Discovery Learning to Improve Student Learning Outcomes for Class X Waste Material at SMK Negeri 1 Jombang

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ABSTRACT
Education is very important for developing the potential of human resources (HR) through high-quality teaching activities by maximizing discovery learning models that can be used as a bridge to encourage changes in teaching and learning activities more effectively because this learning requires students to be able to construct their knowledge with their experiences so that students can build their knowledge through discovery in learning experiences by interacting directly with objects and phenomena that exist around their environment. This study aims to determine the increase in student learning outcomes on waste material by applying the discovery learning model for class X SMKN 1 Jombang. The research method used was quasi-experimental research or quasi-experimental research with data collection techniques in the form of test instruments (pretest and posttest) which were tested using a paired sample t-test (t-test) using SPSS. The results showed that the paired sample t-test statistical test (t-test) showed that the sig (2-tailed) value was 0.005, so it could be concluded that there was a significant difference between learning outcomes in the pretest and post-test data in class X students of SMKN 1 Jombang. In general, the average pretest score for class X students was 82.193 and the score increased by 14.167 with a posttest score of 96.36. A high post-test score for students could indicate that the learning process was going well.

Keywords: Discovery learning; Learning outcomes; Education

INTRODUCTION

Education is a conscious effort to develop the potential of human resources (HR) through teaching activities. These teaching activities are held at all levels of education, including 9 years of compulsory education, secondary education, and higher education. Educational reforms carried out to produce high-quality education should pay attention to how students can enjoy the material presented by the teacher. The role of a teacher is very significant in the teaching and learning process. The teacher's role in the teaching and learning process includes many things such as teacher, class manager, supervisor, motivator, consular, explorer, etc. Teachers must also have certain approaches, methods, models, and techniques that can create classroom conditions for active and creative learning so that a pleasant learning atmosphere will be obtained.

These learning models are created to maximize learning activities carried out between educators and students. This aims to ensure that the quality of education is expected to increase and make independent and creative people in the future (Sunarto & Amalia, 2022). The learning process should take place in an interactive, inspiring, fun, and challenging manner, motivate students to participate actively and provide sufficient space for initiative, creativity, and independence according to the student's talents and interests (Nurdyansyah, 2018). The learning process must involve many parties, which is balanced by technological developments to make it easier to achieve a certain atmosphere in the learning process so that students are comfortable with learning (Nurdyansyah & Andiek, 2015).

Based on the results of observations of teaching and learning activities for science subjects in class X of SMK Negeri 1 Jombang, it shows that their learning activities are still low, and students tend to be

passive. This can be observed from their lack of asking or answering and responding to questions asked by the teacher. This can be caused by a lack of student participation in the learning process, causing the learning outcomes they achieve to be less than optimal. Determining factors in improving student learning outcomes at school such as feedback, learning models, self-motivation, learning styles, interactions, and instructor facilitation as determinants of potential learning success (Yanuarti and Sobandi, 2019). One of the determinants of satisfactory student learning outcomes is the learning model that is applied and has been tested in the learning process. In the learning process, it is necessary to use an approach as a learning strategy so that learning can run effectively. A learning approach is a way or point of view towards education and learning problems in accordance with the cultural system in the applicable educational environment.

Discovery learning can be used as a bridge to encourage changes in teaching and learning activities to be more effective because this learning requires students to be able to construct their own knowledge with their experiences so that students can build their own knowledge through discoveries in learning experiences by interacting directly with objects and phenomena around their environment (Afdillah, 2018). Discovery Learning has the meaning of a learning process that does not provide the whole but involves students to organize, and develop their knowledge and skills to solve various kinds of problems (Ana, 2019). Not only is learning more active, but the Discovery Learning model indirectly makes students more creative and critical in thinking. Not to mention, this model is also able to make students more independent in finding conclusions or learning material. For several moments, classes that use the Discovery Learning model have experienced better learning outcomes compared to classes that use other learning models (Prilliza et al., 2020).

The learning model using the Discovery Learning method according to Rohim & Susanto (2012) is a learning method that requires students to be able to compile their knowledge through experiments and then gain a discovery in the form of new knowledge from their experience. Discovery learning is very suitable for science learning because, with the discovery method, students can interact directly with the environment around them so that students can easily understand the learning material and the knowledge gained from their experiences directly from nature will be easy to remember (Afdillah, 2018). The Discovery Learning learning model is a strategy in the learning process to encourage students to make observations and experiments so that conclusions can be obtained from experiments (Saifuddin, 2014). The syntax in the Discovery Learning learning model is: (1) Providing stimulation; (2) Problem identification; (3) Data collection; (4) Data processing; (5) Proof; (6) Concluding (Aprilianingrum and Wardani, 2021).

The Discovery Learning method creates an active learning process where the material or content is not provided directly by the teacher at the beginning of the lesson. During the learning process, students are asked to find their ways to solve problems (Tampubolon, 2017). It can be further explained that this learning model is how students understand concepts, meanings and relationships through an intuitive process to finally arrive at a conclusion (Khasinah, 2021). Based on the background above, it is necessary to carry out research with the title "Discovery Learning to Improve Learning Outcomes Class X Waste Material Students at SMK Negeri 1 Jombang."

METHOD

The research method used is quasi-experimental research or quasi-experimental research using observation techniques. The quasi-experimental method is considered appropriate to use in this research because it is carried out to collect factual information through the use of question instruments for the pretest and posttest. The data collection technique is in the form of a test instrument to measure students' abilities before and after the learning process. The research was conducted in January – February 2023 at SMK Negeri 1 Jombang. The subjects of this research were 35 students in class X AKL 1 and 36 students in class X AKL 2, X AKL 3, and X PKM 2 as many as 37 students majoring in Banking and Microfinance at SMK Negeri 1 Jombang. After students are given a pretest at the initial stage of learning, and the learning process in class uses the Discovery Learning learning model, students are given a posttest to measure the students' final abilities. Next, the pretest results and posttest results were tested using a paired sample t-test (t-test) using SPSS so that the results of the differences in student scores before and after the experiment were carried out.

RESULT AND DISCUSSION

The research was carried out in the Even Semester of the 2022/2023 academic year in Classes X AKL (Accounting and Institutional Finance) and The learning model used in the research is discovery learning.

Result

The average value of student learning outcomes can be seen in Table 1 below.

Table 1. Average Learning Outcome Scores for Class X Students of SMK Negeri 1 Jombang

Class	Average Learning Outcome Value		Range Increase in Value
	Pretest	Posttest	
X AKL 1	75,43	96,28	20,85
X AKL 2	80,83	95,36	14,53
X AKL 3	88,05	97,73	9,68
X AKL4	90,27	97,8	7,53
X PKM 1	71,02	95,88	24,86
X PKM 2	87,56	95,11	7,55
Rata-Rata	82,193	96,36	14,167

Based on Table 1 above, it can be seen that the average learning outcome scores for class X students all experienced an increase, where the largest increase was in class X PKM 1 with an increase value of 24.86 while the smallest increase in learning outcomes was in class X AKL 4, namely 7.53; However, overall all classes experienced an increase in learning outcomes. Based on the results of the paired sample t-test statistical test (t-test), it can be seen that the sig (2-tailed) value is 0.005, so it can be concluded that there is a significant difference between learning outcomes in the pretest and posttest data for class X students at SMK Negeri 1 Jombang. In general, the average pretest score for class X students was 82.193 and the score increased by 14.167 with a posttest score of 96.36.
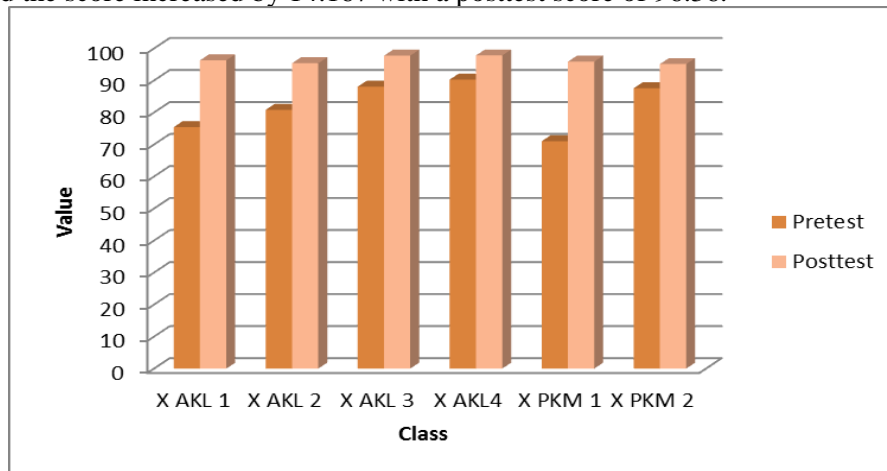

Figure 1. Average Value of Class X Student Learning Results at SMK Negeri 1 Jombang

From the graph, it can be seen that the learning process that has been implemented in all classes has achieved an increase in student learning outcomes in waste material science lessons. The posttest results achieved by students showed better improvement than the pretest results.

Discussion

The largest increase in value was in class X PKM 1, this is because using the discovery learning model can require students, especially class phenomena in the environment. The objects and phenomena observed by these students include various kinds of organic and inorganic waste that exist around the environment where they live so that in the application of discovery learning students become more active in reading and exploring information in the form of knowledge and looking for solutions to problems given by the teacher so that students have excellent memory and can improve student learning outcomes.

In general, all classes succeeded in improving their learning outcomes, which means that the use of the discovery learning model was effective in applying waste materials to science subjects at SMK Negeri 1 Jombang. The same results were also obtained by class VI students at UPT SDN 8 Kassikebo, Ma'rang District, Pangkep Regency, that the application of the Discovery Learning learning model can improve

student learning outcomes because it has exceeded the limit of 70% of students who meet the KKM, namely 70, apart from that, student activities are becoming more active, can carry out discussions well, exchange opinions or information well and there is directed interaction between teachers and students, and students and students (Rosdianah, Nurhaedah and Muh. Hamkah, 2022).

The average pretest score for class X students was 82.193 and the score increased by 14.167 with a posttest score of 96.36. High posttest scores for students can indicate that the learning process has gone well. Discovery learning is learning that must maximally involve students' abilities to explore and identify information so that they can discover knowledge on their own so learning activities do not only focus on the teacher but must also involve students (Fajri, 2019). In the discovery learning model, students are invited to discover for themselves what they are learning and then construct that knowledge by understanding its meaning. In this model, the teacher is only a facilitator.

The learning process that has been implemented in all classes has achieved an increase in student learning outcomes in waste material science lessons. The posttest results achieved by students showed better improvement than the pretest results. This increase in learning outcomes is achieved because the learning process applies the discovery learning learning model, students are guided to play an active role in learning are able to solve problems independently and are intelligent in thinking to interpret material concepts (Hutajulu, 2021). The results obtained are by research from Sasingan (2022) where there are significant differences in science learning outcomes between groups of students taught through the Discovery Learning model and groups of students taught through conventional learning. Thus, it can be concluded that the use of the Discovery model influences the science learning outcomes of class X students at SMK Negeri 1 Jombang. Discovery learning can also increase students' enthusiasm for learning, thus reducing students' boredom in receiving lessons. In learning, rewards need to be given to students who succeed as motivation for other students to improve the desired learning outcomes (Rutonga, 2017).

CONCLUSIONS

The application of the discovery learning model can improve student learning outcomes in-class study on pretest and posttest data on class X students of SMK Negeri 1 Jombang. High posttest scores for students can indicate that the learning process has gone well so that the use of the discovery learning model is effective for applying to science and waste materials subjects at SMK Negeri 1 Jombang.

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