

The Impact of Learning Cycle 7e and Student Initial Ability to Student Competence of Grade VIII Junior High School 13 Pekanbaru

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ABSTRACT

Biology learning at Senior Pekanbaru which dominated by the teachers, less varied method and student initial ability rarely noticed by teachers lead to low of student learning competence. It proved by student learning competence average score still below minimum standard score. One of the ways to solve those problem by using Learning Cycle 7e model and student initial ability. This research aim to know the impact of Learning Cycle 7e model and student initial ability to student learning competence grade VIII Junior High School 13 Pekanbaru. This research was quasi experiment research with 2 x 2 factorial design. The population of this research is class VIII SMPN 13 Pekanbaru. The sample was chosen by using Purposive Sampling technique. The data was collected through a test to measure the students cognitive competence and an observation sheet to see their affective and psychomotor competence. The data obtained was analyzed by using t-test and Mann Whitney U test. The result of data analysis indicated that : (1) the learning competence on cognitive aspect of the students taught by Learning Cycle 7 e was better than that of students of the that does not use, (2) the learning competence on affective aspect of the students taught by Learning Cycle 7e was better than that of students of the that does not use, (3) the learning competence on psychomotor aspect of the students taught by Learning Cycle 7e was better than that of students of the that does not use, (4) There is no interaction between learning cycle model 7e with the student's initial ability level.

Keywords: Learning Cycle 7e, Early Ability, Biological knowledge competence

1. INTRODUCTION

Education is a process of human development in developing itself in order to be able to face all the problems that arise in human beings themselves. The quality of education has always been the main focus in the world of education. Various efforts have been made to improve the quality of education, including the use of various learning models and learning media as well as creating a conducive (Kemendikbud, 2014: 15)^[1]. The learning process is essentially a communication process, namely the process of delivering messages from the message source through certain channels or media to the recipient of the message. Sometimes the communication process is unsuccessful due to obstacles. Some of the inhibiting factors include psychological barriers, physical barriers, cultural barriers and environmental barriers (Sadiman, dkk. 2009: 11)^[2]. Biology learning is essentially a process to deliver students to their learning goals, and biology itself acts as a tool to achieve these goals. Biology as a science can be identified through objects, natural objects, problems or symptoms exhibited by nature, as

well as scientific processes in discovering biological concepts.

The process of learning biology is the creation of conducive situations and conditions so that there is an interaction between the subject of students with the object of learning in the form of living things and all aspects of life. Through interactions between students' subjects with learning objects can lead to the development of optimal mental and sensory motor processes in students.

Seeing the importance of the role of biology, the learning process of biology in the classroom should be more interesting, fun, and student-centered.

Biology learning involves students searching for extensive information sources from various sources. This is seen when students participate in the learning process such as raising their hands to ask questions and contribute their thoughts, think critically and logically so that effective learning will be created.

Based on the results of observations on SMP Negeri 13 Pekanbaru on September 14 and 15 2015 there was a problem that biology learning had not proceeded as expected, namely the implementation of learning was still centered on the teacher as a source of information.

Students lack confidence in learning, a sense of responsibility towards the group and are not active. Students lack interaction either with the teacher or with fellow students.

This can be seen when the teacher asks, only smart students answer while the other students just keep quiet. In the learning process, the teacher does not give apperception, motivate and repeat the material that has been learned. Learning habits with the teacher as the main actor (*teacher centered*) in the learning process needs to be changed, namely by placing students as the center of learning (*student centered*).

This is in accordance with the opinion Lufri (2010: 21)^[3], that the more actively students develop cognitive, affective and psychomotor abilities through interactions with teachers and peers the richer their learning experiences will be.

The teacher only evaluates cognitive aspects while the affective and psychomotor domains are not assessed, because when learning takes place the activities in the classroom are minimal, so the teacher does not observe for affective. In addition, the teacher also does not conduct discussions and practicum activities both in the laboratory and outside the classroom. Competencies of student learning outcomes from the cognitive domain are shown in Table 1.

Table 1. Average Mid Semester 1 Values in Cognitive Domains of Class VIII of SMPN 13 Pekanbaru Academic Year 2015/2016.

No	Class	Students	Average
1.	VIII1	32	86,5
2.	VIII2	30	70
3.	VIII3	30	74,46
4.	VIII4	30	76,33
5.	VIII5	30	80,60
6.	VIII6	30	58
7.	VIII7	32	72,62
8.	VIII8	32	64,31
9.	VIII9	32	72,93

Sumber: Biology Teacher, SMPN 13 Pekanbaru

Based on Table 1 it is known that student learning outcomes are still below the KKM set by the school which is

80. The low value of students is inseparable by the teacher in managing the class for the success of the learning process.

The low student learning outcomes are also determined by students' initial knowledge, because initial knowledge is the foundation in forming a new learning concept. This is as stated by Shapiro (2004)^[4], that initial ability is influential in student learning outcomes, including high-level learning outcomes.

By paying attention to students' initial abilities, the teacher can determine the portion of the material for students in order to develop cognitive processes so that students can

improve their high-level thinking skills well. Students with high initial ability are more able to develop cognitive processes so that it is easier to work on high-level thinking problems compared to students with low initial ability. In connection with the above, the alternative problem solving that can be used is to implement a student-centered learning(*student centered*) where students are invited to more actively present or communicate their understanding in several steps or cycles through the learning model *Learning Cycle 7E*.

Learning model of *Learning Cycle 7E* is one of the learning models that provides opportunities for students to optimize learning and develop students' reasoning power. Model stages *Learning Cycle 7E* consist of *Elicit, Engage, Exploration, Explanation, Elaboration, Evaluation dan Extend*. This is consistent with research conducted by Netti (2012)^[5], and Indrawati (2014)^[6], shows that learning model *Learning Cycle 7e* can improve students competence and critical thinking skills towards understanding the concept of solubility.

2. MATERIALS AND METHODS

This study uses quasi experimental research methods. The research design used is *factorial design 2x2*. The experimental class was given treatment using a learning model Learning Cycle 7e, while the control class uses conventional learning. For more details, research design can be seen in Table 2 as follows.

Table 2. Factorial research design 2x2

		Low	
		Learning	High ability
		Model	(Y1)
Learning			ability
<i>Learning</i>		A1B1	A1B2
<i>Cycle7e (A1)</i>			
Control (A2)		A2B1	A2B2

Information:

A1B1 : learning competency in the Learning Cycle 7e learning groups of students who have high initial abilities

A2B2: learning competency in conventional learning for groups of students who have low initial ability model for groups of students who have high initial abilities

A2B1: learning competency in the Learning Cycle 7e learning model for groups of students who have low initial ability

A1B2: learning competency in conventional learning for

3. RESULT AND DISCUSSION

The data obtained in this study are in the form of competencies in student biology learning outcomes in the cognitive, affective and psychomotor domains. Data on learning outcomes in the realm of knowledge were

Table 3. Cognitive Domain Competencies Based on Differences in Early Experimental and Control Class Capabilities

Sample Class	high initial ability	N	\bar{X}	Xmax	Xmin	S	S2
experim En	High	15	84,33	92,5	80	4,35	18,9 2
	Low	15	72,17	77,5	65	3,38	11,4 2
Control	High	15	78	87,5	72,5	4,55	20,7 0
	Low	15	64,17	70	50	6,02	36,2 4

Table 4. Affective Domain Competencies Based on Differences in Early Experimental Class and Control Class Abilities

Sample class	High Initial Ability	N	\bar{X}	Xmax	Xmin
Experi Men	High	15	2,86	3,67	2,38
	Low	15	2,62	3,17	2,17
Control	High	15	2,4	2,67	2,13
	Low	15	2,21	2,54	1,46

Table 5. Psychomotor Domain Competency Based on Differences in Experimental Class and Control Class Early Capabilities

Sample Class	High Initial Ability	N	\bar{X}	Xmax	Xmin
Experi Men	High	15	2,28	2,88	1,69
	Low	15	2,02	2,58	1,47
Control	High	15	1,94	2,47	1,53
	Low	15	1,76	2,25	1,28

obtained through written tests at the end of learning. The realm of attitude and skills data obtained during the learning process takes place through the attitude and skills assessment format.

Table 6. Hypothesis Testing of Interaction Learning Model of Learning Cycle 7E with Initial Ability

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Model	337232.983 ^a	4	84308.246	3.811E-3	.000
Class	745.538	1	745.538	33.703	.000
Initial Ability	2489.704	1	2489.704	112.550	.000
class*					
Initial Ability	13.537	1	13.537	.612	.437
Error	1238.767	56	22.121		
Total	338471.750	60			
Conclusion	No interactions				

This study shows the results of the hypothesis analysis as follows:

1. In the cognitive domain of students' competencies, the Sig value <real level ($\alpha = 0.05$) means that the hypothesis is accepted.
2. In the affective domain competence students obtained Sig value <real level ($\alpha = 0.05$) means the hypothesis is accepted.
3. In the psychomotor domain competence students obtained Sig value <real level ($\alpha = 0.05$) means the hypothesis is accepted.
4. Interaction of A x B at the real level ($\alpha = 0.05$), obtained sig value of 0.437 thus it can be concluded that there is no interaction between the Learning Cycle 7e learning model and the students' initial ability to the cognitive competence of students.

The learning process is the process of developing overall attitudes through interaction and learning experiences. The involvement of students in the teaching and learning process is very important, so in the process of learning biology in class VIII of SMPN 13 Pekanbaru, research has been carried out using the Learning Cycle 7e learning model.

Learning Cycle 7e learning model to improve learning achievement because students are actively involved in the learning process both individually and in groups. Studying in groups makes students remember the lesson longer. The search process itself will make it easier for students to understand the lesson because students are required to be more active. In contrast to conventional classroom learning, here teachers tend to provide material without involving students, so students are less enthusiastic in the learning process. Characteristics of the 7E learning model are learning starts with problems related to the real world of learners, focuses on interdisciplinary linkages, conducts investigations where learners experience directly their learning process, demand students in the form of products or performance,

and work together in small groups so as to provide opportunities to motivate each other, share inquiry and dialogue to develop students' understanding of scientific concepts and attitudes. Through the 7E learning model, students are trained to be able to master concepts and apply these concepts in solving realistic problems.

Anava calculation results for hypothesis testing show there is no interaction between the learning model of Learning Cycle 7e with the students 'initial ability to student learning competence, meaning that student learning outcomes using the Learing Cycle 7e learning model can be improved without seeing the students' initial ability. Interaction is a relationship of dependence between a variable with other variables at a certain real level, this can be seen from changes in student learning outcomes. an interaction occurs when the effect of one factor influences

other factors in influencing something. This means that each factor (learning method and initial ability) is not interdependent and does not influence each other, which shows the two things (method and initial ability) have their respective positions on learning outcomes. shows both of these things (methods and initial abilities) have their respective positions on learning outcomes. There are times when a student's initial ability determines learning outcomes but on the other hand sometimes learning methods that affect.

There is no interaction between learning models and initial abilities on the motion system material in plants and pests, diseases in plants between students who have high initial ability and students who have low initial ability can be explained, that There is no interaction between learning models and initial abilities on the motion system material in plants and pests, diseases in plants between students who have high initial ability and students who have low initial ability can be explained, that information about the characteristics of students is very much needed as a foothold in choosing learning components such as; learning objectives, materials,

media, learning strategies and evaluation. Information about the initial abilities that students already have is needed by the teacher as a foothold in organizing and delivering subject matter.

When the teacher understands the subject matter. Therefore, in general teachers in providing learning tend to provide an understanding of the initial abilities that are prerequisites to learning before the main material will be studied. This condition is thought to be the cause of there is no interaction between the learning model and initial ability for students who have high initial ability and students who have low initial ability.

4.CONCLUSION

Based on the results of data analysis obtained during the study, it can be concluded that there is no interaction between Learning Cycle 7E Learning Model with Initial Ability

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- This is in line with the research of Budiningsih (2010) [7], explaining that there is no interaction between the use of Deep Dialogue / CT learning strategies and the initial ability of students' understanding of Learning Theory and Learning subject matter. Reaction Rate and research Nengsih (2015) [8], explained that there was no interaction of discussion methods with Mind Mapping media and the initial ability to student learning outcomes with $\text{sig} = 0.618$ with sig values greater than values $\alpha=0.005$ ($\text{sig.} > \alpha$)
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