Journal of Innovation in Research, Education and Culture (JIREC)
Vol. 2, No. 1, February 2024, pp. 09~13
ISSN: 2986-8793

THE EFFECT OF GUIDED DISCOVERY LEARNING MODEL BASED ON PERFORMANCE ASSESSMENT ON STUDENTS' SCIENCE PROCESS SKILLS IN SCIENCE SUBJECTS AT SMPN 11 BENGKULU SELATAN

Bimon Boyssorongan [1] , Sukarno [2] , Khosi'in [3]
[1,2,3] Science Study Program , Faculty of Tarbiyah and Tadris
[1,2,3] UIN Fatmawati Sukarno Bengkulu, Bengkulu, Indonesia

ABSTRACT

The academic problems that arise are: Is there a significant influence in the use of the Guided discovery learning model based on performance assessment on students' science process skills at SMPN 11 South Bengkulu. This research method is a quantitative method. Quantitative research is research that is based on the philosophy of positivism, used to research certain populations or samples, collecting data using research instruments, quantitative/statistical data analysis, with the aim of testing predetermined hypotheses. The research results are as follows: Based on the results of research conducted at SMP Negeri 11 South Bengkulu, the results of data analysis and discussion can be concluded that the experimental hypothesis is accepted. This means that "the guided discovery learning model based on performance assessment has an influence on the science process skills of students in class VIII of SMP Negeri 11 South Bengkulu. This is shown by the results obtained from the t test with the posttest tcount of 4,273 which is greater than the ttable of 2,021 with the conclusion Ho rejected so that H1 is accepted. 102 So the null hypothesis which states there is no (no) influence of the performance assessment-based guided discovery learning model on students' science process skills is rejected and thus the t-test results state that H1 is accepted, namely there is (is) an influence of the model guided discovery learning based on performance assessment of students' science process skills.

Keywords: Influence, Model, Guided, Discovery, Learning

Corresponding Author:
Bimon Boyssorongan [1] , Sukarno [2] , Khosi'in [3]
Science Study Program, Faculty of Tarbiyah and Tadris
UIN Fatmawati Sukarno Bengkulu, Bengkulu, Indonesia
Email: bimonmanna@gmail.com

1. INTRODUCTION

At the development level, there is a visible and precise process in the formation of a nation. Therefore, education is a mutually beneficial means for him to grow and become part of a good and united society, whether in terms of religion, technology, or both. To grow a better society, education must be able to identify important problems and produce quality human resources (HR) [1] . Education has an important role in producing citizens who are ready to face the future, capable, intellectual, creative, and able to contribute to progress. Therefore, schools must be flexible enough to adapt to new circumstances.

Innovation is always created to ensure the success of the educational process, making further learning the most important aspect of the process. Engaging in educational endeavors presents mental and physical obstacles. The ability to recognize and appreciate each student's unique skills is an important component of any effective teaching strategy [2] . Teachers often remind students that their emotions and intuition have a significant impact on how they understand and process information. Many students are reluctant to participate because they are required to learn by following rules that have been repeatedly set by their teachers. This is also beneficial for Islamic religious education, because many students are not ready to face the final exams.

Learning is different from teaching. What we mean by “teaching” is passing on knowledge (the language of instruction) to students. In this case students are seen as objects, not subjects. Students should only accept what their teacher gives them. On the other hand , when teachers make decisions, students are seen not as learning objects but as teaching subjects in the classroom. Teachers are

expected to be able to improve their students' learning experience in such a way that they can actively participate in developing their own concepts or interests. science is a methodology for investigating questions, not simply a body of knowledge. Developing scientific literacy is the main goal of science education. Scientifically literate students or adults can use their knowledge of basic scientific concepts to answer everyday questions and make reasoned judgments, both in their own lives and in the world at large.

Guided discovery learning is a teaching model that involves students in activities that develop their critical thinking skills, where students are guided to explain and explain themselves about a concept, so that students' understanding and critical thinking skills are not only based on facts but also on themselves. confidence . learn on my own. That is the use of a learning model.

Performance assessment is a set of strategies to improve students' understanding, competence, and motivation in the workplace through meaningful and rewarding work. Performance appraisals are based on what the trainee is capable of doing in terms of work, not on what they do. able to demonstrate. So, performance assessment is a teacher's attempt to measure student progress throughout the learning process by recording their actions and reactions. This research's performance assessment strategy to improve student learning outcomes includes conducting in-depth observations of student actions when the learning process begins using an observation sheet tool or performance assessment strategy. This presentation can be a motivation for students' learning process and serve as a guide for them in learning [3] .

Educators at SMP Negri 11 South Bengkulu have not created a learning model that is in line with students' science goals, so that the scientific processing abilities of class VIII students are below standard. In order for students to remain engaged and enthusiastic about learning, educators must be able to create a friendly classroom environment. Direct experiential learning (learning by doing) is the most appropriate paradigm for the education of Indonesian children today. Given the above, it is clear that there needs to be a change in the way we approach education if we want our students to not only absorb the information we teach, but also actively participate in their own learning and progress through the curriculum in school. fast pace .

2. METHOD

Types and Research Approaches

Quantitative research methodology used in this research. The positivism of quantitative research makes it a useful tool for studying populations or samples, collecting data using research instruments, and analyzing that data quantitatively or statistically to test hypotheses [4] .

This research methodology adopts a nonequivalent control group design as its approach. The research was conducted in two classes, namely the experimental class and the control class. The experimental section applies a learning model that focuses on evaluating work performance, while the control section uses traditional learning methods, including discussion and question and answer sessions, without applying special learning strategies [5] . In terms of methodology, this research uses a quasi-experimental design with a control group that did not undergo any experiments, as seen in the table below.

Table 1. ***Nonequivalent Control Group Design***

Group	Pre-test	Treatment	Post-test
Experiment	O_1	X	O_2
Control	O_3	-	O_4

Place and time of research

The research is scheduled to be carried out in 2023 according to the research project schedule that has been prepared to collect data.

Data analysis technique

1. Test Prerequisites

a . Normality test

The normality test can provide information whether the dependent variable (residual) has a normal distribution or not. The goal is to assess whether the final data set follows a normal distribution or not.

b . Homogeneity Test

You have run a normality test using the Shapiro-Wilk test in SPSS version 25 and assumed that the data from both samples have a normal distribution. Next, you perform homogeneity testing, which aims to determine whether the two groups belong to the same population or not **.**

c . Hypothesis testing

Class VIII of SMP Negeri 11 South Bengkulu carried out a control practicum using conventional methods and an experimental practicum using the Guided Discovery Learning Model based on Performance Assessment throughout the learning process. To test the hypothesis, the t-test is used. This research uses SPSS version 25 for hypothesis testing.

3. RESEARCH RESULTS AND DISCUSSION

a. Instrument Test Results

1. Validity Test

Learning material test traps, light penetrating transparent objects, and light refraction were used as evaluation tools in this research. Because these tools have been used to assess the validity of an instrument, the researcher decided to test them on respondents who were not part of the predetermined sample. Regarding this matter, the research was conducted by researchers with a total of 25 participants from class VIII A; The questions consist of 25 in total and have 4 possible answers. Questions 3, 12, 17, 21, and 25 were found to have poor validity based on the calculation results of 25 questions.

2. Different Power

In this study, the appendix describes the results of the similarity test. The samples that are considered observant with a similarity level of less than 0.20 are samples 3, 12, 17, 21, and 25. However, it should be noted that although sample number 3 is considered very observant, its similarity does not meet the threshold of less than 0.20 and therefore previously ineligible. Along with the test item criteria to be used for data analysis, it is important to ensure that the trial meets the appropriate criteria so that the results can be considered worthy of data analysis ..

3. Difficult Level

The validity of the assessment of the results of the teaching process is being re-evaluated. The results of the trial reliability analysis on samples 3, 9, and 12 ranged from 0.71 to 100, making the categorization process easier. The question is being given because the question has a degree of difficulty with 0.30 and 0.70.

4. Reliability Test

We applied Cronbach's alpha as a method to measure test reliability. The results show high reliability, because the calculated KR-20 value reaches 0.713. Therefore, it can be concluded that the items on the test are reliable and can be used as a tool in research.

Based on the summary results of the trial analysis, the validity, reliability and legitimacy of the data used as a research instrument are determined by the following: high level of confidence, good or very good data quality, and the existence of specified criteria. variable . The numbers 3, 12, 17, 21, and 25 do not fall into any category. After expansion, the soil samples can no longer be used, but the other soil samples (20 samples) can be used as research instruments.

5. Normality test

The normality test is used to determine whether the data collected by researchers is normally distributed data or not. This research uses the Liliefors method in Microsoft Excel copy software as a normality test. Agreement criteria were determined by comparing sig. Value (2-tailed) in the LIliefors test table with a significance level of 0.05 (5%). As a result, the data follows a normal distribution with a decision threshold Lhicount < Ltable. On the other hand, if the decision making coefficient (Lhiitung) is greater than the table value (Ltable), then the data distribution is not normal.

a. Homogeneity Test

The experimental variability was recorded as 91.60997732. After undergoing a variance control test with a result of 57,482.99, a homogeneity test formula involving the F test was used. Research analysis showed that the f-statistic was 2.124 at a significance level of 0.05, and the F-value was 1.593. This indicates that the critical value is smaller than the f table value, namely 1.593 < 2.124. Thus, it can be stated that a data variable is considered homogeneous based on this procedure.

b. Hypothesis Testing Results

In this research, after undergoing hypothesis testing, data analysis techniques are used which are also known as follow-up tests. One of the further tests carried out is the two sibling t test, which includes a t test to test the null hypothesis (H0). The purpose of this t test is to evaluate the statement that there is no influence of the work-based learning paradigm on student learning achievement.

Table 2. Hypothesis Test Results Posttest Data Results of Science Process Skills

Class	T count	T table	Conclusion
Posttest experiment And Control	4,273	2,021	H_0 rejected

Based on the table, the posttest calculated t value is 4.273, which exceeds the t table value of 2.021. This results in rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (H1.97). Therefore, it can be concluded that the null hypothesis which states there is no influence from the behavior-based learning model on student performance in the learning process is rejected.

b. Observation sheet results

1. Observation Sheet Results

The results of student observations in the experimental class used a problem-based learning model based on job analysis, while in the control class used an image-based learning model and the word "light" to explain the concept of light. The observation indicator in the experimental class reached a percentage of 82.14 % , while in the control class it reached 75.89%. In the indicator grouping, the experimental class reached a percentage of 78.96 % , while in the control class it reached 70.63%. The measuring indicators in the experimental class reached a percentage of 82.14 % , while in the control class it reached 70.23%. In predicting indicators, the experimental class reached a percentage of 75.59 % , while the control class reached 69.64%. In terms of indicators for carrying out simple experiments, the experimental class achieved a percentage of 79.76 % , while the control class did not get a percentage value because it did not involve experiments in the learning process. In the thinking indicator, the experimental group reached a percentage of 79.76 % , and the control group reached a percentage of 66.66%.

The students' work on the material "Light Can Be Refracted" shows that the experimental group obtained a percentage of 84.52%, while the control group obtained a percentage of 76.48%. The experimental group achieved a percentage of 78.96% on the cluster indicator, while the control group achieved 71.42%. In the experimental group, the growth indicator reached a percentage of 89.9 percent, while in the control group it reached 72.0 percent. Predictive indicators show that the experimental group reached 77.38%, while the control group reached 72.03%. The experimental group obtained a percentage of 81.15 percent, but the control group did not obtain this percentage because they did not include experiments in the learning process which is an indicator of continuous experimentation. On the one hand, the experimental group reached a percentage of 81.22%, while the control group reached 80.35%. The indicator results show that the experimental and control groups reached the same percentage, namely 72.61%

2. Results of post-test scores for the experimental class and control class

In this research the author used observation sheets and test questions from the final ability exam (posttest) to collect data on students' scientific processing abilities. The following are the results of the post-test carried out by students in the control group and experimental group.

Table 3. Recapitulation of Posttest Scores on Students' Science Process Skills

Category	Intervals	Amount		Percentage	
		A	B	A	B
Good	≥75.6	17	2	80.95 %	9.52%
Enough Good	≤75.6	4	18	19.05 %	85.71%
Not enough	≤59.5	-	1	-	4. 76 %

Table 3 shows that there are differences in the number of posts made in the experimental and control groups. As a result of using different post-test scores, the experimental learning group used a guided discovery learning model based on performance assessment, while the control group used a

drawing and drawing learning model. In the experimental group there were 17 participants (or around 80%) who were in the good category, while 2 participants (or around 9.52 %) were in the control group. Then, in the "very good" category there were four people in the experimental group (or around 19.05 %) and in the control group there were eighteen people (or around 85.71%). Then, there are students who are in the "short duration experiment" category. One person or around 47% is in that category and is at the control level.

4. CONCLUSION

Based on the results of research at SMP Negeri 11 South Bengkulu, data analysis and interpretation concluded that the experimental hypothesis was acceptable. In other words, "the guided discovery learning model based on performance assessment has an effect on students' science process skills in class VIII of SMP Negeri 11 South Bengkulu." This conclusion is based on a t value of 4.273, which exceeds the t table value of 2.021, and rejection of the null hypothesis (Ho), which results in acceptance of the alternative hypothesis (H1). Therefore, the null hypothesis which states that there is no influence of the guided discovery learning model based on performance assessment on student performance in the learning process is rejected, and the corresponding t test results state that H1 is accepted, indicating that there is an influence of the learning model on student performance in the learning process .

REFERENCE

[1] Trianto IIbnu IBadar Ial-Tabany, *Designing innovative, progressive, contextual and contextual learning models* , IPrenamedi. Jakarta, 2014.
[2] IUsman Isamatowa, *IIPA IDi Learning Elementary School* , IPT. IInde. Jakarta, 2016.
[3] IIbadullah IMalawi I& IAni IKadarwati, *IThematic Learning I (IConcepts and IApplications)* , ICV. IAE I. Magetan, 2017.
[4] Sugiono, *Quantitative, Qualitative and R&D Research Methods* , Alfabeta. Bandung, 2016.
[5] Trianto IIbnu IBadar IAl-Tabany, *designed an innovative, progressive and contextual learning model* , Kencana. Jakarta, 2014.
[6] Maisyarah, M., Afriyanti, D., & Manurung, A. A. (2021). Penerapan Model Pace Untuk Meningkatkan Hasil Belajar Matematika Siswa Pada Smp Nurul Hasanah. *Jurnal Penelitian, Pendidikan dan Pengajaran: JPPP*, *2*(1), 81-99.
[7] Manurung, A. A., & Gulo, F. F. (2021). Application of Problem Based Learning Model on Pythagorean Theorem Material to Improve Student Learning Outcomes for Class VIII SMP Negeri 2 Mandrehe. *Indonesian Journal of Education and Mathematical Science*, *2*(2), 92-102.
[8] Sari, S. P. (2016). *PENGARUH MODEL DISCOVERY LEARNING DAN KECERDASAN INTERPERSONAL TERHADAP HASIL BELAJAR IPA SISWA SD MUHAMMADIYAH 02 MEDAN* (Doctoral dissertation, UNIMED).