Vol.2, No.5 (2024)
e-ISSN: 2963-7589
Economic and Business Journal | ECBIS
https://ecbis.net/index.php/go/index

The Effect of Implementing Project Based Learning on the Problem Solving Ability of Class X Students in Economics Learning at MAN

Rismayanti[1]*, Amiruddin Tawe[2], Romansyah Sahabuddin[3], Tuti Supatminingsih[4], Najamuddin[5], Sapto Haryoko[6]

[1-6)]Makassar State University

E-mail:[*)] rismayanti140898@gmail.com

Abstract

This study aims to, 1) analyze the differences in problem-solving skills between students who are given treatment in the form of applying the Project Based Learning model with students who are given a conventional model in Economic Learning at MAN Jeneponto, 2) to analyze the effect of applying Project Based Learning on the problem-solving skills of class X students in economic learning at MAN Jeneponto. The research method used is quasi-experiment with Nonequivalent (Pretest and Posttest) Control Group Design. Data collection methods are through tests (pretest and posttest), questionnaires, and documentation. The number of samples in this study were 76 students, where in the experimental class there were 38 students and in the control class 38 students. The data analysis used is the N-Gain of the experimental class and control class, as well as the experimental class Hypothesis test. The results of this study indicate that the N-Gain of the experimental class is in the high and effective category, while the control class is in the low and less effective category. This means that the application of Project Based Learning is effective on the problem solving skills of class solving ability of class X students in economic learning at MAN Jeneponto.

Keywords: *Project Based Learning, Problem Solving, Learning*

INTRODUCTION

In an educational unit, there are several components including educators, students, teaching and learning facilities, educational methods, educational tools, and educational environment, and educational evaluation, but there are components that play an important role in educational units, namely educators and students. Therefore, it is appropriate for educators and students to have a connection in order to establish a pleasant and effective teaching and learning process for both parties. In accordance with the educational objectives stated in the law on national education objectives, the expected improvement in students is not only about knowledge through academic grades, but also includes skills, talents, thinking abilities, and the process of solving a problem (Tholib & Rugaiyah, 2022).

In realizing the goals of education, the Independent Curriculum is implemented as one of the manifestations in improving students' abilities in terms of knowledge, attitudes and skills. MAN Jeneponto school has implemented the Independent Curriculum since 2023 until now. For the smooth running of the teaching and learning process using the independent

curriculum, one of the right models is Project Based Learning. According to Mujiburrahman et al. (2022), the independent curriculum is recommended to implement project-based learning (Project Based Learning) to support character development in accordance with the Pancasila Student Profile. Project Based Learning is a driver of students, teachers act as facilitators and then students will be active in discussing, determining, arranging/creating and reporting the results of their work. Project Based Learning is a learning with long-term activities that involve students in designing, creating, and displaying products to solve real-world problems.

This research will be conducted at MAN Jeneponto where the problem that occurs is the low problem-solving ability of students in economics subjects, especially in class X. Although the independent curriculum has been implemented, in the learning process there are still students who pay less attention to the learning explained by the teacher. The methods used in delivering lesson materials in the form of lecture methods vary, discussions are also often carried out, but students seem less interested in participating in discussions so that the grades obtained are less than optimal because the material is not conveyed properly to students. In the discussion process, only a few students are active in expressing opinions, asking questions, and so on.

Therefore, the researcher believes that it is necessary to apply a model that is in accordance with the Merdeka Curriculum, namely Project Based Learning in economics learning in class X, seen from how students' abilities are in solving existing problems by creating a product so that students are more active, critical and analytical in solving the problems given. In addition, so that students can apply it in everyday life, and be responsive to problems in their surroundings. The researcher will examine "The Effect of Implementing Project Based Learning on the Problem Solving Ability of Class X Students in Economics Learning at MAN Jeneponto".

Literature review

Learning Concept

The learning process provided by the teacher develops creative thinking that can improve students' thinking skills and is able to provide new knowledge in improving the subject matter provided. According to Sari (2012), learning is actually an activity carried out to create an atmosphere or provide services so that students learn. Learning is a process of gaining knowledge, experience, and skills in the form. Learning is a process of interaction between teachers and students and learning resources that occur in the classroom and changes in students' mindsets in gaining knowledge.

Project Based Learning Learning Model

According to Sani (2013), PjBL is a student motivator, the teacher acts as a facilitator and then the students will be active in discussing, determining, arranging/making and

reporting the results of their work. PjBL is a learning with long-term activities that involve students in designing, making, and displaying products to solve real-world problems. This PjBL learning method can attract students' interest and stimulate their thinking to acquire and apply new knowledge. Through the project approach, students can be involved in solving problems, formulating them as research questions, and conducting investigations into related phenomena. So that students will be more active and concentrated in the learning process (Inayah et al., 2022). Project Based Learning is a learning activity that directs students in planning, compiling, forming, and displaying the results of products that have been worked on according to the problems given so that students can be more active and focused in the ongoing learning process. Provide stimulus to students by making a product so that students do not feel bored and bored in the learning provided by the teacher.

Project Based Learning Steps

The steps of Project Based Learning that researchers will take in the learning process are as follows:

Project Based Learning Steps

Work steps	Teacher Activities	Student Activities
Basic Questions	The teacher delivers the topic and asks questions on how to solve the problem.	Asking basic questions about what students should do about the topic/problem solving
Designing Product Planning	The teacher ensures that each student in the group chooses and knows the procedure for making the project/product that will be produced.	Students discuss making a plan for creating a problem-solving project including dividing tasks, preparing the tools, materials, media and sources needed.
Creating a Production Schedule	Teachers and students make an agreement about the project schedule (stages and submission).	Students prepare a project completion schedule by paying attention to the time limit that has been determined together.
Monitor Project Activity and Progress	The teacher monitors the activeness of students during the project, monitors the	Students carry out project creation according to schedule, record each stage, discuss problems

Work steps	Teacher Activities	Student Activities
	realization of development and provides guidance if they experience difficulties.	that arise during project completion with the teacher.
Testing Project Results	Teachers discuss project prototypes, monitor student engagement, measure achievement of standards.	Discuss the feasibility of the project that has been created and create a product/work report to be presented to others.
Evaluation of Learning Experience	The teacher guides the project presentation process, responds to the results, then the teacher and students reflect/draw conclusions.	Each student presents a report, other students provide responses, and together with the teacher, conclude the project results.

RESEARCH METHOD

This type of research is a quasi-experimental study consisting of 2 research groups that will be given, namely the experimental class by providing treatment in the form of the Project Based Learning (PjBL) model and the control class that is not given treatment using the conventional learning model. The research will be conducted on January 4, 2024 to February 17, 2024, namely 6 meetings in class. The place of research to be carried out at the Jeneponto State Islamic High School located on Jl. Lanto Dg. Pasewang No. 351, Balang Village, Binamu District, Jeneponto Regency. This study uses a quasi-experimental design with the form of design used, namely Pretest-Posttest Control Group Design. The population in this study will focus on class X at MAN Jeneponto in the 2023/2024 academic year which has a low average ability. The students who have a low average ability are class X.5 and class X.6. The sampling technique in this study is the Non Probability Sampling technique (non-random sample).

The data collection techniques and instruments are observation, questionnaires, and documentation. For the research instrument test, namely validity and reliability. The data analysis technique uses the N-Gain Test and Hypothesis Test. Before conducting the hypothesis test, the hypothesis analysis requirements test is carried out, namely the normality test and the homogeneity test.

RESULTS AND DISCUSSION

Research result

Before the research was conducted at MAN Jeneponto, the researcher conducted initial observations at the school and met with the economics teacher of class X, Mrs. Rahmia. The researcher is a teacher at MAN Jeneponto and also often discusses student problems with other economics teachers including Mrs. Rahmia who teaches in class X. Mrs. Rahmia revealed the problems that occurred in her students in class X, especially in classes X.5 and X.6. Some students paid less attention to learning and were less able to solve the problems given. Both problems regarding economic theories or mathematical solutions to economics so that their learning outcomes in classes X.5 and X.6 were less than satisfactory and the average score was the lowest among class X.

At the first meeting in the experimental class and the control class, an initial questionnaire in the form of a pretest was given first. This aims to determine the initial abilities of students before being given material using Project Based Learning in the experimental class and Conventional in the control class. At the second meeting to the fourth meeting, the researcher continued the material at the beginning of the even semester, namely the Market Equilibrium material using the Project Based Learning model in the experimental class and the conventional model in the control class. After the experimental class was given treatment in the form of Project Based Learning, a posttest was conducted. Likewise with the control class which was not given treatment but with conventional learning. Both classes were given a posttest to determine whether or not there was an increase in the questionnaire results from the previous results, namely the pretest.

For the final product that will be made, namely an audiovisual where all groups will post or upload the results of their problem solving to the YouTube application so that many people can see the results of the experimental class students' problem solving. Meanwhile, after giving the pretest and posttest questionnaires, the results of the students' scores are used by researchers for their research analysis.

N-Gain Analysis in Experimental Class and Control Class

Gain is the difference between the posttest and pretest scores. N-Gain analysis aims to determine the extent of the increase in students' problem-solving abilities in the experimental class with the Project Based Learning method and the control class with the conventional method. This increase is obtained from the pretest and posttest scores obtained from students in the experimental and control classes.

N-Gain Analysis Results

	Kelas	Pretest	Posttest	Posttest - Pretest	Score Ideal (100-Pretest)	N-Gain Score	N-Gain Score (%)
Average value	Experimental Class	54.92	112.32	57.39	70.08	0.81	81.45
	Control Class	66.87	98.66	31.79	58.13	0.53	53.29

From the results above, the N-Gain value of the experimental class has an average of 0.81. While the percentage value of the N-Gain of the experimental class is 81.45. The data above shows that the average value of the N-Gain of students' problem-solving abilities in economics learning in the experimental class is in the high category. While the average value of N-Gain% in the experimental class is in the effective category.

Meanwhile, the results of the N-Gain value in the control class have an average of 0.53. While the percentage value of the N-Gain control class is 53.29. In the N-Gain category, the results of the control class calculation above show that the average N-Gain value of students' problem-solving abilities in economics learning in the control class is in the moderate category. While the average N-Gain% value of the control class is in the less effective category.

Hypothesis Analysis Requirements Testing

First, Normality Test, namely based on decision making, data is regularly distributed if the Kolmogorov-Smirnov results show a significant value above 0.05. Conversely, data is not normally distributed if the significant value is less than 0.05.

Normality Test Results

	Kolmogorov-Smirnova		
	Statistics	df	Sig.
Experiment Pretest	.128	38	.117
Pretest Control	.132	38	.190
Posttest Control	.166	38	.110
Posttest Experiment	.160	38	115

Based on the output above, the Sig. value of the experimental pretest is 0.117, the control pretest is 0.190, the control posttest is 0.110, and the experimental posttest is 0.115. All of these values are more than 0.05, so it can be concluded that the residual value contributes normally.

Second, the homogeneity test is a statistical test procedure that aims to show that the experimental class and the control class have the same variance. To test the homogeneity between the experimental class and the control class, the Homogeneity of Variance Test is carried out.

Homogeneity Test Results

		Levene Statistics	df1	df2	Sig.
Solution to problem	Based on Mean	2,647	1	74	.108
	Based on Median	2.411	1	74	.125
	Based on Median and with adjusted df	2.411	1	68,839	.125
	Based on trimmed mean	2,637	1	74	.109

Based on the output above, it is known that the significant value (Sig) based on mean is 0.108 > 0.05, so it can be concluded that the variance of the post-test data for the experimental class and the post-test data for the control class are the same or homogeneous.

Third, Hypothesis Testing, namely to determine the effect of the application of Project Based Learning on the problem-solving abilities of class X students in economics learning at MAN Jeneponto, the partial significance test technique (t-test) is used which is carried out with statistical testing as follows:

H0: There is no influence of the implementation of Project Based Learning on the problem-solving abilities of class X students in economics learning at MAN Jeneponto.
H1: There is an influence of the implementation of Project Based Learning on the problem-solving abilities of class X students in economics learning at MAN Jeneponto.

Hypothesis Testing (Independent t-test).

Paired Samples Test

	Paired Differences					t	F	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Before being given Treatment – After being given Treatment	-57,395	13,482	2.187	-61,826	-52,963	-26,243	7	.000

The output above shows the Sig. (2-tailed) value of 0.000 <0.05, so it can be concluded that there is a significant influence on the implementation of Project Based Learning on the problem-solving abilities of class X students in economics learning at MAN Jeneponto. So from these results, H0 is rejected and H1 is accepted.

DISCUSSION

Differences in Problem Solving Abilities between Students Who Implement Project Based Learning and Students Who Implement Conventional Learning in Economics at MAN Jeneponto

N-Gain analysis of problem-solving ability scores in economics learning of students X at MAN Jeneponto. The problem-solving ability in the experimental class was obtained 0.81, meaning that the problem-solving ability in the experimental class was in the high category so that it can be stated that the application of Project Based Learning can improve students' problem-solving abilities, while the problem-solving ability in the control class was at a value of 0.53, meaning that the problem-solving ability in the control class was in the medium category so that it can be stated that the application of the conventional model was less able to improve students' problem solving. Furthermore, seen from the average value of the N-Gain score % of problem-solving ability in economics learning of students in the experimental class, which was 81.45, it was categorized as effective, meaning that Project Based Learning was an effective learning model in improving students' problem-solving abilities in economics learning. While in the control class, it was at a value of 53.29, it was categorized as less effective, meaning that the conventional model was less effective in improving students' problem-solving abilities in economics learning. In the research of Pratiwi et al. (2018), it was shown that there was a significant difference between the control class and the experimental class in improving problem-solving skills, where students in the

experimental class improved their problem solving skills more than students in the control class.

Based on the results of the analysis above, students in the experimental class and control class have different problem-solving abilities in economics learning. The average posttest score for problem-solving abilities in economics learning of students in the experimental class is greater than that of the control class. The average N-Gain score for problem-solving abilities in economics learning of students in the experimental class is in the high and effective category. This is also in line with the research of Pratiwi et al. (2023), stating that the PjBL model has a positive and effective effect on improving cognitive abilities, learning outcomes and achievements, effectively improving high-level, critical and creative thinking skills, and increasing self-confidence, learning motivation and student activity at the high school level in the independent curriculum. While the average N-Gain score is moderate for problem-solving abilities in economics learning of students in the control class. This study is also supported by Karina et al. (2014), stating that problem-solving abilities cannot be taught through lecture methods because problem solving and emotional intelligence are active processes. One of the learning models that is relevant to the development of students' problem-solving abilities and emotional intelligence is the project-based learning (PjBL) model.

4.2.2. The Effect of Implementing Project Based Learning on the Problem Solving Ability of Class X Students in Economics Learning at MAN Jeneponto

The results of the study show that the Sig. (2-tailed) value is 0.000 <0.05 (Ho is rejected and Ha is accepted), these results mean that there is a close relationship between Project Based Learning and problem solving so that it can be stated that there is a significant influence on the application of Project Based Learning on the problem-solving abilities of class X students in economics learning at MAN Jeneponto. In line with the research of Solong et al. (2022) that project-based learning has a positive impact on students' problem-solving abilities. One of the students' thinking abilities is problem-solving abilities.

Teachers need to start learning by examining problems with the aim of integrating students' prior knowledge. In the application of Project Based Learning, students can explore the problems given. In the research of Wilujeng et al. (2022), it was stated that in addition to focusing on learning, students can convey reasons according to relevant information/evidence in students' opinions, draw conclusions about information correctly and can analyze several pieces of information related to a problem.

Therefore, the implementation of Project Based Learning is one of the solutions in solving student problems. Students are required to be more active in finding and finding the

problems given. In line with Nurfitriyanti's research (2016) that students actively follow all series of learning process activities actively and enthusiastically both in groups and individually and students become more courageous in interacting with teachers and their friends. In the research of Solong et al. (2022), learning that raises contextual problems can improve students' abilities in problem-solving activities. Project based learning applied to the learning environment can provide meaningful experiences and improve problem solving abilities (Makrufi, et al., 2018). Project-based learning by raising a contextual problem has been proven to be able to train students to, (1) Identify problems, (2) Formulate problems, (3) Analyze problems, (4) Make conclusions, and (5) Create problem-solving solutions.

CONCLUSION

The results of the pretest and posttest questionnaires on problem-solving ability showed that in the experimental class given treatment in the form of Project Based Learning implementation, the N-Gain score results were in the high category and the N-Gain percent results were in the effective category. Meanwhile, for problem-solving ability in the control class that was not given treatment, the N-Gain score results were in the moderate category and the N-Gain percent results were in the less effective category. The results above show that there is a difference in problem-solving ability between the experimental class given treatment in the form of Project Based Learning and the control class given conventional learning.

The implementation of Project Based Learning has an effect on the problem-solving ability of class X students in economics learning at MAN Jeneponto. This means that there is a close relationship between the implementation of Project Based Learning and the problem-solving ability of class X students in economics learning at MAN Jeneponto. So it can be stated that Project Based Learning can be applied by teachers in schools as a learning model that is able to provide problem solving to its students and become an effective learning model used in solving problems.

REFERENCES

Anggraini & Wulandari (2021). Analysis of the Use of Project Based Learning Models in Increasing Student Activeness. Journal of Office Administration Education. Vol. 9, No. 2.

Anita, Y. et al. (2021). STEM-Based Digital Pocket Book: Development of Learning Media for Problem Solving Skills. Journal of Mathematics Education. Vol. 10, No.3

Cahyani, H., & Setyawati, RW (2016). The Importance of Improving Problem Solving Skills through PBL to Prepare a Superior Generation to Face the MEA. PRISMA, Proceedings of the National Mathematics Seminar. 151–160.

Fitri, A. (2016). Implementation of Project Based Learning Model with Portfolio Assessment in Mathematics Economics Course. Scientific Journal of Mathematics Education. Vol. 4, No. 2

Ilahiyyah, I. et al. (2022). Implementation of Project-based Learning to Improve Entrepreneurial Mindset and Entrepreneurial Skills in SMK Nurul Islam Students. Jurnal Maksipreneur. Vol. 11, No. 2

Jakni. (2016). Experimental Research Methodology in the Field of Education. Bandung: Alfabeta

Lesnowati, I & Hafifi. (2021). Application of Project Based Learning Model to Increase Motivation to Learn Economics in Grade X SMK Students. Jurnal Inovasi Pendidikan MH Thamrin. Vol.5, No. 1

Mujiburrahman. et al. (2022). Implementation of the Project Based Learning Model in the Era of the Independent Curriculum. Journal of Community Service. Vol. 2, No. 2.

Palennari, M. (2017). The Effect of Integration of Problem Based Learning and Cooperative Jigsaw Learning on Critical Thinking Skills. Journal of Educational Sciences, 22(1), 36–45.

Rahmatullah, R., & Inanna, I. (2019). Classroom Action Research Writing Training for Teachers. Journal of Community Dedication, 3(1), 19–25.

Rismayanti. (2020). The Effect of Implementing the Problem Based Learning Model on Problem Solving Ability in Economics Learning for Class XI Students with Cross-Interests at SMA Negeri 16 Makassar. Thesis. Makassar State University: Makassar.

Ruhyadi, S. et al. (2022). Implementation of the Project Based Learning (Pjbl) Model in the Implementation of the Independent Learning Curriculum in the Upper Elementary School Classes. Journal of Islam, Society, and Education. Vol. 7, No. 1

Rusman. (2015). Integrated Thematic Learning: Theory, Practice, and Assessment. Jakarta: Raja Grafindo Persada

Sakarinto, W. (2022). Independent Curriculum and Project Based Learning. https://www.kompas.id/baca/artikel-opini/2022/03/25/kurikulum-merdeka-dan-project-based-learning. Accessed on November 15, 2023, at 01.02

Sani R A. (2013). Scientific Learning for Curriculum Implementation. Jakarta: Bumi Aksara

Satwika, YW, Laksmiwati, H., & Khoirunnisa, RN (2018). Application of Problem Based Learning Model to Improve Students' Critical Thinking Skills. Journal of Education (Theory and Practice), 3(1), 7.

Sari, YI, & Putra, DF (2015). The Influence of the Treffinger Learning Model on the Critical and Creative Thinking Skills of Students at Kanjuruhan University, Malang. Journal of Geography Education, 20(2), 30–38.

Siswono, T., & Novitasari, W. (2007). Improving Students' Creative Thinking Skills Through "What's Another Way" Type Problem Solving. Transformation Journal, 1–13.

Sugiyono. (2012). Educational Research Methods, Quantitative, Qualitative and R & D Approaches. Alfabeta: Bandung

Sururi, M. et al. (2022). Analysis of Problem Solving Skills of Grade XI Students with Contextual Learning Model at MA Sarji Ar-Rasyid Situbondo. Sustainable Journal. Vol. 5, No. 2

Tholib, U. A & Rugaiyah. (2022). Application of Project Based Learning Model to Students' Problem Solving Skills. Scientific Journal of Wahana Pendidikan. Vol. 8, No. 23

Titu, MA (2015). Implementation of Project Based Learning (PjBL) Learning Model to Improve Student Creativity in Economic Problem Concept Material. Proceedings of the National Seminar. Surabaya State University

Winayah, S. (2023). The Influence of Project Based Learning (PjBL) Learning Model on Students' Problem Solving Ability in Science Subjects of Grade 5 MI Mazro'atul Huda Bonang Demak. Thesis. State Islamic Institute of Kudus: Kudus

Yusri, AY (2018). The Influence of Problem Based Learning Model on Mathematics Problem Solving Ability of Grade VII Students at Pangkajene State Middle School. Mosharafa: Journal of Mathematics Education, 7(1), 51–62.