

Influence of Role Playing Model and Entry Behaviour to Biology Competence of Class VIII Student of SMP Negeri 17 Kerinci

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Abstract - The results of observations in class VIII I of SMP Negeri 17 Kerinci showed that the learning process still emphasizes the aspects of knowledge so that the active role of students is not optimal. Another thing that cause learning is not optimal is the initial ability of diverse students and the likes of students playing in learning. One effort that can be done to overcome these problems is to conduct research by applying the Role Playing learning model that the learning model becomes the center of attention in the learning process. Students are directly involved in the role they play and develop their ability to solve problems faced. The purpose of this study was to determine the effect of the learning model Role Playing and the initial ability to learn biology learning competencies. This research is a study quasi-experimental; the population of this study is the eighth grade students of SMP Negeri 17 Kerinci in the academic year 2017/2018. Sampling was done using the purposive sampling technique and it was obtained class VIII c as the experimental class given model treatment Role Playing and initial ability and class VIII d as a control class treated with the model Direct Instruction. The instruments used were objective tests, observation sheets for attitude aspects and assessment sheets for aspects of skills. Data analysis in this study used the t-test for knowledge competencies, as well as the test Mann Whitney U for attitude and skill competencies. The results showed that the value of the science learning competencies of the experimental class students was better than the control class students.

Keywords - Influence, Role Playing, Early Ability, Learning Competence.

I. INTRODUCTION

Education is a human effort to humanize humans. As God's creatures, humans have the ability to speak language and mind, so they are able to develop themselves into cultured beings. Education is the process of influencing students to be able to adjust as well as possible with their environment, so as to cause changes in themselves that enable them to have a function in social life (Hamalik, 2011). Education must help the formation of critical individuals with a high level of creativity and skill (Rusman, 2014).

Education is obtained through the learning process. Learning is an attempt by a person to obtain a new change, as a result of his own experience in interaction with his

environment (Sutikno, 2009). The definition shows that the results of learning are characterized by "changes", namely changes that occur within a person after doing certain activities.

One of the subjects in Junior High School (SMP) is a biology subject that is incorporated into the subject of Natural Sciences (IPA). Science education is one aspect of science education that is expected to help students to meet the abilities needed in the 21st century. This capability is according to the Ministry of Education and Culture (2016: 1), namely learning and innovation skills and being able to solve problems, be creative and innovative, and be able to communicate and collaborate. Science learning includes Chemistry, Physics and Biology.

Biology as a science process includes the skill of observing, asking questions, classifying and interpreting data, and communicating findings orally or in writing, digging, and sorting out factual information that is relevant for testing ideas or solving everyday problems.

Based on observations and interviews conducted on science subject teachers in class VIII of SMP Negeri 17 Kerinci, it is known that the learning process still emphasizes aspects of knowledge and understanding of material. During this time the learning process that took place was still a *teacher center*; the teacher delivered more of the subject matter through lectures and gave training to work on the questions contained in the LKS. As a result, students become less trained in developing thinking skills and solving problems and applying concepts learned in school into the real world.

Through observations that have been made, it can also be seen that the active role of students in the learning process is still very lacking, only a few students who demonstrate activity in asking and answering questions. The questions and answers submitted are still limited to questions and answers at the level of knowledge.

The competency knowledge data of students obtained from the 17 Kerinci Public Middle School science teacher also shows that students' learning competencies in the knowledge aspect are still below the minimum completeness criteria that have been set, 175. Daily test scores can be seen in Table 1.

Table 1. Percentage of Completion of Learning Outcomes of Class VIII I Kerinci Public Middle School 2016/2017 Academic Year

No	Class	Students	Average Value UH
1	VIII a	22	68.70
2	VIII b	22	68.50
3	VIII c	22	67.75
4	VIII d	22	68.00

Source: 17 Kerinci State Middle School Science Teacher

The low learning outcomes of students are also determined by the students' initial knowledge, because initial knowledge is the foundation in forming a new learning concept. Knowledge can not be moved as a whole from the teacher's mind to students, but actively built by the students themselves.

The students' initial knowledge competency data obtained from the 17 Kerinci Public Middle School science teachers also showed that students' learning competencies in the knowledge aspect were still below the minimum completeness criteria can be seen in Table 2.

Table 2. The Average Value of Biology's initial ability Kerinci 2017/2018 Academic Year on Knowledge Aspects

No	Class	Number of Learners	ability scores
1	VIII a	22	60.75
2	VIII b	22	65,50
3	VIII c	22	63,75
4	VIII d	22	63,50

Source: Teacher of SMPN 17 Kerinci

Table 2 shows that the value of students' initial knowledge is low. Initial knowledge is knowledge that is owned by students before teaching and learning activities take place. The initial abilities of these students were obtained from the daily test scores of students in the previous material. In the teaching and learning process teachers are faced with students with different abilities, there are high and low ability students. The diversity of abilities of existing students will affect the mastery of the subject matter taught by the teacher in the classroom (Ennike, 2017: 180).

Based on the above problems, the author tries to apply the role playing learning model to the material of human excretion and respiration systems in class VIII of 17 Middle School in Kerinci, entitled "Model Effect Learning *Role Playing* and Early Capability of 17 Kerinci Public Middle School Student Competence ". *Model Role Playing* involves many students to engage in learning activities and will create an exciting atmosphere so that students are happy and enthusiastic in participating in learning. Thus the impression obtained by students about the subject matter being studied will be stronger, which in turn can improve the understanding and completeness of student learning.

Learning with models *role playing* presents real life situations of students so that students are not confused and can immediately understand and find out for themselves what is learned in everyday life. This learning model also involves students actively in the learning process. Students are given the freedom to think more in developing their reasoning in solving problems they face. The learning

model is *role playing* expected to be appropriate to be applied to the material of environmental pollution in everyday life so that students more easily understand the material. If it is associated with the characteristics of the material used, then the model *role playing* can be applied. The use of this model is expected to be able to make students actively involved in learning activities so that they can improve learning competencies. This is in line with the results of Liliani (2014) research that the application of models *role playing* can increase the activity, motivation and learning outcomes of students compared to using the direct Instruction model.

II. LITERATURE STUDY

1. Learning Model

According to Lufri (2007: 50) the model means a pattern (example, reference, variety, etc.). The model referred to in learning is also the same or almost the same as stated in the Large Dictionary of Indonesian Language. According to Suprihatiningrum (2013: 142-143) the learning model is a conceptual framework that describes the procedures for organizing learning experiences to achieve learning goals.

2. Role Playing Model

As argued by Sudjana (2001), "By playing this role, it is expected that students gain experience that is played by other parties". In this model students act as other parties in the real world so that they gain experience from their roles.

Models were *Role playing* chosen in this study because in this model students are the center of attention in the learning process. Students are directly involved in the role they play and develop their abilities in solving problems faced by the:

2. The teacher shows some students to learn the scenario before the implementation of teaching and learning activities	1. Students learn and discuss understanding the scenarios that have been ^{shared} by the teacher in accordance with the material discussed
3. The teacher forms a group of students, each with 5 members.	1. Students sit based on groups that have been formed by the teacher.
4. The teacher provides an explanation of the competencies to be achieved. The	1. students are asked to listen and listen to the teacher's explanations deliver the competency you want to be tired inside ongoing learning process.
5. Teachers call on students who have been appointed the scenario that has been prepared	1. Students present the roles that have been studied together with group members 2. Participants must be able to play / play roles in accordance with the roles that have been determined in accordance with the material learned
6. Each student is in his group while observing the scenario being demonstrated	1. Students observe the shortcomings of the group presentations in front of the class.

(Source: According to Miftahul Huda (2013),

3. Learners' Early Capabilities

The initial ability of students is the ability that has been possessed by students before attending the lessons to be given. This initial ability (*entry behavior*) describes the readiness of students in accepting lessons to be delivered by the teacher. According to Septiadi (2018) The initial ability of students is the ability that has been possessed by students before participating in the learning that will be given.

4. Student Competencies

In essence, competence is a change in behavior shown by students after learning. Changes in behavior can take the form of knowledge, attitudes and skills. Competence is the

Stage	Activation Teacher / Student The
1. teacher prepares the scenarios to be displayed	1. Share Scenarios with a human screening system, for example: students 1. Act as a nose. 2. Students pay attention to the teacher explaining the scenario that will be displayed.

ability obtained by students after going through learning activities (Sudjana, 2005: 112).

III. RESEARCH METHODS

The method used in this study was *quasi-experimental*. In the experimental class using the model *Role Playing* science and the control class using the learning model *Direct Instruction*. The study design used factorial design (*Factorial design*) 2×2 for knowledge domain competencies and for *Posttest Only Control Design* for domain competencies in attitudes and skills.

Data Analysis Techniques

A. Normality Test The normality

test used is the *Kolmogorov-Smirnov test*. The normality test aims to see whether the population is normally distributed or not. Data is normally distributed if the value obtained is greater than the real level $\alpha = 0.05$ with the statistical hypothesis as follows:

H_0 = data follows a normal distribution

H_1 = data does not follow normal distribution

The test criteria is accept H_0 if the Sig > level real ($\alpha = 0.05$) means normal distribution and if vice versa.

B. Homogeneity

Test The variance homogeneity test was carried out by test Levene's. The variance homogeneity test is conducted to determine whether the population has a homogeneous / no variance. variance homogeneity test carried out with the help of *software* SPSS17. The test criteria are received H_0 if the value of Sig. > real level ($\alpha = 0.05$) and rejected if the opposite.

C. Hypothesis

Test Hypothesis testing aims to determine whether there is an influence of the model *Role Playing* and the initial ability of students' learning competencies. The testing criteria are if the Sig. > 0.05 then H_0 is received and H_1 rejected, otherwise the Sig. < 0.05 then H_1 is accepted and H_0 is rejected.

D. The First, Second and Three Hypothesis Testing

The statistical test used for the second hypothesis is the t test because the data is normally distributed and has a homogeneous variance. The test criteria is when the price of $t_{hitung} \leq t_{table}$ then H_0 is received and H_1 rejected, otherwise if the price of $t_{hitung} > t_{table}$ then H_1 is accepted and H_0 rejected. With $dk = n_1 + n_2 - 2$.

E. Third and Fourth Hypothesis Testing

Statistical tests were carried out for the third and fourth hypothesis is the *Mann-Whitney U* test. In this research hypothesis testing conducted with *SPSS 17* Criteria for testing this hypothesis that if the significance value that is greater than 0.05 then H_0 is accepted, and if the significance value obtained is less than 0.05 then H_1 rejected.

IV. RESULTS AND DISCUSSION

A. Results

1. Description of Data Competency

Data on the competency domain of this study was obtained through the final test in the form of a written test in the form of multiple choice questions given to experimental class students and control classes held at the end of each Basic Competency meeting. The results of the realm of competency in knowledge can be seen that the average science learning competency of students in the experimental class is higher than the control class, namely 83.63 experimental class and 174.63 control class. The maximum and minimum values of the cognitive competency in the experimental class are higher than the control class.

2. Description of Domain Competency Attitude

Data Research data on attitude aspects is obtained through observations made by observers using observation sheets assessing the realm of student attitudes during the learning process. The results of the domain competency attitude can be seen that the total value of the average domain of students' attitudes filled by observers in the experimental class is higher than the control class.

3. Description of Data on Skills Competency

Data Research data on aspects of skills is obtained through the assessment of products made by students. The results of skills competency can be seen that the total value of the skills of students in the experimental class is higher than the control class.

4. Data Analysis Research

Test requirements analysis is done before proceeding to test the hypothesis, the first test conducted was a test for normality using the *Kolmogorov-Smirnov* test homogeneity variance using test *Levene's* with the help of *software* SPSS 17. If the data were normally distributed and homogeneous then test the hypothesis using the t test, if it is not normally distributed it will not be continued with the homogeneity

test of variance and hypothesis testing using the *Mann Whitney U test*.

a. Normality Test

Normality tests were conducted on the value of critical thinking skills and realm competencies in the knowledge of the experimental class and the control class. The normality test was carried out using the *Kolmogorov-Smirnov test* with the help of software SPSS. The test criteria is accept H_0 if the value of Sig. > real level ($\alpha = 0.05$).

From the calculation results show that critical thinking skills for the experimental class have a Sig. 0.200 while the control class has a Sig. 0.200 so that it can be concluded that the data is normally distributed. The knowledge competency value for the experimental class has a Sig. 0.118 while the control class has a Sig. 0.0617 so that it can be concluded that the data is normally distributed.

b. Homogeneity test

Test of homogeneity of variance test of the value of critical thinking skills as well as knowledge of learners' competence value experimental class and control class using test *Levene* with SPSS 17. The test criteria are received H_0 if the value of Sig > extent of paragraph ($\alpha = 0.05$) and rejected H_0 if the opposite.

From the calculation results show that the critical thinking skills of the experimental class and the control class have homogeneous variance with a significance value of 0.1798 while the knowledge competency value of the experimental class and control class also has a homogeneous variance with a significance value of 0.229.

c. The first Hypothesis

Hypothesis test is used to determine the realm of learning competencies of knowledge of students who follow the Role Playing learning model better than the realm of learning competencies of knowledge of students who take Direct Instruction learning, because data is normally distributed and has a homogeneous variance, the test used is a t-test. The results of the calculation of this hypothesis test can be seen in Table 3

Table 3. Results of First Hypothesis Calculation

Class	Sig	α	Conclusions
Experiment	0.002	0.05	accepted H_0 rejected
Control			

Results of calculation Table 3 shows that cognitive competencies of students have Sig. <0, 05 means that H_0 is rejected. This means that the value of knowledge competency in experimental class students has a significant difference with the control class. Thus it can be concluded that the learning competencies of students who follow the type of Role Playing learning model are better than the learning competencies of the knowledge of students who take Direct Instructions learning.

d. The Second Hypothesis

This hypothesis test is used to determine the realm learning competencies of knowledge of high-ability students who follow the Role Playing learning model better than the realm of learning competencies knowledge of high-ability early learners who follow Direct Instruction learning, because data is normally distributed and has variances that homogeneous, then the test used is the t-test. The results of the calculation of this hypothesis test can be seen in Table 4

Table 4. Results of Second Hypothesis

Class	Ability	Sig		Conclusion
Experiments	High	00	5	accepted H_0 rejected
Control				

Results of calculation Table 4 shows that cognitive competencies of students have Sig. <0.05 means that H_0 is rejected. This means that the value of knowledge competency in experimental class students has a significant difference with the control class. Thus it can be concluded that the learning competencies of knowledge of high-ability early students who follow the Role Playing learning model are better than the realm of learning competencies knowledge of high-ability early students who take Direct Instruction learning.

e. Third

Hypothesis This hypothesis test is used to determine the realm of learning competencies of knowledge of low-ability students who follow the Role Playing learning model better than the realm of learning competencies knowledge of low-ability early learners who follow Direct Instruction learning, because data is normally distributed and has variances homogeneous, then the test used is the t-test. The results of the calculation of this hypothesis test can be seen in Table 5.

Table 5. Third Hypothesis Calculation Results

Class	Ability	Sig		Conclusion
Experiments	Low	0.004	5	accepted H_0 is rejected
Control				

Results of calculation Table 5 shows that cognitive competencies of students have Sig. <0.05 means that H_0 is rejected. This means that the value of knowledge competency in experimental class students has a significant difference with the control class. Thus it can be concluded that the learning competencies of low-ability early learners who follow the Role Playing learning model are better than the realm of learning competencies of knowledge of students with low initial learning who take direct instruction learning.

f. The Fourth Hypothesis

Test this hypothesis is used to determine the realm learning competencies of students who follow the Role Playing learning model better than the realm of learning competencies in the attitude of the students who take Direct Instruction learning.

The domain of competency data attitudes have characteristics, namely the results of the calculation are not found fractions (nominal data), then directly analyzed using non-parametric statistics. The test used was the test *Mann Whitney U*. The results of the calculation of the hypothesis test can be seen in Table 6

Table 6. Results of the Study of the Fourth Hypothesis

Class	Sig.	α	Conclusion
Experiments	0,000	0.05	H_1 Accepted H_0 is rejected
Control			

Results of calculation Table 6 shows that Sig. <0.05 which is 0,000 obtained from the results of analysis using SPSS. Thus it can be concluded that the affective learning competencies of the students who follow the Role Playing learning model are better than the learning competencies of the students who take direct instruction learning.

g. The Fifth Hypothesis

The test of this hypothesis is used to find out the realm of learning competencies the skills of students who follow the Role Playing learning model are better than the learning

competencies of the skills of students participating in Direct Instruction learning.

The domain of competency data skills have characteristics, namely the results of the calculation are not found fractions (nominal data), then directly analyzed using non-parametric statistics. The test used was the test *Mann Whitney U*. The results of the calculation of this hypothesis test can be seen in Table 7.

Table 7. Results of the Results of the Fifth Hypothesis

Class	Sig.	α	Conclusion
Of Experiment	0.004	0.05	H_1 Received H_0 is rejected

Result calculation Table 17 shows that Sig. <0.05, which is 0.004 obtained from the analysis using SPSS. Thus it can be concluded that the learning competencies of the skills of students who follow the Role Playing learning model are better than the competencies in learning the skills of students who take Direct Instruction learning.

B. Discussion

1. Cognitive Competency

The results of the study show that the learning competencies of the knowledge of students can be increased by using the learning model of the problem based learning. Based on the description of the data presented previously, it appears that the average value of biology learning competencies of experimental students who follow the learning model of based learning problems as a whole is significantly better than the control class that follows the direct instruction learning model. The high acquisition value of the average learning competency of the experimental class students compared to the control class was caused by the treatment given to the experimental class, namely the learning model of the problem based learning.

Based on the data analysis, the experimental class students who were treated using the problem based learning model based on their better initial learning outcomes compared with the control class treated using the Direct Instruction model. This is because the Problem Based Learning model is a learning approach that presents contextual problems, thus attracting students' attention to learning in a class that applies problem-based learning. According to Uno and Mohammad (2012: 112) the Role Playing model is a learning model that guides students to work on authentic problems with the intention of

developing their own knowledge, developing inquiry and critical thinking skills, developing students' independence and confidence. According to Erda (2018) the problem model of based learning is a learning model that requires students to be active in the learning process. According to Yunanda (2018) the initial ability is the basic ability or ability possessed by students before participating in learning.

The learning process in the Role Playing model and initial abilities are assisted by Scenarios which is one form of independent training given, which can be used to attract the attention of students to be more critical and understand concepts. Scenarios are given in each group, according to the learning model used. Scenarios that are shared in each group contain problems and questions related to learning material. This makes it easier for students to conduct group discussions and collaboration with each group, and make them more active in learning.

Learning activities with the Role Playing model have five main steps that begin by introducing students to the problem and ending with the presentation of the work of students. The five steps are: students' orientation to the problem, organizing students to learn, guiding individual and group investigations, developing and presenting the work, and analyzing and evaluating the problem solving process.

In the orientation phase of the students on the problem, students are asked to understand the problems that have been provided on the problem discourse sheet. Activities carried out by students are to find the problems contained in the problem sheet. Then students solve problems together and dare to express opinions that are in accordance with their experiences so far through the explanations given by the teacher. Students dare to give a complete explanation for the wrong answers. Giving real problems will stimulate curiosity, desire to observe, and the desire to be involved in a problem will be even greater.

At the stage of guiding individual and group investigations at this stage can improve students' critical thinking skills, this is because at this stage the teacher invites students to discuss the most appropriate strategies to solve the problem given, then find information about the causes and consequences of the problem which exists.

After students find alternative solutions that are used to solve problems, students conduct investigations in groups to find the right solution to the problem. At this stage, students are also asked to draw conclusions from the

problem solving activities carried out. The next stage is that students are asked to develop and present their work. The teacher asks several groups to present the results of their assignments in front of the class, while the other groups are asked to respond.

Based on these steps, it appears that the involvement of students in the learning process is active in every learning process, collaborative, and student-centered. This shows that the Role Playing model can spur students to think in solving problems. This is in accordance with the opinion of Masek and Yamin (2011: 219) stating that the steps contained in the Role Playing model are able to support the development of students' thinking skills.

In the competency control class the knowledge aspect is lower than the experimental class because in the control class using the Problem Based learning model and initial abilities. This can be seen from the results of student tests, students find it difficult to solve problems because the teacher does not give homework, only asks students to read the material learned later in the school. But not all students have the willingness to read material, so student learning capital is low.

This results in students needing a long time in solving problems given by the teacher; students must flick through the book first, first read the material that is in accordance with the existing problems. Then understand the problem, and note if the problem has been found the answer, so that time is widely used in orientation to the problem and investigation of the problem, while the development and presentation of the work and evaluating the problem solving process is not achieved optimally.

The teacher overcomes the problem by giving students a time limit in orientation to the problem and investigation of the problem, but the time given is not enough to solve the problem given by the teacher. There are some groups who are finished in solving problems, some other groups are not finished in solving problems, so in the process of developing and presenting the work and evaluating the process of solving teacher problems more extra to direct students in the problem solving process. The results in not all students being active in discussions, only smart students dominate the learning process

In other words, the learning process in the two sample classes, namely the experimental class and the control class there are significant differences. The experimental class using the application of the problem based learning model has an average value of competency aspects of knowledge better than the average value of the

competency knowledge of the control class using the Problem Based learning model.

2. Attitude Competency

Assessment attitude is a supporter of the learning process used. Based on the observation of the realm of students' competency in the attitude of the observers, it was found that the real-world competency data of students' attitudes in the experimental class was significantly better than the competencies of students' attitudes in the control class. The realm of competency in the attitude of students in the experimental class as a whole has good criteria. Students' curiosity about the discussion material made students focus and active in the learning process, responses, and answer the problems that arise in the learning process. The high level of cooperation in discussions, because students are responsible for solving problems and answering questions that have been given.

In the learning process students solve problems given by the teacher in the form of SCENARIO so that when the orientation process of students on the problem is focused on the problem given, students confidently convey the problem solving encountered. Students sit quietly and carefully following the discussion. In discussing students also look responsible and earnest in solving problems, students socialize with each other well and enthusiastically contribute their opinions to complete SKENARIO in discussions. When discussions where the teacher guides group inquiry, the teacher only directs a little to solve the problem found, because students work together to convey the understanding that has been gained in the learning process. According to Anas (2018) cooperative learning requires students to cooperate optimally in accordance with the conditions of the group, whereas according to Imron (2018) cooperative learning encourages students to work together and learn in groups.

In the learning process, when students develop and present their work, students are more confident in conveying problem solving contained in SCENARIO and other students are listening. This shows the students' curiosity about the problems obtained in the learning process. Students are active in asking questions that are appropriate to the problem. When students don't understand about solving existing problems, other students add. Role Playing Learning can develop the ability to think in giving a more detailed and clear explanation according to the knowledge they have so that they can understand a meaning behind an event, especially in learning.

The above shows that the application of a Role Playing learning model can maximize the competency of students' attitude. This learning model provides a different atmosphere in the learning process, because each student has a responsibility so that it fosters confidence to ask questions or respond to friends' opinions.

Based on the explanation above, it can be concluded that the realm of learning competencies in the attitudes of students who follow the Role Playing learning model is significantly better than the learning competencies in the attitude of students who take direct instruction learning.

3. Skills Competency

Results of the assessment of the realm of competency in the skills of the students conducted, obtained by the competency data of the skills of the experimental class students were significantly better than the control class. Competency in the realm of skills of students in the experimental class as a whole gets good criteria.

The high acquisition of competency skills of students in the experimental class is a positive influence of learning that uses a model *Role Playing* where in problem solving activities, students are required to develop and present the work that demands the creativity of students. Not much different from the opinion expressed by Dewi and Jatiningsih (2015: 9317) that the model *Role Playing* has a special characteristic of producing products or works and exhibiting these products. When students have creativity, then the skills learning competency will increase because the assessment of students' competency skills is done through product assessment. In making products in the form of posters, students are required to have high creativity to produce creative products as well.

The learning process in both sample classes namely the experimental class and the control class have significant differences. The experimental class using the model *Role Playing* has an average skill competency higher than the average value of the control class skills competency using the direct instruction learning model. Savery and Dufy (2001: 59) explain that in environment *Role Playing*, students are actively involved in learning to construct knowledge and apply it to skills.

V. CONCLUSION

Based on the results of the research and the results of data analysis, it can be concluded that there is an influence of the model *Role Playing* and the initial ability to science learning competencies in the realm of knowledge, attitudes and skills.

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