

The Effect of Learning Model Guided Inquiry by Noting Early Capabilities on Learning Competence of Class X Students of SMAN 1 Kuantan Mudik

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Abstract – This study aims to determine the effect of learning models *guided inquiry* by paying attention to the initial ability of students' learning competencies. This type of research used is quasi-experimental. The research *design is factorial design 2x2* for the knowledge domain competency and *the static group comparison design* for the attitude and skills domain competency. The population used is the students of class X MIPA SMAN 1 Kuantan Mudik who were registered in the academic year 2019/2020. Sampling using *purposive sampling technique*, obtained class X MIPA 1 as an experimental class and Class X MIPA 2 as a control class. The instrument used was a written test with questions for knowledge competencies, observation sheets and assessment rubrics for attitude competencies and appearances. Data analysis was performed with normality test, homogeneity test and hypothesis test using SPSS software. The results of this study indicate that there are significant differences in the learning model *guided inquiry* by paying attention to the initial ability of the students' knowledge competence and there is a significant difference in the learning model *guided inquiry* towards the attitude competencies and skills of the students.

Keywords – Model *Guided Inquiry*, Initial Ability and Learning Competence.

I. INTRODUCTION

Learning can be said as a learning activity carried out by students and teachers (Sudjana, 2010). Learning plays an important role in education with the aim of building the intelligence abilities of students in order to solve their problems (Zhou, 2005).

The government is trying to improve the quality of education, including curriculum improvements starting from the 1994 curriculum to the 2013 curriculum covering all subjects including Biology subjects.

Biology learning requires students to be able to master the competencies that have been set. The mastery of competencies by students is inseparable from the teacher's role as a guide and facilitator in learning. A teacher must be

able to find a good way so that students are interested and happy about the material being taught so that students are qualified. Students who are of good quality academically, skills (emotional skills), emotional maturity, and spiritual morals will be produced by qualified teachers. Teachers are required to master the material and learning strategies so that students' learning competencies increase (Munandar, 2009).

The author collected initial data at SMAN 1 Kuantan Mudik on 30 September 2019. The results of the questionnaire that was given to 60 students, it is known that 70.95% of the learning process uses lecture, question and answer, discussion and demonstration methods. 45.7% of students are active in group discussions. The results of observations made can be concluded that learning has not directed students to be actively involved in learning and students are still focused on the teacher during the learning process.

Low student learning outcomes also have an impact on the affective domain of students in a variety of behaviors such as lack of attention to learning, discipline, learning motivation, respect for teachers and classmates, and social relations. Teaching material contains the cognitive domain, the effective domain must be an integral part and must be seen in the learning process and student learning outcomes. Learning outcomes of students' skills must also be seen their ability in the physical field, for example the ability to make reports. These problems require solutions to create an atmosphere of learning that can make students active and participate in learning. One solution that can be implemented is implementing learning model *guided inquiry*.

The guided inquiry learning model (guided inquiry) is the implementation of the inquiry conducted on the instructions of the teacher. The teacher starts asking questions that track with the aim to direct students towards the expected conclusion. The guided inquiry model asks students to experiment to prove the opinions expressed (Hanafiah and Suhana, 2009).

Another factor that must be considered in learning biology is the initial ability of students (Ahmad, 2012). The initial ability of students is one important role in the smoothness of a learning activity because it illustrates the readiness of students in accepting the lesson to be delivered. In the description above, researchers are interested in conducting a study entitled "The Effect of Learning Model *Guided Inquiry* by Noting Early Capabilities Against Learning Competence of Class X Students of SMAN 1 Kuantan Mudik".

II. METHODOLOGY

type of research is quasi-experimental. This study uses two sample classes namely the experimental class and the control class. The sample is determined using *purposive sampling* technique. In the experimental class, treatment was given using the learning model *guided inquiry* and the control class using the model commonly used in the biology learning process by the teacher of SMAN 1 Kuantan Mudik, namely the model *direct instruction*. The instrument used was a written test in the form of objective questions for knowledge competencies and an observation sheet for attitude competencies and skills. This study uses a 2x2 factorial design.

III. RESULTS AND DISCUSSION

1. Results

a. *The data analysis knowledge competence of learners using spss software version 16.0.*

Table 1. Analysis of Knowledge Competency Data by Paying Attention to the Initial Ability of the Early Capabilities of the Sample Class Students ($\alpha = 0.05$)

Parameters	Mean Square	F	Sig.	Explanation
Class (Model)	1830.13	98.71	0.00	Significant
Initial Ability	2369.01	127.78	0.00	Significant
Class * Initial Ability	3.13	0.17	0.68	No Interaction

In Table 1, the two annova test results the direction of the class parameter shows an F value of 98.71 with a sig value of $0.00 < \alpha$ so that it can be concluded that there is a significant difference in the value of students' knowledge competence between the experimental class and the control class. The initial capability parameter shows an F of 127.78 with a sig value. equal to $0.00 < \alpha$, so it can be concluded that there is a significant difference in the value of students' knowledge competence between groups of students who have high initial ability and groups of students who have low initial ability. The interaction parameters between the class and initial ability showed an F value of 0.17 with a sig value. equal to $0.68 > \alpha$, it can be concluded that there is no interaction between the learning model and the initial ability to increase the value of students' knowledge competence.

b. The results of the analysis of student competency attitude data using SPSS version 16.0 software.

Table 2. Analysis of Student Competency Attitudes Data Sample Samples ($\alpha = 0.05$)

Parameters	Class		Explanation
	<i>experi ments</i>	<i>Cont rol</i>	
Average	86.14	79.81	$x_1 > x_2$
Normality Test	0.20	0.12	Distributed Normal
Homogeneity Test	0.82		Variance Homogeneous
Hypothesis Testing	0.00		Hypothesis received

Table 2, the average attitude of students in the experimental class is higher that is 86.14 compared with the control class that is 79.81. The results of the normality and homogeneity test of the two sample classes are Sig. > A, this means that the data is normally distributed and has a homogeneous variance then proceed with the t test, the results obtained are Sig. equal to 0,00 with a significant level ($\alpha = 0.05$), Sig value <0.05, the hypothesis is accepted.

c. The results of data analysis on students' competency skills using SPSS version 16.0 software.

Table 3. Analysis of Student Competency Skills Data Sample Class ($\alpha = 0.05$)

Parameters	Class		Ket.
	<i>Experiments</i>	<i>Control</i>	
Average	82.28	76.06	$\bar{x}_1 > \bar{x}_2$
Normality Test	0.18	0.17	Normal Distributed
Homogeneity Test	0.38		Homogeneous Variance
Hypothesis Test	0.01		Hypothesis accepted

Table 3, the average value of students' skills the experimental class was 82.28 compared to the control class 76.06. The results of the normality and homogeneity test of the two sample classes namely Sig. > A this means that the data is normally distributed and has a homogeneous variance then proceed with the t test, the results obtained are Sig. of 0.01 with a real level ($\alpha = 0.05$), this means the value of Sig. < α , then the hypothesis is accepted.

2. Discussion

a. Knowledge Competence

This research uses a written test with objective questions. The test is carried out after each meeting of the kingdom plantae and animalia material is completed which aims to measure the level of mastery of the concept of material in the sample class after being given treatment. In Table 1, it can be seen that the parameters of the class and the initial ability have a significant influence or the existence of a real influence by giving a learning model *guided inquiry* (experimental) With the learning model *direct instruction* (control), it can be concluded that the learning model *guided inquiry* can improve the students' knowledge competence.

Knowledge domain competence is the result of mastery learning material that aims to measure mastery and selection of basic scientific concepts (*content objectives*), in the form of essential materials as key concepts and main principles. This domain of knowledge is an area that involves more mental or brain activities (Sofyan, 2006).

The learning model *guided inquiry* can improve students' knowledge competence because there are several factors that influence it. The first factor is, learning *guided inquiry* is a learning model in which the teacher provides or provides extensive guidance or guidance to students. The teacher presents events or phenomena that allow students to find problems (Jack, 2013). Process-oriented learning activities emphasize direct learning experiences, active student involvement in learning activities, and application of concepts in daily life. Students are encouraged to think critically, analyze themselves, so they can find general concepts or principles based on material / data provided by the teacher (Vlassi and Karaliota, 2013).

Second, the learning model *guided inquiry* has activities where students have a deep sense of curiosity that is manifested in the form of questions about the material being studied. The questions will arise after the teacher gives a problem or a problem is found and then narrowed down to see the possibility that the problem can be solved by students (Farrell and Spencer, 1999).

Third, learning model *guided inquiry* emphasizes students to formulate a problem and be able to set a temporary answer or better known as a hypothesis. Temporary answers are obtained by searching for information, data, and facts needed, for example by reading books, researching, asking questions, discussing. Students in groups will analyze the data obtained to find a concept in teaching material (Dougla and Chiu, 2012).

Fourth, in the learning model *guided inquiry* students must be able to present the results of the data obtained and be able to make conclusions from the concept of teaching material. Students who are able to conclude the students have been doing critical thinking activities and actively involved in the learning process (Almuntashari and Wright, 2016).

In this study, the treatment of learning models with no initial ability to interact, it can be said that the treatment of the model can not only increase the students' high abilities but also can increase the students' low abilities. The results of this study are in accordance with the results of research conducted by Putri (2019) which shows that there is no interaction between the learning model and the students' initial ability to influence the learning competence in the biological realm of students' knowledge. Thus, it cannot be said that certain learning models can optimize learning in groups of students with certain initial abilities.

b. Attitude Domain Competencies

In Table 2 it can be seen that the learning process using the model is *guided inquiry* proven that the attitude competency of the experimental class students is higher than the control class applying the direct instruction learning model. In this study, attitude competency can be measured by several instruments. The instrument the researcher used was an observation sheet with a certain attitude scale. In this study, what was observed were social attitudes (Responsibility, Discipline, Curiosity).

The realm of attitude is the result of learning related to the attitudes or behavior of students, such as attention to learning, discipline, motivation to learn, and respect for teachers and classmates (Sadirman, 2012). The learning model *guided inquiry* in learning helps students to improve learning competency. Daniah, (2015) states that the learning model *guided inquiry* can increase the value of students' attitudes. The realm of attitude toward students can be done by questionnaire or through observation. Observation steps were carried out seen from the behavior characteristics displayed by learning students (Arikunto, 2015).

The learning model *guided inquiry* helps students to develop an active attitude in learning (Arslan, 2014). The learning process in the experimental class is more active than the control class. Interest and positive attitudes of students towards the learning process can foster student motivation to learn, so that the achievement of student learning outcomes for the better (Desgamalia, 2019).

The learning model *guided inquiry* requires students to work together in groups in formulating problems, making hypotheses, collecting data and making conclusions. The learning process *guided inquiry* that uses group work makes students have more freedom in making decisions that have been determined together in advance. A number of groups prefer to divide their tasks so that all group members have their respective assignments so as to give rise to students' sense of responsibility. Discussion in groups will create a more relaxed atmosphere because students who better understand the learning material can guide their friends who do not understand the learning material (Wahyuni, Fitri, Selaras, and Syamsurizal, 2019).

Students' curiosity about the material makes students focus, think critically and not feel bored. Students actively look for references for problem solving given and mutual respect for the decisions of each group member. Students are confident in conveying questions, responses, and answering problems that arise in the learning process.

In the learning process *guided inquiry*, students' discipline will be seen. Discipline will be seen when students continue to be throughout the learning process rules. Students will be considered disciplined when respecting group friends (do not denounce the opinions of group friends), follow each teacher's rules during the learning process and do not interrupt during group discussions or presentations. This study is also in accordance according to Novidsa, Syamsurizal and Darussyamsu (2017) that Inquiry learning can improve the attainment of attitudes of learners by applying the strategy *LC* through the learning model of inquiry on the material structure and function of plant tissue.

c. Skill Domain Competencies

In the results of the skills competency assessment, the average value that is treated by applying the learning model *guided inquiry* has an average value higher than the average value of the control class, then learning by applying the *guided inquiry* model affects the competency of the participant skills students.

The learning model *guided inquiry* has a syntax that is able to train students to master the science process skills (Wulanningsih, et al, 2012). Skills competencies are competencies related to one's ability to act after gaining learning experience (Kunandar, 2013).

The results of observations in learning *guided inquiry*, students have ample opportunity to grow and improve the skills of the scientific process through the activities of inquiry

such as that carried out by a scientist that is making observations, formulating problems, conducting hypotheses, designing research to test hypotheses, collecting data and analyzing to make conclusions. Each stage *guided inquiry* teaches students the science process skills (Suwandari, Taufik and Rahayu, 2018). The model *guided inquiry* can improve students' process skills. This learning model is prepared by the teacher and the teacher guides students so students can find and investigate what is not yet known (Zehra and Nermin, 2009).

The results of learning knowledge and attitudes will be the results of learning skills if students have shown certain behaviors or actions in accordance with the meaning contained in the competence of knowledge and attitudes (Desgamalia, 2019). Skills competencies in students in learning *guided inquiry* have the ability to improve and broaden the mastery of skills in the process of obtaining cognitive (Moon and Brockway, 2019). The model is *Guided Inquiry* able to develop intellectual abilities as part of the mentality of students, as a result students are not only required to master the lessons, but students can use their potential (Smithenry, 2010).

The success of students in learning is also influenced by the independence of learning and social skills of students. Learning independence and social skills can be formed when students collaborate in a discussion activity to identify information in solving problems (Febriani, Ardi, Fevria and Syamsurizal, 2019).

IV. CONCLUSION

Conclusion of this study is the learning model *guided inquiry* by paying attention to initial abilities can improve students' knowledge competence. learning model *Guided inquiry* can improve students' attitudes and skills competencies and there is no interaction between learning models with the initial ability of students' learning competencies.

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