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Implementation of Experiential Learning Learning Model Toward Students' Science Generic Skills

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Abstract

This study aims to determine the generic science skills of students before and after learning using the Experiential Learning learning model. The research method in this study used a pre-experiment in the form of One Group Pretest and Posttest Design. The research instrument used was using a generic science test, student response questionnaires and observation sheets using the purposive sampling technique. The data analysis technique used paired sample t test. Based on the results of the study, it was found that (1) the Experiential Learning Model had an influence in training students generic science skills as evidenced by the significance obtained, namely 0.000 <0.05, (2) The average learning implementation of the Experiential The learning model was 100% with a very good category,Based on the results of this study, it can be concluded that the Experiential learning model has an influence on students' generic science skills so that the learning process is important to implement in other materials.

Key words: Experiential Learning, science generic skills, science learning.

INTRODUCTION

The hands-on activities and experience in science learning is currently highly emphasized to develop students' abilities. Students' skills were also developed scientifically by exploring and understanding the natural environment, and utilizing and developing process skills and scientific attitudes (Permendikbud Number 22, 2006). Direct student participation in the learning process is needed to find information and apply the knowledge gained. So that students are required to be actively involved in learning process in order to be able to build knowledge and make that knowledge more meaningful and easier to remember.

Based on the results of interviews with science subject teachers at SMP Negeri 1 Sooko Mojokerto, it is obtained that related to the learning method used, learning process is still teacher-centered. Activities in learning are still dominant with writing and reading activities. Some teachers stated that this situation was done because of time constraints, the tools and targets for completing the material being taught had to be appropriate with time table. The teacher stated that they rarely used practical activities. Without doing practical activities, students' generic science skills will not develop and students' understanding of the material will be less than optimal (Mahmudatun,

2017). Learning process like this will have a negative impact on student achievement in science.

Based on the results of research and interviews with subject teachers then a learning model is needed that can increase student activity, associate material with experience and improve students' generic science skills. This is because students generally have audiovisual and kinesthetic learning styles so that most students prefer active and student-centered learning.

The right solution is that the teacher must provide an application of the concepts that have been put forward by several experts to involve students in the learning process and build a a fun learning process. The learning model of Experiential learning is a model that is suitable for use in learning. Kastawaningtyas, A., (2017) states that Experiential learning is learning that can activate students in the learning process from an experience and can create the knowledge they are looking for.

The learning model in which students learn directly on the problems or issues being studied is the experiential learning model. The experiential learning model consists of 4 stages, namely the direct experience stage (Concrete Experience), the reflecting observation stage (Reflective Observation), the abstract concept stage (Abstract Conceptualization) and the active experimentation stage (Active Experimentation) (Kolb, 2014). Based on this learning stage which will later bring up a main skill that must be possessed by students. Learning with this experiential learning model uses science activities, where in the learning process students are directly involved so that students' generic science skills can be developed.

Based on the 21st century, the main skills that students must have are critical thinking, problem solving, creativity and innovation, collaboration and communication (Redhana, 2019). These skills are related to students' generic science skills. Generic science skills can be accepted by students if students have basic skills including observing or measuring and other process skills(Augustine, 2016).

The material used in this research is vibration, wave and sound material. Vibration, wave and sound material in everyday life not only understands the concept but students can understand science learning by relating it to everyday life and develop generic science skills by using questionnaires and generic science skills tests.

METHODE

The type of research used is quantitative research using experimental research methods. The experimental design in this study was pre-experimental so that in this study only the experimental class was used without a control class and a comparison class (Sugiyono, 2015). The research was conducted at UPTD SMP Negeri 1 Sooko Mojokerto which is located in the village of Modongan, Sooko District, Mojokerto Regency. The class level used for research is seventh grade in the even semester of the 2021/2022 school year in May.

The population in this study were all class of seventh students of SMPN 1 Sooko

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Mojokerto for the 2021/2022 academic year which divided into 6 classes. The sample in this study was class VIII-E as the experimental class, which consisted of 31 students. Sampling technique was used with purposive sampling technique.

The design used in this study is the One Group Pretest and Posttest Design. This research was conducted before the experiment (Pretest) and after the experiment (Posttest) with one group of subjects (Sugiyono, 2015). This research began with giving pretest questions which were used to find out students' initial abilities regarding students' generic skills, then the teacher gave learning treatment by applying the experiential learning model and then continued with giving posttest questions which were used to find out the increase in students' science generic skills.

Research instruments that must be prepared before the research include preparing learning tools including syllabus, lesson plans, worksheets, and tests of students' science generic skills. Data collection techniques used include giving tests of generic science skills, observation sheets of learning implementation and student response questionnaires. The results of students' science generic skills tests are interpreted to determine the level of these skills in class VIII-E. The value of students' these skills obtained from the results of the pretest and posttest was analyzed to determine whether there was an influence of the experiential learning model on students' science generic skills. Analysis of students' skills using paired sample t test with the help of SPSS software version 25.

Student science generic skills test in the form of descriptions and objectives on scoring. Answers are assessed using a scoring rubric which has been made with 4 criteria for description questions and 2 criteria for objective questions with the highest score being 7 and the lowest score being 0. Science generic skills test data were measured using formula 1.

$$\text{Value} = \frac{score}{Maxscore} x100 \qquad .....(1)$$

The results of the analysis of students' generic skills test data are categorized according to table 1.

Table 1. Science Generic Skills Criteria

Score	Category
80≤x≤100	Very high
60≤x<80	High
40 ≤x<60	Moderate
20 ≤x<40	Low
0 ≤x<20	Very low

(Modification of Riduwan, 2013)

The learning implementation observation sheet is used to determine students' generic science skills during the learning process. The observation sheet of the implementation of learning uses a Gutman measurement scale. The respondent's answer is in the form of the highest score of 1 is given if one activity item is carried out and the lowest score is 0 if it does not carry out an activity item. The formula for observing the implementation of learning in formula 2.

$$R = \frac{s}{N} x100\% \qquad ....(2)$$

(Riduwan, 2016)

description:
R : Average score
S : Total score obtained
N : Total maximum score

The student response questionnaire contains student responses about the application of the model Experiential Learning on students' science generic skills. Questionnaire data measurement using a Likert scale. The student questionnaire given was then analyzed using formula 3.

$$RS = \frac{K}{N} x100\% \quad ....(3)$$

(Riduwan, 2016)

description:
RS : Presentations
K : Student respons score obtained
N : Maximum score

RESULTS AND DISCUSSION

Differences in Science Generic Skills of Students Before and After Learning

The results of students' science generic skills can be analyzed using pretest and posttest scores. The results of the pretest scores showed that the number of students in the low category was 3 students, 13 students were categorized as medium, 13 students were categorized as high and 3 students were categorized as low. While the results of the posttest showed that as many as 15 students were categorized as very high and as many as 16 students were categorized as high. Based on the results of the students' pretest and posttest scores, it was found that there was an increase in students' generic science skills. The pretest result was 59.39 and the posttest result was 82.26. This happens because the implementation of the learning model has been carried out on vibrations, waves and sound topic. According to research by Yahya & Fitriyanto (2016) stated that there is an increase in students' skills compared to conventional learning. Implementation of Experiential Learning model can help students to act as researchers where students find their own information that is used to solve a problem through scientific investigation as a form of hands-on learning experience.

Hypothesis testing is done by paired sample t test because the Posttest results are normally distributed. The results of hypothesis testing in this study obtained value of the significance of the t-test Equality of Means is 0.000 smaller than 0.05 this is in accordance with the criteria for testing the hypothesis if the significance value < 0.05 then H0 is rejected and H1 is accepted. The significance value in the hypothesis test is <0.05 so that H0 is rejected and H1 is accepted. So there are differences in students' science generic skills between after and before the implementation of the Experiential Learning model. This is in accordance with research conducted by Darmawan, Halim & Nur (2013) stated that using experience-based learning, namely through experimental activities, has a significant influence on science generic skills.

Based on the results of the pretest and posttest, the posttest percentage results were 82.2% higher than the pretest percentage of 63.8%, which was very high for the posttest and high for the pretest. This is also supported by the number of students in the acquisition of pretest and posttest scores in table 4.5 with a higher

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number of students, namely 15 students in the posttest while the pretest with 2 students is in the very high category. Based on the results of the pretest and posttest of generic science skills, analysis was carried out for each indicator to determine the percentage of each indicator before and after being given the learning treatment. In accordance with Yuniarita (2014) stated that the results of the percentage value of posttest which is higher than the pretest score, the posttest score for science generic skills was 58.81% while the pretest percentage results were 36.93%.

The Implementation of the Learning Model with the Experiential Learning Model for Science Generic Skills

The implementation of learning is carried out in each meeting as many as three meetings. The first meeting was held on Saturday 28 May 2022. The second meeting was held on Monday 30 May 2022. The third meeting was held on Thursday 2 June 2022.

The learning activities are divided into three parts, namely in the initial activities (opening), main activities and final activities (closing). The implementation of the Experiential Learning model can improve students' science generic skills. The increase in students' generic science skills is supported by 4 stages of Experiential Learning. The stages of Experiential Learning are Concrete Experience (CE), Reflective Observation (RO),(Kolb, 2014). Based on the observation of 4 stages of Experiential Learning obtained a percentage of 100% for all meetings which means that it has been implemented and categorized as very good. This is in accordance with the research by Fihriyah, Arif & Rahayu (2019) which states that the percentage of implementation of learning using the experiential learning model is 85% with a very good category.

The main activity in the Experiential Learning model is based on the opinion of Fathurrohman (2015), the first step is Concrete Experience (CE) where during learning students learn from experiences that students feeling. The second step is Reflective Observation, which is a step where students make observations as real experiences, namely when observing vibrations on a simple pendulum, waves on a rope and a simple telephone through experimentation. The third step is Abstract Conceptualization, which is a step where students think about what they get when doing practical (Istighfaroh, 2014), activities such as discussions and working on worksheets will appear at this stage. The last step is Active Experimentation (doing) where students are given the opportunity to dare to come forward.

Student Response to Learning

Questionnaires are a list of questions that are given to other people to provide responses according to user requests (Riduwan, 2016). Student response questionnaires are given after all meetings in learning are finished to determine student responses to the Experiential Learning model. The student response questionnaire contains 10 statements consisting of 5 positive statements and 5 negative statements. The student response

Table 2. Data of Student Response

Question	Percentage of Score (%)			
	Strongly Agree	**Agree**	**Disagree**	**Strongly Disagree**
1 (+)	68	32	0	0
2 (-)	0	13	13	74
3 (-)	3	6	29	61
4 (+)	55	45	0	0
5 (+)	58	39	3	0
6 (-)	3	13	39	45
7 (+)	65	32	3	0
8 (-)	6	3	19	71
9 (+)	45	48	6	0
10 (+)	42	52	6	0
Average of Positive Items	58	39	3	0
Average of Negative Items	11	17	21	50

questionnaire consists of 3 indicators, namely helpfulness, convenience and attractiveness. Student response questionnaires were prepared using a Likert scale with four alternative answers, namely Strongly Agree, Agree, Disagree and strongly Disagree.

The results of the student response questionnaire (Tabel 2) for each question item obtained an average percentage of positive questions by 58% of strongly agree, 39% of agree, 3% of disagree, 0% of strongly disagree while the average percentage of negative questions was 11 of strongly agree, 17% of agree, 21% of disagree, 50% of strongly disagree.

The results of student responses gave a positive response to the learning process using the Experiential Learning model on vibration, wave and sound material. This statement is in accordance with what was conveyed in Riduwan's research (2013) student responses to experience-based learning models in the subject matter of vibrations, waves and sound are included in the very good or very good category, this is because most students strongly agree with the application of experience-based learning models .

The results of the student response questionnaire analysis for each indicator in this study obtained an average percentage of the indicators of assistance, convenience and attractiveness of 88%, 84%, 89%. The average percentage of student response questionnaires for all indicators was 88%.

Based on the research that has been carried out, it can be concluded that the Experiential Learning model influences students' science generic skills so that the learning process using this model should be implemented in other materials so that students' science generic skills can be trained better.

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CONCLUSION

The conclusions of this study are: (1) The Experiential Learning model influences students' generic science skills as evidenced by the t test results according to the criteria with a significance value of 0.000 <0.005 so that H0 is rejected and H1 is accepted which means that there is a difference in the average results of generic skills science students using the Experiential Learning model and without using the Experiential Learning model (2) The results of the science generic skills on the posttest scores obtained an average score 82.26 in the high category while the pretest obtained an average score of 59.39 in the medium category so that it can be said to be science generic skills after the implementation of the Experiential Learning model is better than before treatment. (3)The use of the Experiential Learning model based on the observation sheet of the implementation of learning reaches 100% with very good criteria. (4) Student response to learning by using the Experiential Learning model for students' generic science skills results in an average percentage of student response questionnaires for each indicator of 88%. Suggestions for further research are that the teacher should prepare the tools and materials needed in the experiment to anticipate if the school does not provide experimental tools and materials.

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BRIEF PROFILES

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