that there are obstacles in the planning, implementation, and efforts to overcome the problem of learning materials related to the guided inquiry-based learning model is the understanding of the guided inquiry-based learning model understanding the appropriate teaching material, and teaching skills.

Related to the root of the problem of understanding the learning model in planning the lesson plan, especially occurs in the teacher's lack of understanding of the syntax of the inquiry learning model related to matching the time allocation in the syllabus with the RPP, matching the indicators with basic competencies, incorporating the "5 M" approach in the learning scenario based on the syntax of the guided inquiry-based learning model, dividing the allocation of time in class hours into the learning scenario that is initial activities, core activities and closing activities.

Related to the root of the problem of understanding teaching materials that are appropriate for applying the guided inquiry-based learning model in learning planning, especially occurs in the teacher's lack of understanding in terms of understanding and developing concepts, conformity with learning objectives, and the systematic presentation of concepts, so as to improve students' abilities in terms of understanding conceptual as a competition after learning occurs. As a result of these two root problems, so that even on the other learning materials the teacher is found to have problems.

The learning materials are the understanding related to the syllabus, the preparation of student activity sheets based on the crossing of guided inquiry-based learning models learning media based on the syntax of guided inquiry-based learning models and evaluation of learning based on guided inquiry-based learning models with the use of rubrics designed to evaluate the achievement of Core Competencies 1 : spiritual, Core Competencies 2: social, Core Competencies 3: knowledge, and Core Competencies 4: skills in accordance with the 2013 Curriculum (Sidharta, 2006). Based on this problem, it is necessary to develop learning models through guided inquiry learning models through development research methods to overcome teacher constraints in planning and implementing learning materials related to guided inquiry learning models, so that learning materials such as syllabus, lesson plans, teaching materials, media, and evaluations can be used by the teacher in learning in class.

## CONCLUSION

Based on the results of the research that has been done, it can be concluded that: (1) the understanding of high school biology teachers related to biology learning materials through the

guided inquiry model is still lacking in syllabus, lesson plans, media, worksheets and evaluation of 80% of teachers with very less categories and 20% of teachers enough categories; and (2) overcoming the problems and obstacles of teachers related to the development of biology learning materials through the guided inquiry model by providing training to teachers how to develop the learning device through the guided inquiry model.

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