

Discovery Learning Model to Improve the Quality of Student Learning Post Covid 19 Pandemics

Rahmat Saputra⁽¹⁾, Fitria Budi Utami⁽²⁾, Delina Kasih⁽³⁾

^{1,2}Muhammadiyah A.R. Fachruddin University
Jl. KH Syekh Nawawi KM 4 No.13 Matagara, Tigaraksa Kabupaten Tangerang
Indonesia

³Panca Sakti University Bekasi
Jl. Raya Hankam No. 54 Jatirahayu, Pondok Melati, Bekasi, Indonesia

Email: ¹rasput000@gmail.com, ²fitriabudiutami.2005@gmail.com,
³delina.kasih@gmail.com

Tersedia Online di

<http://www.jurnal.unublitar.ac.id/index.php/briliant>

Sejarah Artikel

Received 8 December 2023
Revised 14 February 2024
Accepted 17 February 2024
Published 17 February 2024

Keywords:

Discovery Learning; Pandemic;
Quasi Experimental

Kata Kunci:

Discovery Learning;
Eksperimental Semu; Pandemi

Corresponding Author:

Name:
Rahmat Saputra
Email:
rasput000@gmail.com

Abstract: This study aims to analyze the post-pandemic learning process using the Discovery Learning method. The population of this study was all class A students of the Industrial Engineering study program in the fourth semester of Muhammadiyah University A.R. Fachruddin, numbering 26 people. Determination of the sample in this study is the saturated sample method so that the number of samples is the same as the number of populations, namely as many as 26 samples. This research is quasi-experimental. This research was conducted using an online discovery learning model. Based on the results of data analysis, it can be concluded that there are differences in quality between learning using the Discovery Learning method and without Discovery Learning. According to the results of the analysis, the Discovery Learning learning method is of higher quality than learning without using the Discovery Learning method.

Abstrak: Penelitian ini bertujuan untuk menganalisis proses pembelajaran pascapandemi dengan menggunakan metode Discovery Learning. Populasi penelitian ini adalah seluruh mahasiswa kelas A program studi Teknik Industri semester IV Universitas Muhammadiyah A.R. Fachruddin yang berjumlah 26 orang. Penentuan sampel dalam penelitian ini adalah metode sampel jenuh sehingga jumlah sampel sama dengan jumlah populasi yaitu sebanyak 26 sampel. Penelitian ini merupakan penelitian eksperimen semu. Penelitian ini dilakukan dengan menggunakan model pembelajaran penemuan online. Berdasarkan hasil analisis data dapat disimpulkan bahwa terdapat perbedaan kualitas antara pembelajaran yang menggunakan metode Discovery Learning dengan tanpa Discovery Learning. Berdasarkan hasil analisis, metode pembelajaran Discovery Learning lebih berkualitas dibandingkan pembelajaran tanpa menggunakan metode Discovery Learning.

INTRODUCTION

In March 2020, the Covid-19 virus spread in Indonesia. To date, the Covid-19 pandemic has had quite a serious impact in various fields, one of them is in education at various levels. Before the pandemic occurred, the learning process at various levels which was usually carried out directly and face to face switched to distance learning and utilized online learning applications

so that teaching and learning activities could run smoothly. Education itself has a very important role in life to improve the quality of human resources. However, because of these changes many problems have arisen, both material and non-material. According to (Syahreza et al., 2021) these two things influence the success of students in achieving learning goals. Among the non-material factors is motivation. In terms of language, the word motivation means an urge that arises in a person consciously or unconsciously to carry out an action with a certain goal.

Furthermore, according to (Siti Hasanah, 2023) learning outcomes are achievements obtained by students which include changes in knowledge, attitudes and values that students have after learning. To improve learning outcomes, students must be active, creative, critical and innovative, but in reality, in a learning process, there is still a monotonous and unpleasant learning atmosphere because the teacher only teaches in front of the class and assigns students worksheets, so students are less motivated in learning which causes learning outcomes to decrease.

This also happens at the upper education level, namely class A students of the fourth semester Industrial Engineering study program at Muhammadiyah University A.R. Fachruddin. A student himself is defined as an adult participant who is registered and undergoing his education at a tertiary institution, whether academic, polytechnic, high school, institute or university.

Student is a status held by a person because of his or her relationship with a university and is expected to become an intellectual candidate (Utami & Kasih, 2020). The transition to the learning process after the pandemic requires students to be more independent in carrying out the learning process. This is due to limited interaction because everything takes place online, network difficulties and limited media used in the learning process. So, the post-pandemic learning process needs to use a learning model that can improve the quality of the learning process.

The learning model that is appropriate to this condition to improve the quality of existing learning is to use the discovery learning model. According to Hamdani (2011) in (Ulfa & Oktaviana, 2021) the discovery learning model is learning that is designed systematically, so that students are able to acquire knowledge or concepts by discovering it themselves, through experimental activities or trials. Where in the application of discovery learning, students are given problems related to the concept of lecture material, then the lecturer gives students the opportunity to discover the concept of the material by the students themselves, and the lecturer acts as a guide.

The aim of this discovery learning model is to build independent understanding of concepts and foster an active attitude in learning. By discovering concepts independently, it means that students have the skills to analyze and solve a problem. Feelings of joy can also arise from being able to solve problems so as to discover a mathematical concept independently (Handita & Wahyu Prasetyo, 2022). Discovery learning is a series of learning activities that maximally involve all students' abilities to search and investigate systematically, critically and logically so that they can discover their own knowledge, attitudes and skills as a form of behavior change.

The difference between this research and previous research conducted by (Kristin, 2016), (Sunarsih, 2021), (Ridho & Setyawan, 2022) (Lawa, 2022) lies in the research sample which is students at the first level of education, namely Elementary School, Junior High School. and Senior High School, this research took research samples at the Upper Education Level. Furthermore, previous research focused on creativity, learning outcomes, critical thinking and also learning motivation, but this research focuses on the quality of learning itself. Learning Quality in (Tatta & Daulae, 2019) has the meaning of conformity to certain standards, suitability to certain needs, suitability to certain characteristics and conditions, harmony with the demands of the times, willingness when needed, exemplary in sharing conditions and having high competitiveness. Furthermore, according to (Dewi & Ert, 2023) the quality of learning can be a benchmark for the extent of success in achieving the learning objectives that have been set. Learning quality indicators can be assessed through several aspects, namely: Educator learning behavior, student behavior, learning climate, learning materials, learning media and methods, and learning systems.

METHODS

The experimental method used in this research leads to quasi-experimentation. According to Creswell (2015) in (Ningrum et al., 2022), quasi-experiment is an experimental design that is carried out without randomization, but involves assigning participants to group. This research was conducted after the pandemic incident using discovery learning. This research uses a pre-experimental one shot cas study design, which means that this research only focuses on implementing learning with a discovery learning approach after pandemic conditions to improve the quality of student learning.

The population of this study were all class-A students of the fourth semester Industrial Engineering study program at Muhammadiyah A.R University. Fachruddin, numbering approximately 26 people. The sampling method used in this research was a saturated sample method, so that the sample size was the same as the population, namely 26 samples. This research is quasi-experimental research. This research was conducted using an online discovery learning model. In general, it can be concluded that this research was carried out in stages: (1) Learning stage using discovery learning (2) Learning stage without using discovery learning, and (3) Analysis stage of research results. For learning that uses Discovery Learning it is symbolized by Class 1, while for learning that does not use Discovery Learning it is symbolized by Class 2.

Each stage is designed so that valid data is obtained according to the characteristics of the variables and research objectives. The data that will be collected in this research is data related to the quality of student learning taken using tests. The test is carried out by giving essay questions. The tests given are pretest questions and posttest questions. Data processing begins by testing the statistical requirements needed as a basis for hypothesis testing, including the homogeneity of variance test and the data normality test.

Next, the t-tests, regressions and correlations are carried out which are adjusted to the problem. All statistical calculations in this research use the SPSS 25 computer program.

Hypothesis: To test the quality of student learning

H₀ : $\mu x = \mu y$

H_a : $\mu x \neq \mu y$

information:

μx : The quality of student learning that taught using the Discovery Learning model

μy : The quality of student learning that is not taught using the Discovery Learning model (conventional)

To test this hypothesis, the t-test formula is used with the help of SPSS 25 with the testing criteria being to reject H₀ if the significance value is < 0.05 and accept H₀ for other conditions with a predetermined significance level.

RESULT AND DISCUSSION

The results of this research based on the results of analysis from the homogeneity test, normality test, and t-test. The following are the results of data processing:

Table 1. Test of Homogeneity of Variances Quality of Learning

	Based on Mean	Based on Median	Based on Median and with adjusted df	Based on trimmed mean
Levene Statistic	.089	.039	.039	.073
df1	1	1	1	1
df2	50	50	44.825	50
Sig.	.767	.844	.844	.788

The first test was Homogeneity of Variances Quality of Learning. In statistics, the homogeneity test is used to determine whether the observed variables come from populations that have the same variance or not. In the context of Indonesian use, "homogeneity" refers to uniformity or sameness. So, the homogeneity test aims to determine whether variables x and y

have the same level of uniformity or not in terms of variance. If the results of the homogeneity test show that the variances of variables x and y are significantly different, then it can be concluded that the two variables are not homogeneous, meaning that variables x and y have different levels of variability. On the other hand, if there is no significant difference in the variance of variables x and y, then it can be concluded that they are homogeneous in terms of their variability (Ningrum et al., 2021).

Based on the Test of Homogeneity of Variances table above, it can be seen that the significant value Based on Mean is $0.767 > 0.05$, due to homogeneity test decision making, it can be concluded that the variance of learning quality data in classes 1 and 2 is homogeneous. The significant value Based on Median is $0.844 > 0.05$, so as with homogeneity test decision making it can be concluded that the variance of learning quality data in classes 1 and 2 is homogeneous. The significant value Based on Median and with adjusted df is $0.844 > 0.05$, due to homogeneity test decision making it can be concluded that the variance of learning quality data in Classes 1 and 2 is homogeneous. The significant value Based on Trimmed Mean is $0.788 > 0.05$, due to homogeneity test decision making it can be concluded that the variance of learning quality data in classes 1 and 2 is homogeneous.

Table 2. One-Sample Kolmogorov-Smirnov Test

		Quality of learning
N		52
Normal Parameters ^{a,b}	Mean	78.38
	Std. Deviation	7.295
Most Extreme Differences	Absolute	.091
	Positive	.072
	Negative	-.091
Test Statistic		.091
Asymp. Sig. (2-tailed)		.200 ^{c,d}

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Based on the One-Sample Kolmogorov-Smirnov Test table 2, it can be seen that the significant value is $0.200 > 0.05$, so as with normality test decisions it can be concluded that the data is normally distributed.

Table 3. Group Statistics

	Class	N	Mean	Std. Deviation	Std. Error
Quality of learning	Discovery Learning	26	81.35	7.183	1.409
	Without Discovery Learning	26	75.42	6.224	1.221

Based on the Group Statistics table 3, it can be seen that the mean value of Discovery Learning is 81.35 which is greater than the mean value without Discovery Learning of 75.42, so it can be concluded that the quality of learning with Discovery Learning is higher than without Discovery Learning.

Table 4. Independent Samples Test
Levene's Test for Equality of Variances

		Levene's Test for Equality of Variances								
		t-test for Equality of Means							95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		
Quality of learning	Equal variances assumed	.089	.767	3.178	50	.003	5.923	1.864	2.179	9.667

	Equal variances not assumed			3.178	49.006	.003	5.923	1.864	2.177	9.669
--	--------------------------------------	--	--	-------	--------	------	-------	-------	-------	-------

Based on the Independent Samples Test table 4, it can be seen that the significance value is <0.05 , so it can be concluded that H_0 is rejected and H_a is accepted, so there is a significant (real) difference between the quality of learning with Discovery Learning and learning without Discovery Learning.

Thus, based on the results obtained from the calculations above, it reaffirms the opinion of (Nuraeni, 2022) that Discovery Learning is an approach that emphasizes the active role of students in constructing their own knowledge through direct experience, exploration and discovery. There were several steps in implementing discovery learning according to (Soleha & Annisa, 2021), start by providing a context or situation that is relevant to the learning material. This helps students see the relevance and application of what they will learn.

Next, encourage students to think critically and creatively by asking questions that encourage higher thinking. These questions can stimulate curiosity and the desire to explore more deeply the topic being studied. The next stage is to give students the freedom to explore the learning material through experimentation, observation and investigation. They can learn from mistakes and the process of self-discovery.

Next, do not forget to also ensure students have access to the resources needed to support their discovery process, such as reading materials, laboratory equipment, or access to technology. Lecturers must also encourage collaboration between students in solving problems or exploring complex concepts. Peer-to-peer discussions can help them broaden their viewpoints and understand concepts better.

Although the Discovery Learning approach emphasizes the active role of students, it is important to still provide support and guidance if needed. Lecturers can guide students through the discovery process without directing them directly. Facilitate students by reflecting. Reflective discussions can help them consolidate their understanding and identify areas for improvement. By applying the Discovery Learning approach, students can develop critical, creative and independent thinking skills that are important for success in learning and life in the future.

CONCLUSION

Based on the results of data analysis, it can be concluded that there is a difference in quality between learning using the Discovery Learning method and without Discovery Learning method. According to the analysis results, the Discovery Learning method has higher quality than without Discovery Learning method. Discovery learning has a positive impact on students which makes them more active, critical and creative. Students look for explanations of the material provided independently so that students can think broadly by investigating the problems given and linking them with the material obtained so that students' ability to think critically and skillfully can increase.

This research has a positive impact on students' reasoning abilities with discovery learning, however, as a lecturer, we should to develop students' reasoning abilities not only by stimulating understanding of the concepts and material presented but can also be pursued by students' skills in conveying what they know well. In the future research, it is hoped that there will be additional factors in students' ability to represent learning outcomes using a discovery learning approach. Both are good in delivery and can be developed into a joint project so that it will foster good collaboration skills between students which has a positive impact on students' learning abilities.

REFERENCES

- Dewi, H. S. C. P., & Erti. (2023). *Analisis Pengaruh Kualitas Pelayanan Dan Kualitas Pembelajaran Terhadap Kepuasan Mahasiswa*. 4(1), 261–270. <https://doi.org/10.36312/ej.v4i1.1322>
- Handita, Y., & Wahyu Prasetyo, P. (2022). Penerapan Model Discovery Learning Untuk Meningkatkan Keaktifan Belajar Siswa Saat Pandemi. *Jurnal Derivat*, 9(1).
- Kristin, F. (2016). *ANALISIS MODEL PEMBELAJARAN DISCOVERY LEARNING DALAM MENINGKATKAN HASIL BELAJAR SISWA SD*.
- Lawa, I. D. G. (2022). Optimalisasi Penerapan Model Discovery Learning untuk Meningkatkan Motivasi dan Hasil Belajar IPA Siswa SD Negeri 37 Cakranegara Pasca Pandemi Covid-19. *Jurnal Paedagogy*, 9(2), 282. <https://doi.org/10.33394/jp.v9i2.4912>
- Ningrum, D., Budi Utami, F., Yuminar, N., & Kasih, D. (2021). Pengaruh Mata Kuliah Kecerdasan Emosional Terhadap Self-Awareness dan Self-Regulation Mahasiswa Semester 1 Universitas Panca Sakti Bekasi. In *PERNIK Jurnal PAUD* (Issue 2).
- Ningrum, D., Supriyadi, & Utami, Fi. B. (2022). *THE EFFECTS OF STRENGTH-BASED PARENTING ON ADOLESCENT'S RESILIENCE AND SELF-ESTEEM IN FAMILIES USING TALENTS MAPPING*. <https://dlejpancasakti.ac.id/index.php/dlejpancasakti>
- Nuraeni. (2022). *PENINGKATAN HASIL BELAJAR SISWA SMA NEGERI 1 JATIBARANG MELALUI PEMBELAJARAN DISCOVERY LEARNING DENGAN LKPD PADA MATERI REDOKS DAN SEL ELEKTROKIMIA*. 2(4).
- Ridho, A. Moh. R., & Setyawan, F. (2022). Peningkatan Aktifitas dan Kemampuan Berpikir Kreatif Melalui Model Pembelajaran Discovery Learning Berbantuan E-Modul. *Action Research Literate*, 6(2), 99–117. <https://doi.org/10.46799/ar.v6i2.125>
- Siti Hasanah, L. (2023). *Model Pembelajaran Discovery Learning Dalam Meningkatkan MODEL PEMBEAJARAN DISCOVERY LEARNING DALAM MENINGKATKAN HASIL BELAJAR PESERTA DIDIK PASCA PANDEMI COVID-19* (Vol. 17, Issue 1).
- Soleha, D., & Annisa. (2021). UPAYA PENINGKATAN HASIL BELAJAR SISWA MELALUI METODE PEMBELAJARAN DISCOVERY LEARNING. *Indonesian Journal of Teacher Education*, 2(1), 218–225.
- Sunarsih, E. (2021). *OPTIMALISASI KETERAMPILAN BERPIKIR KRITIS DAN HASIL BELAJAR MELALUI IMPLEMENTASI MODEL DISCOVERY LEARNING*.
- Syahreza, A., Islam, S., Al, I. L., & Batam, H. (2021). MEMBANGUN MOTIVASI BELAJAR MELALUI PEMBELAJARAN AKTIF DAN PENGGUNAAN KOMIK BERBASIS DISCOVERY LEARNING. In *CENDEKIA : Jurnal Ilmu Pengetahuan* (Vol. 1, Issue 4).
- Tatta, O. :, & Daulae, H. (2019). LANGKAH-LANGKAH PENGEMBANGAN MEDIA PEMBELAJARAN MENUJU PENINGKATAN KUALITAS PEMBELAJARAN. In *Forum Paedagogik* (Vol. 11).
- Ulfa, M., & Oktaviana, E. (2021). Peningkatan Kemampuan Berliterasi melalui Model Discovery Learning Berbantuan Media Pohon Literasi. *Jurnal Basicedu*, 5(6), 5204–5212. <https://doi.org/10.31004/basicedu.v5i6.1549>
- Utami, F. B., & Kasih, D. (2020). PENGARUH PENERAPAN MODEL EXPERIENTIAL LEARNING PADA MATA KULIAH MATEMATIKA DAN SAINS TERHADAP KEAKTIFAN MAHASISWA PG PAUD UNIVERSITAS PANCA SAKTI BEKASI. *WISDOM: JURNAL PENDIDIKAN ANAK USIA DINI*, 1(2), 64–84.