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Effectiveness of Project-Based Learning in Improving Student Communication Skills

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ABSTRACT

Purpose–Cultivating strong communication abilities is essential for navigating the challenges of today's workplace. These skills enhance academic performance and serve as a fundamental asset in meeting the demands of an ever-evolving and competitive job market. This study aims to evaluate the effectiveness of Project-Based Learning in enhancing the communication skills of communication science students.

Methodology–The method used in this study was pre-experimental with a one-group pre-test and post-test design. The research subjects comprised 73 students from the Communication Studies Program, Muhammadiyah University of Bengkulu. Data was collected using pre-tests and post-tests to determine students' communication skills before and after being given learning treatment with the Project-Based Learning (PjBL) approach. The data analysis technique was carried out using a variable normality test and a hypothesis test to see the difference in the pre-test and post-test scores of communication skills, with a significance of 0.05.

Findings–The research conclusion is that there is a significant difference between the results of the student pre-test and the post-test of student communication skills with a paired samples test (t) value of 12.848 with a p-value of 0.000. There is a difference between communication skills (pre-test) and communication skills (post-test). Statistical analysis shows that the variables in this study are typically distributed. The hypothesis test results show a t-value of 12.848, which is greater than the t-table of 1.666.

Significance –The application of PjBL significantly contributes positively and effectively to improving students' communication skills. Therefore, educators should emphasize the Project-Based Learning (PjBL) approach in learning, which has been proven effective in improving students' communication skills.

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INTRODUCTION

The ability to communicate is an essential skill for every individual, especially for students studying in the field of communication. This skill plays a significant role in personal development and professional success (de Sousa Mata et al., 2021; Douglas et al., 2021). Gnecco et al. (2024) argue that these communication skills not only support academic activities but also become the main provision in facing the demands of an increasingly competitive world of work. Another opinion says that building good communication skills is crucial to facing challenges in today's work environment and ensuring efficient collaboration in various fields (Symonds et al., 2023).

Communication skills are often considered a key competency that communication science students must have. However, many of the Communication Science Study Programme students at the Faculty of Social and Political Sciences, Universitas Muhammadiyah Bengkulu, still have difficulty applying them in real situations. Saxena (2022) and Baugh et al. (2020) in their research corroborate this opinion that although educational institutions recognize the importance of communication proficiency, there is still a gap in practical application among students, struggling to apply these skills effectively in real-world situations. Classroom learning in the Communication Studies program at the Faculty of Social and Political Sciences, Universitas Muhammadiyah Bengkulu, focuses on cognitive mastery. At the same time, opportunities to practice communication skills directly are often limited. This is the opinion of (Hammond & Barber, 2024), who said that classroom learning often emphasizes theoretical mastery, which can limit opportunities for students to practice important communication skills. This creates a gap between what students learn and what is needed professionally. Students lack the experience to overcome communication challenges outside the academic space.

In the Communication Sciences Study Programme of the Faculty of Social Sciences and Political Sciences at Muhammadiyah University, Bengkulu, traditional teaching methods largely prevail, focusing primarily on content mastery. This conventional approach limits students' opportunities for active participation in practical learning experiences. As a result, students often miss out on meaningful interactions, whether with their peers or in real-world contexts. Consequently, their potential to develop essential communication skills—especially in areas that require teamwork and problem-solving—remains underutilized. As noted by (Bjelobaba et al., 2023), recent studies advocate for a transition towards more interactive and student-centered learning environments that can enrich collaboration and individual learning experiences. Supporting this view, Allen et al. (2023) and Perkins et al. (2023) emphasize the necessity for educational reform that prioritizes interactive learning to maximize students' communication and problem-solving abilities.

This study aims to discuss the central question of whether Project-Based Learning (PjBL) effectively enhances the communication skills of Communication Science students at the Faculty of Social and Political Sciences, Universitas Muhammadiyah Bengkulu. Additionally, it aims to explore PjBL's impact on these students' communication abilities. This study aims to assess how effective PjBL is in improving communication skills, so students can hone their abilities to succeed in academic and professional environments.

One highly effective learning method for developing practical skills is Project-Based Learning (PjBL). This educational approach focuses on students engaging with real projects that provide hands-on experience, promoting active, student-centered learning (Fowler et al., 2024). By emphasizing project completion, PjBL deepens student engagement and cultivates essential practical skills (Jordens et al., 2022). Additionally, PjBL fosters critical thinking, collaboration, and problem-solving abilities, equipping students to tackle professional challenges and enriching their educational journey (Guo et al., 2020). The student-centered nature of Project-Based Learning allows individuals to explore ideas and resolve issues independently or in groups (Pazildzhanova, 2024b; Zhao, 2024). Moreover, PjBL encourages active engagement and experiential learning, allowing students to apply theoretical concepts in a real-world context (López-Pimentel et al., 2021). It encourages cooperative learning, creativity, and an inquisitive mindset, ultimately enhancing skills such as teamwork, creativity, and problem-solving (Abdul Ghani et al., 2022); (Guizado et al., 2024); (Pazildzhanova, 2024a).

Implementing Project-Based Learning (PjBL) is widely recognized as an effective communication skill enhancement. Numerous studies have demonstrated that PjBL can significantly bolster students' abilities in this area. For instance, research conducted by Chung et al. (2022) revealed that a blended learning program for nursing students resulted in participants who engaged in PjBL exhibiting higher levels of communication competency. Similarly, Nair and Md Yunus (2022) found that PjBL effectively enhanced speaking skills, fostering greater engagement and confidence in communication among students. Additionally, studies by Oktaviani (2022) and Maridi et al. (2019) indicated that the Project-Based Learning model not only improves students' communication capabilities but also enhances their collaboration and oral and written communication skills. Furthermore, Cholily et al. (2024) reported that PjBL significantly enhances communication skills across various subjects.

Although much research supports the effectiveness of the Project-Based Learning (PjBL) method, its application in higher education, particularly in Communication Studies programs, is still limited. This study offers a new perspective by focusing on Communication Studies programs, which have unique characteristics in developing communication skills. Most previous studies have focused more on applying PjBL in other fields. This study not only examines the impact of PjBL in general but also measures explicitly its effect on the communication skills of Communication Science students. In addition, this study introduces a new approach to measuring communication skills by using tests and participatory observations to observe student interactions and activities in learning directly. It is hoped that the PjBL method can improve the communication skills of Communication Science students. This research will fill the literature gap regarding applying PjBL in Communication Studies programs and contribute to developing more effective learning methods in higher education.

On the other hand, although Project-Based Learning (PjBL) has been recognized as an effective learning method in various fields, its application to develop the communication skills of Communication Science students at the Faculty of Social and Political Sciences, Muhammadiyah University of Bengkulu, has not been widely researched. Many studies focus more on cognitive learning outcomes, without considering how PjBL affects interpersonal and group communication skills. This raises questions about the impact of PjBL in the context of Communication Studies education. Based on this, the author is interested in conducting research titled 'The Effectiveness of Project-Based Learning in Improving Communication Skills of Students of the Communication Studies Study Program, Faculty of Social and Political Sciences, Muhammadiyah University of Bengkulu.'

METHODOLOGY

Research Design

The research employs a quantitative approach utilising a pre-experimental design with a single group. In this study, participants are assessed without including a comparison group. Measurements are collected before the treatment (pretest) and again after the treatment (post-testpost-test). The structure of this one-group pretest-posttest design is outlined as follows:

Table 1. Experiment Design One Group Pretest Post-Test Post-Test

Pretest	Treatment	Postest
01	X	02

Description:

01: A pre-test is conducted before the given learning with Project-Based Learning (PjBL)

X: Treatment (Treatment) is given learning with Project-Based Learning (PjBL)

02: The final test (post-test) is conducted after being given learning with Project-Based Learning (PjBL)

Participants

The research participants comprised fifth-semester students of the Department of Communication Science, Faculty of Social and Political Sciences, Universitas Muhammadiyah Bengkulu, consisting of 73 students who took the Karil and Feature courses. The sample selection technique used was purposive sampling, which is selecting samples that have relevant information and can provide the data desired by the researcher. The sample selection criteria are fifth-semester students of the Communication Studies Program, Faculty of Social and Political Sciences, Universitas Muhammadiyah Bengkulu who take scientific papers and feature courses.

Data collection

Data collection techniques were conducted using tests, namely pretests conducted before applying Project-Based Learning to measure students' initial communication skills. This test is in the form of speaking tasks, both individually and in groups. A post-test was conducted after implementing PBL to measure changes or improvements in communication skills. The Communication Skills Test was conducted by asking students to speak and present the projects/tasks that they had done. Direct observation was carried out during the implementation of project/task presentations. Researchers observed students' communication skills when speaking in front of the class and used instruments to assess various aspects of communication skills. The assessment instrument is as follows:

Table 2. Communication Skills Assessment Rubric

No	Aspects	Descriptions	Score				
1	ability to organise the message well,	Ideas are organised rationally, information is well structured and easy to understand, and there is a clear flow in the delivery of messages.	1	2	3	4	5
2	clarity in conveying ideas,	There are no misunderstandings, concepts are communicated effectively, and words are used appropriately. The tone of voice is appropriate to the message, the voice is clear, and the pronunciation is accurate.	1	2	3	4	5
3	ability to listen and respond effectively	Attention to other speakers, responding appropriately and understanding questions or responses effectively	1	2	3	4	5
4	confidence in communication	Body language shows confidence, a steady voice, no hesitation, and no nervousness in delivering the material.	1	2	3	4	5
5	ability to attract audience attention,	Maintain eye contact, and use a variety of intonations and gestures that support the delivery of material.	1	2	3	4	5
6	use of appropriate language,	The language used should be clear and easily understood by the audience, in harmony with the context, free from excessive jargon, and polite in tone and formality.	1	2	3	4	5
7	mastery of the material,	Have a strong understanding of the topic, minimise reliance on notes, and effectively provide in-depth explanations when needed	1	2	3	4	5

No	Aspects	Descriptions	Score				
8	adaptability to the audience,	Able to adapt the communication style and level of detail to the needs or reactions of the audience, and flexible in responding to unexpected situations.	1	2	3	4	5
9	ability to use visuals or supporting media,	Use tools such as slides, images or graphics effectively to clarify the message and support the delivery of the material. .	1	2	3	4	5
10	message consistency	The message is delivered consistently without any changes that can confuse the audience, as well as keeping the flow of the conversation in line with the main topic.	1	2	3	4	5

Data Analysis Techniques

The data analysis method used in this study involved several important steps to obtain accurate results. First, descriptive analysis was conducted to describe the distribution of scores, including the calculation of mean, standard deviation, maximum, and minimum values on pretest and post-test data. Next, a normality test using the Kolmogorov-Smirnov test was conducted to ascertain whether the data were normally distributed. If the significance value (sig) > 0.05, then the data is considered normally distributed, while if sig < 0.05, the data is considered not normally distributed. Finally, to test whether there is a significant difference between the pretest and post-test scores, a paired t-test was conducted. This test is used to compare two averages of the same sample at two different points in time, namely before and after the application of Project-Based Learning (PjBL). With the paired t test formula:

$$t = \frac{\bar{d}}{s_d/\sqrt{n}}$$

With d^- is mean difference between pretest and post-test scores, *sd* is standard deviation of the score difference, and *n* is number of respondents.

FINDINGS

This study measures how much Project-Based Learning (PjBL) can improve students' communication skills. Based on the analysis of data obtained from the pretest and posttest, the results showed a significant improvement in students' communication skills after applying the project-based learning method. The data was obtained from fifth-semester students of the Communication Studies Program at Universitas Muhammadiyah Bengkulu who took Scientific Paper and Feature courses.

In the pretest, the average score of students' communication skills was 68.84, with the highest score of 85 and the lowest score of 40, and a standard deviation of 12.5. This figure shows considerable variation in students' communication skills before implementing PjBL. After implementing PjBL, students were given a posttest, with an average score of 76.33, the highest score of 93, the lowest score of 60, and a standard deviation of 9.12. This increase shows that PjBL positively influences students' communication skills.

To test whether the difference between the pretest and posttest is significant, a paired samples t-test analysis was conducted, which resulted in a t value of 12.848 with a p value of 0.000. Since the p-value is <0.05, this indicates a significant difference between students' communication skills before and after implementing project-based learning.

It can be concluded that Project-Based Learning (PjBL) is efficacious in improving students' communication skills. The data used in this study were obtained through pretest and posttest, i.e., before and after implementing the project-based learning method. The results of this analysis showed that the implementation of PjBL contributed to a significant improvement in students' communication skills, indicating this method's effectiveness in higher education.

Normality Test Results

The normality test results can be seen in the following table with the help of SPSS version 26 for Windows, a statistical data processing computer software.

Table 3. Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Communication Skills Pretest	.104	73	.050	.901	73	.000
Communication Skills Posttest	.108	73	.034	.956	73	.012

a. Lilliefors Significance Correction

Based on the results of the one-sample Kolmogorov-Smirnov test, the pretest data shows a value of 0.50 which is greater than 0.05, while the post-test data shows a value of 0.34, also greater than 0.05. This indicates that both data sets are normally distributed.

Hypothesis Test Results

The results of the hypothesis test for improving communication skills are as follows.

Table 4. Communication Skills Ability Difference Test (Paired Samples Statistics)

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Communication Skills Pre-test	68.84	73	12.548	1.469
	Communication Skills Post-test	76.33	73	9.127	1.068

According to the findings of the descriptive analysis, students' communication abilities improved when project-based learning was offered, as evidenced by the average pre-test score of 68.84 and post-test score of 76.33. Therefore, it can be said that students in communication studies programs benefit from project-based learning in terms of communication abilities.

Table 5. The result of Paired Samples Correlations (t-test)

		N	Correlation	Sig.
Pair 1	Communication Skills Pre-test & Communication Skills Post-test	73	.943	.000

The table shows that the paired samples test (t) value is 12.848 with a p-value of 0.000. Since the p-value is <0.05, it is said that there is a difference in the average between communication skills (pre-test) and communication skills (post-test). Based on the paired samples test (t) results, learning with the Project-Based Learning (PjBL) approach in improving students' communication skills is effective.

The t-test results in the Paired Samples Correlations table show a strong correlation between pre-test and post-test communication skills, with a correlation value of 0.943. This indicates a significant positive relationship between the two variables, which means increased communication skills after implementing project-based learning. In addition, the Sig. (p-value) 0.000 indicates this correlation is highly statistically significant, as the p-value is <0.05. This indicates that the difference between pre-test and post-test scores is not a coincidence, but rather the result of the effect of project-based learning applied in this study.

Table 6. The result of Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Communication Skills Pre-test & Communication Skills Post-test	-7.493	4.984	.583	-8.656	-6.330	-12.85	72	.000

The Difference Between Pre-tes and Post-test Communication Skills

Indicators of communication skills include (1) the ability to organise messages well, (2) clarity in conveying ideas, (3) ability to listen and respond effectively, (4) confidence in communicating, (5) ability to attract audience attention, (6) use of appropriate language, (7) mastery of material, (8) adaptability to the audience, (9) ability to use visuals or supporting media, (10) consistency of message. The difference in the pre-test and post-test scores for student communication skills is as follows:

Ability to Organise Messages Well and Clarity in Conveying Ideas

Figure 1. Ability to Organise Messages Well

Figure 2. Clarity In Conveying Ideas

In the Figure 1, the results of the student pretest which describes communication skills in the aspect of the ability to organize messages, 18% are very good, 30% of students are classified as good, 31% are sufficient, 10% are lacking and 11% are very lacking. The post-test results showed an improvement, with 25% classified as very good, 34% as good, 30% as sufficient, 7% as lacking, and 4% as very lacking.

In the Figure 2, the results of the student pretest illustrate communication skills in the aspect of clarity in conveying ideas, 27% are classified as very good, 22% as good, 35% as sufficient, 11% as lacking, and 5% as

very lacking. The post-test results showed an increase, with 29% of students classified as very good, while 44% were good, 20% were classified as sufficient, 7% were categorized as lacking and 0% were categorized as very lacking.

Ability to Listen and Respond Effectively and Confidence in Communicating

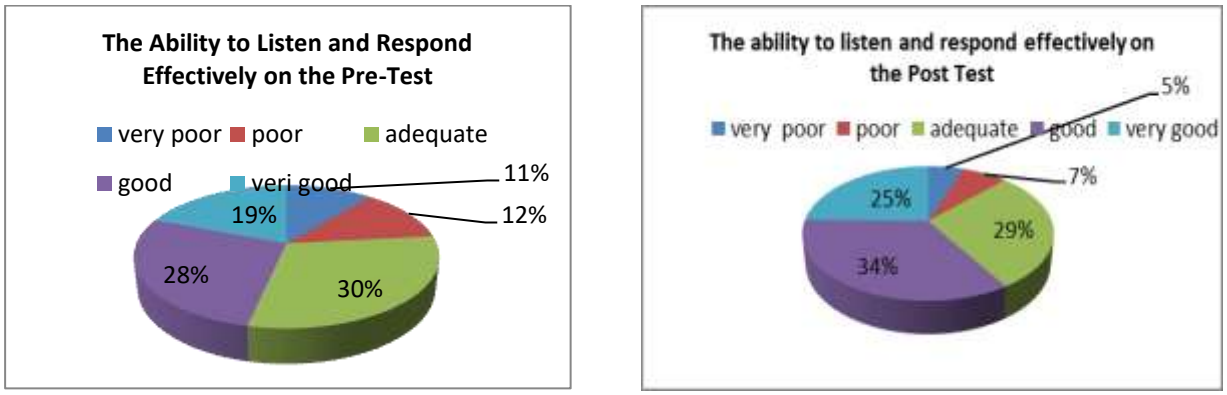

Figure 3. Ability to Listen and Respond Effectively

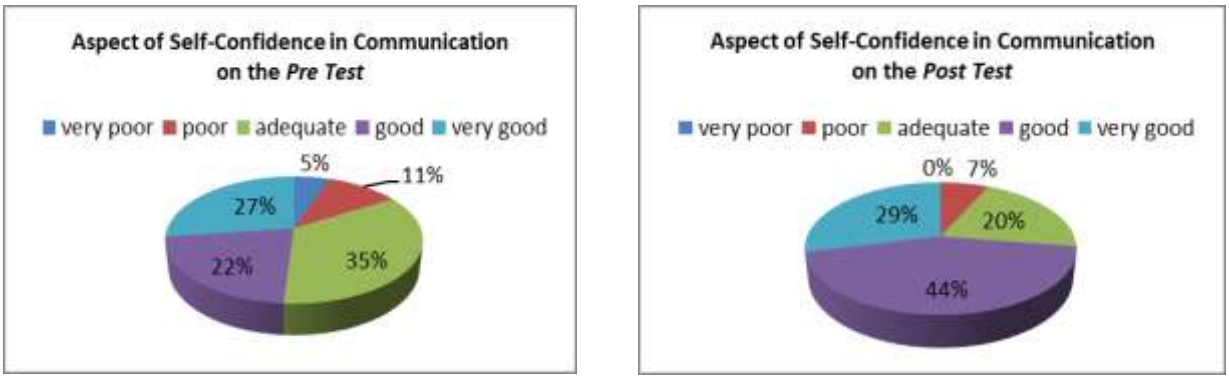

Figure 4. Confidence in Communicating

In the figure 3, the results of the student pretest illustrate communication skills in the aspects of listening and responding effectively, 19% are classified as very good, 28% as good, 30% as sufficient, 12% as lacking, and 11% as very lacking. The post-test results showed an improvement, with 25% classified as very good, 34% as good, 29% as sufficient, 7% as insufficient, and 5% as very insufficient.

In the figure 4, the results of the student pretest illustrate communication skills in the aspect of confidence in communication, 27% are classified as very good, 22% as good, 35% as sufficient, 11% as lacking, and 5% as very lacking. The post-test results showed an improvement, with 29% classified as very good, 44% good, 20% classified as sufficient, 7% insufficient, and 0% very insufficient.

Aspects that Attract the Attention of the Audience and Use of Appropriate Language

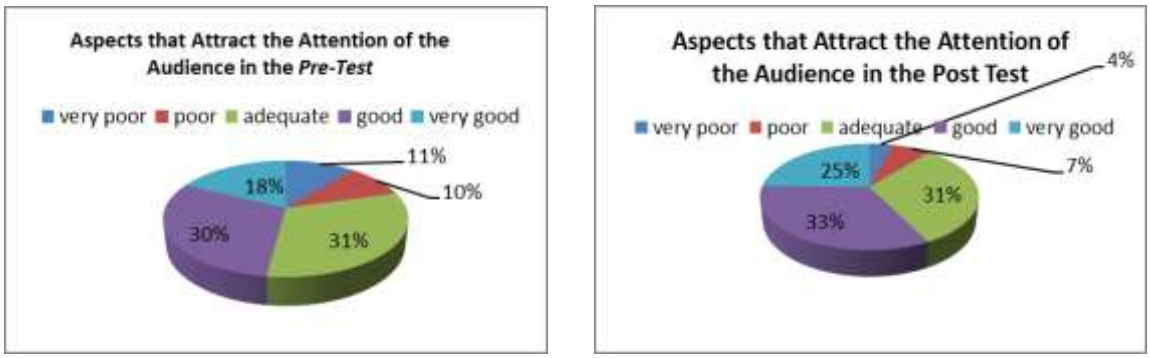

Figure 5. Ability to Attract Audience Attention

Figure 6. Use of Appropriate Language

In the figure 5, the results of the student pretest illustrate communication skills in the aspect of the ability to attract audience attention, 18% are classified as very good, 30% as good, 31% as sufficient, 10% as lacking, and 11% as very lacking. The post-test results showed an improvement, with 25% classified as very good, 33% as good, 31% as still quite good, 7% as poor, and 4% as very poor.

In the figure 6, the results of the student pretest which illustrates communication skills in the aspect of appropriate language use are 21% classified as very good, 26% good, 34% sufficient, 7% lacking and 14% very lacking. The post-test results show an improvement, with 29% classified as very good, 37% good, 27% sufficient, 7% and 0% very lacking.

Mastery of the Subject Matter and Adaptability to The Audience

Figure 7. Mastery of Material

Figure 8. Adaptability to The Audience

In the figure 7, the results of the student pretest which illustrates communication skills in the aspect of material mastery are 21% classified as very good, 27% good, 34% sufficient, 7% lacking and 11% very lacking. The posttest results show an improvement, with 27% classified as very good, 41% good, 28% sufficient, 4% lacking and 0% very lacking.

In the Figure 8, the results of the student pretest illustrate communication skills in the aspect of adaptability to the audience, 21% are classified as very good, 27% as good, 34% as sufficient, 7% as lacking, and 11% as very lacking. The posttest results show an improvement, with 27% classified as very good, 38% as good, 28% as sufficient, 7% as lacking, and 0% as very lacking.

Ability to Use Visuals or Supporting Media and Consistency of Message

Figure 9. Ability to Use Visuals or Supporting Media

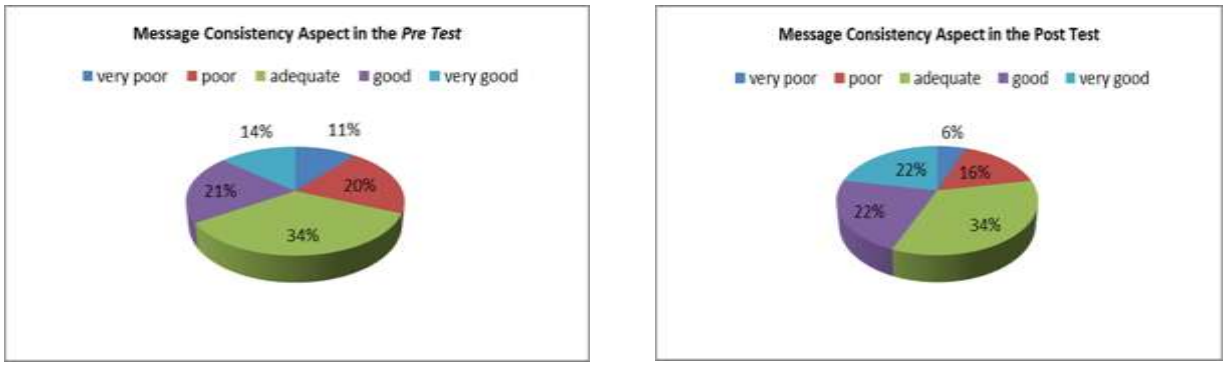

Figure 10. Consistency of Message

In Figure 9, the results of the student pretest, which illustrates communication skills in the aspect of the ability to use visuals or supporting media, 14% are classified as very good, 27% as good, 34% as sufficient, 14% as lacking, and 11% as very lacking. The post-test results showed an improvement, with 21% classified as very good, 34% as good, 30% as sufficient, 11% as lacking, and 4% as very lacking.

In Figure 10, the results of the student pretest, which illustrates communication skills in the aspect of message consistency, 14% is classified as very good, 21% as good, 34% as sufficient, 20% as lacking, and 11% as very lacking. The post-test results show an improvement, with 22% classified as very good, 22% as good, 34% as sufficient, 16% as lacking, and 6% as very lacking.

DISCUSSION

Based on data analysis, this study found a significant improvement in students' communication skills after implementing project-based learning (PjBL). Before PjBL was implemented, the average pretest score for student communication skills was 68.84, with a highest score of 85 and a lowest score of 40. This shows that before PjBL, student communication skills varied, with most still needing improvement, as seen from the relatively large standard deviation of 12.5.

After implementing project-based learning, the average post-test score increased to 76.33, with a highest score of 93 and a lowest score of 60. This increase shows that the PjBL method has improved students' communication skills. After implementing this method, the minor post-test standard deviation (9.12) also reflects better consistency in improving communication skills. These results align with the findings of (Maulidah, 2024), who states that applying the PjBL model has a significant positive influence on improving

students' communication skills. A similar thing was also expressed by (Chi, 2023), who stated that PjBL significantly improves students' communication skills by encouraging social development, collaboration, and participation in real situations.

The findings from the statistical analysis conducted through the paired samples test (t) reveal a t-value of 12.848 and a p-value of 0.000, demonstrating a highly significant disparity between the initial and final test results. Given that the p-value falls below 0.05, one can infer a notable difference in students' communication abilities pre- and post-implementation of project-based learning. Furthermore, the examination of data distribution confirms that the variables examined follow a normal distribution, which further supports the credibility of the results obtained from the hypothesis test. The t-value exceeds the t-table value (12.848 > 1.666), signifying that using PjBL yields a constructive and effective influence on enhancing students' communication skills.

Overall, the results of this study show that project-based learning (PjBL) can significantly improve students' communication skills, which can be used as a basis for adopting this method to improve the quality of learning in various disciplines. This finding is in line with research by Winatha et al. (2024), which reveals that PjBL is efficacious in improving the business communication skills of vocational school students, which affects increasing job readiness. (Farida & Indah, 2024) also concluded that PjBL combined with electronic modules in mathematics education has a strong relationship with improved mathematical communication skills. In addition, Nagamalla et al. (2024) found that engineering students involved in PjBL projects focusing on sustainability reported significant developments in creativity, communication, and adaptability.

This research shows that project-based learning effectively improves students' communication skills. This finding implies that this method can be applied to other courses to improve students' communication skills, both oral and written. In addition, the results of this study can be the basis for developing a more interactive and project-based curriculum.

This research contributes to developing learning methods in higher education, especially in the Communication Studies Program. By showing that Project-Based Learning (PjBL) can improve communication skills, this research guides teachers to implement more interactive and relevant methods. In addition, this research enriches the literature on using project-based learning in higher education, especially in developing communication skills that are highly needed in the world of work.

This research has several limitations. First, the sample was limited to Communication Science students at Universitas Muhammadiyah Bengkulu, so the results cannot be generalized to other institutions. Second, it only measures communication skills through pretest and post-test without considering external factors, such as student background. Third, the measurement was only done at one point, so it cannot show long-term changes. Therefore, further research with larger samples and more thorough measurements is needed to understand the impact of project-based learning.

CONCLUSION

According to the findings from the data examination, it is evident that the initial assessment score for communication abilities before implementing project-based learning was 68.84. The highest score was 85, while the lowest was 40, with a standard deviation 12.5. The final post-test score for communication skills after using project-based learning was an average of 76.33, with a highest score of 93, a lowest score of 60, and a standard deviation of 9.12.

There is a significant difference between the student pretest and post-test results of student communication skills with a paired samples test (t) test value of 12.848 with a p-value of 0.000. Due to the p-value being less than 0.05, it is indicated that there exists a distinction between communication abilities measured during the pretest and those assessed in the post-test. The statistical evaluation reveals that the variables in this research follow a typical distribution pattern. The findings of the hypothesis evaluation indicate a t-value of 12.848, which surpasses the t-table value of 1.666. This indicates that applying PjBL can significantly contribute positively and effectively to improving students' communication skills.

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