



Student Communication National and Regional Health System Development Course

Adila Solida^(✉) and Andy Amir

Department of Public Health, Faculty of Medicine and Health Sciences, Universitas of Jambi,
Jambi, Indonesia
adilasolida@unja.ac.id

Abstract. The learning model applied to the National and Regional Health Development System courses at Jambi University is still dominant using conventional methods in the last two years. Student-centered learning innovation is needed through a project-based learning model (PjBL). The purpose of this study is to identify differences in students' critical thinking skills and communication skills between the application of project-based learning and conventional learning in the National and Regional Health Development System courses. The research was conducted in the Public Health Study Program, Jambi University on fifth semester students with a total of 36 students. The research design is in the form of a pseudo-experimental class involving an experimental class and a control class. The instruments used are test sheets with indicators to measure critical thinking skills and oral communication skills test sheets and assessment report sheets. Data collection was carried out twice, complemented by pre-test and post-test. Data processing using SPSS. Data analysis was carried out in stages using the T test. The results showed that there were differences in students' critical thinking skills ($p = 0.002$) and communication skills ($p = 0.004$) between the application of project-based learning and the application of conventional learning. There is an influence of project-based learning on students' critical thinking and communication skills in the National and Regional Health Development Systems course. It is recommended that project-based learning be applied to each course in various study programs in higher education, especially teaching materials. case-based studies. The PjBL method provides opportunities for students to be directly involved in completing the problem-solving projects studied so that it is expected to improve students' thinking power to think critically and hone communication skills by being actively involved in complex learning processes.

Keywords: Project-Based Learning · Critical Thinking Skills · Communication Skills

1 Introduction

The National and Regional Health Development System is one of the courses that is part of the study of Public Health Sciences. The studies discussed include national and regional health development; National Health System, Regional Health System, and

© The Author(s) 2023

D. A. Kurniawan (Ed.): GDIC 2022, ASSEHR 772, pp. 1054–1062, 2023.

https://doi.org/10.2991/978-2-38476-110-4_101

health system implementation case studies. This course aims to prepare students who are able to design ideas, thoughts and scientific arguments responsibly and based on academic ethics, as well as communicate through the media to academics and the wider community to support development activities in the health sector in realizing health status indicators.

To achieve the learning objectives, the case study process on the implementation of the health system passed by students includes complete and careful analysis activities in connecting one phenomenon with another phenomenon related to health problems on a national and regional scale so that students are able to see problems from various points of view so that students are required to be able to think critically. Critical thinking is a systematic process that empowers students' logic in formulating and evaluating their beliefs and judgments based on inquiry and problem solving on which to base decision-making.

In addition to being required to think critically, students must also be able to convey ideas or views as a product of thinking both in writing and orally through communication skills. Student skills in delivering case studies or problems in the implementation of national and regional health systems. These skills will support critical thinking skills because communication skills are a contributing factor in determining a student's success in solving and solving problems [1].

Lecturers as educators and facilitators in the learning process play a very important role in the success of the learning outcomes above. Therefore, lecturers are also required to be able to create a conducive and pleasant learning atmosphere for students so that students' critical thinking skills and student communication skills can be honed and the achievement of the specified learning outcomes. Based on several previous studies, the learning model that can support this achievement is the application of the project-based learning model (PjBL). Project-based learning significantly improves critical thinking skills compared to conventional learning [2, 3]. The application of project-based learning has a positive effect on improving students' communication skills [4].

In its implementation, the project-based learning model directs thinking skills and provides great opportunities for students to make decisions in choosing topics, making observations, and completing a particular project. This learning model is useful for lecturers who want to condition active student-centered learning where students can get a more interesting learning experience and produce reality-based (contextual) work that occurs in life. Things that must be considered in project-based learning include several principles according to Tomas (2000), namely; Examining specific or centralized concepts, leads to understanding, inquiry, free creativity, and realistic in the form of real project production [5]. Students individually or in groups are required to take responsibility for independent projects created by presenting and making reports to see their written and oral communication skills.

The National and Regional Health Development System courses of the Public Health Study Program of Jambi University in 2020 and 2021 are still conventional. The learning model applied is still dominant in the form of a lecture method that is applied as a means of oral communication between lecturers and students in the learning process centered on lecturers as teachers. While interaction between lecturers and students and between

students is still lacking, so the learning process tends to be passive. In this case, lecturers must improve learning in the classroom and innovate in the teaching and learning process.

In the application of conventional methods, students' critical thinking skills and skills in communicating the results of problem studies in the implementation of national and regional health systems have not been optimal. This can be seen from the assessment of the supervisor's observations from cognitive, affective and psychomotor aspects, that of the 30 students in semester 5 of the 2021/2022 academic year who are included in the group with excellent category assessments as many as 7 students (23%), good categories 10 students (34%), enough 12 students (40%) and less than 1 student (3%). Based on an initial survey of 7 students who were tested for critical thinking skills, only 2 students were able to meet the assessment indicators, namely formulating problem formulations, giving opinions, concluding, inducing, evaluating, and making decisions.

The urgency in this study is that there has been no special study or previous research that discusses the significance of differences in the application of methods and the application of project-based methods in the National and Regional Development System courses which are the main courses. The basis for applying this learning model. Learning innovation uses an applied-based model because it allows students to be directly involved in determining decisions to choose a case study topic, work on a problem and complete a project to solve the problem under study. This learning model is expected to improve students' thinking power to think critically and hone communication skills by being actively involved in the learning process.

2 Method

The research was conducted in the Public Health Study Program FKIK Jambi University on fifth semester (five) students specializing in Health Policy Administration with a total of 36 students. The research design is in the form of a pseudo-experimental class involving an experimental class and a control class. The sample was divided into two groups, namely an experimental class consisting of 18 students with even absences and a control class group consisting of 18 students with odd absences. The instruments used are test sheets with indicators to measure critical thinking skills and communication skills test sheets.

The research implementation phase includes the following steps: a) determining basic questions; b) designing projects; c) arrange schedules; d) monitoring of project progress; e) testing results and f) evaluating student experience. Data collection was carried out by collecting test results conducted in two meetings. In the class group, experiments were carried out with a project-based learning model and in the control class were carried out with conventional learning models. The collected data is continued at the stage of processing and analyzing the data gradually using the T test, so that the difference between the experimental class and the control class is obtained.

3 Results and Discussion

The results of descriptive statistical analysis produce an overview of the frequency distribution of scores obtained by students from pre-test (tests before the application of the method) and post-test (tests after the application of the method) in general. of the two classes with the application of different learning methods as shown in Table 1.

In the experimental class, the most pretest scores were in the range of 61 to 80, which was 66.7%. In the postes value, the highest value is still in the range of 61–80, which is 61.1%. However, based on the percentage of scores in the experimental class, it is known that there is an increase in the frequency distribution between pretest and posttest scores, especially in the highest score range of 81–100. From 5.6% to 16.7% so that if calculated there is an increase of 11.1%. This means that in the application of the project-based learning method (PjBL) there is an increase in the percentage of achievement scores that students can achieve by 11.1% in the highest score range.

In the control class, the most pretest scores were in the range of 61–80 at 61.1%. Similarly, the postes score in the control class whose highest value was still in the range of 61–80, which was 61.1%. The percentage of value increase in the value range of 81–100 from 0% to 5.6%. This means that the increase in the percentage of acquisition in the highest value range of applying conventional learning methods (5.6%) is lower than the application of project-based learning methods (11.1%). This finding is similar to previous research in that there is a significant increase in proportion when comparing the application of learning-based projects with traditional or conventional learning (6). The use of project-based learning methods has been shown to improve student learning outcomes simultaneously (2).

Furthermore, the measurement of critical thinking skills in this study used a description test sheet with a total of 20 questions that must be answered in each experimental class and control class. The questions are designed based on the requirements for assessing critical thinking skills adapted from Ennis (2006) that answers from students will show their ability to formulate problem formulations, provide opinions, conclude, induce, evaluate, and make decisions in solving problems of a case. discourse presented. (7) (Table 2).

The results of measuring students' critical thinking skills in the experimental class showed that the highest score was in the range of 81–100, which was 55.6%, while in the control class the highest score was in the range of 61–80, which was 61.1%. This means that in assessing student communication skills, the score that can be achieved with

Table 1. Frequency Distribution of Pre Test and Post Test Scores in the Application of Project-Based Learning Methods and Conventional Learning Methods

Ranking Score	Experiments (%)		Control (%)	
	Pre-Test	Post-Test	Pre-Test	Post-Test
41–60	5 (27,8)	4 (22,2)	7 (38,9)	6 (33,3)
61–80	12 (66,7)	11 (61,1)	11 (61,1)	11 (61,1)
81–100	1 (5,6)	3 (16,7)	0 (0)	1 (5,6)

Table 2. Frequency Distribution of Critical Thinking Ability Scores

Ranking Score	Experiments (%)		Control (%)	
	F	(%)	F	%
41–60	0	0	4	22,2
61–80	8	44,4	11	61,1
81–100	10	55,6	3	16,7

the highest score range (81–100) is more on the application of project-based learning methods compared to the application of conventional learning.

Measurement of students’ communication skills in the experimental class and control class was carried out by assessing the answers from the description test sheets distributed and then compiled with an assessment of students’ skills in presenting their description test answers in front of the class (Table 3).

The results of the assessment of communication skills obtained data that in the experimental class the highest scores were in 2 value ranges, namely 61–80 by 50% and in the range of 81–100 values by 50%. While in the control class, the highest score was in the range of 61–80, which was 77.8%. The percentage in the value range from 81 to 100 is only 16.7%. This means that in assessing students’ communication skills, the scores that can be achieved with the highest score range are more on the application of project-based learning methods compared to the application of conventional learning (Table 4).

Table 3. Frequency Distribution of Communication Skills Scores

Ranking Score	Experiments (%)		Control (%)	
	F	(%)	F	%
41–60	0	0	1	5,6
61–80	9	50	14	77,8
81–100	9	50	3	16,7

Table 4. Recapitulation of Calculation Results of Critical Thinking Skills and Communication Skills

Statistics	Critical thinking skills		Communication skills	
	Experiment	Control	Experiment	Control
Mean	84,72	73,06	85,00	74,72
Mood	80	75	80	80
St. Deviation	10.357	10.451	11.246	8.484
Minimum Score	65	55	65	60
Maximum Score	100	90	100	90

The results of calculating the critical thinking ability score in the experimental class obtained an average score of 84.72 students with a minimum score of 65 and a maximum score of 100. While in the control class, the average score obtained by students was 73.06 with a minimum score of 55 and a score of 55. Maximum 90. The data showed that the acquisition of critical thinking skills scores higher on the application of project-based learning methods compared to Application of conventional learning methods. The calculation of communication skills scores in the experimental class obtained an average student score of 85.00 with a minimum score of 65 and a maximum score of 100. In the control class, the average score obtained by students was 74.72 with a minimum score of 60 and a maximum score of 90. The calculation results also show that the achievement of the value obtained is higher in the application of project-based learning methods compared to the application of conventional learning methods.

Based on the prerequisites for conducting a T-test analysis, a normality test and a homogeneity test are performed. The normality test results use the Kolmogorov-Smirnov sig value with a significance level of >0.05 while the homogeneity test is carried out by looking at GIS value based on mean on variance homogeneity test output. From Table 5. It can be concluded that each data has a GIS value of >0.05 so it is proven that the data is normally distributed. In the homogeneity test, the results of the sig value on each data are >0.05 so that it can be concluded that the data is homogeneous.

Based on the acquisition of the significance value of P-value <0.005 in Table 6. It can be concluded that there is a significant difference on average students' critical thinking skills between the application of project-based learning methods (M = 84.72; SD = 10,357) and the application of conventional learning methods (M). = 73.06; SD = 10.451), t(34) = 3.364; p = 0.002 (Table 7).

In the results shown in Table 5. It can also be concluded that there are differences that significant average student communication skills between the application of project-based learning methods (M = 85.00; SD 11.246) and the application of conventional learning methods (M = 74.72; SD = 8.484), t(34) = 3.095; p = 0.004 (Table 8).

Table 5. Normality Test and Homogeneity Test Results

	Critical Thinking Skills		Communication skills	
	Experiment	Control	Experiment	Control
Kolmogorov-Smirnov (Sig)	0,200	0,105	0,171	0,139
Based on average (Sig)	0,841	1.000	0,161	0,179

Table 6. Average Differences in Critical Thinking Skills Between Project-Based (Experiential) and Conventional (Control) Learning Applications

Critical Thinking Skills	n	Mean	SD	.db	T(t-test)	P-value
Experimental Class	18	84,72	10.357	34	3.364	0,002
Control Class	18	73,06	10.451			

Table 7. Average Differences in Student Communication Skills Between Project-Based (Experiential) and Conventional (Control) Learning Implementation

Communication skills	n	Mean	SD	.db	T(t-test)	P-value
Experimental Class	18	85,00	11.246	34	3.095	0,004
Control Class	18	74,72	8.484			

Table 8. The Effect of Project-Based Learning Implementation on Students' Critical Thinking and Communication Skills

Variable	P-value
Critical Thinking Skills	0,002
Communication skills	0,004

At the limit of significance of P-value <0.05 , it can be concluded that there is an effect of the application of project-based learning on students' critical thinking skills ($p = 0.002$) and communication skills ($p = 0.004$). The findings of this study are in line with previous research that showed a relationship between the application of project-based learning methods and critical thinking skills (8) (9). In addition, previous research has also proven that project-based learning affects students' communication skills [10, 11].

The ability to think critically is a form of higher order thinking with a complex process and if students can do it it will help in learning complex lessons sequentially and with good understanding. Therefore, the application of project-based learning can give students higher scores on the assessment of critical thinking skills compared to the application of conventional methods [1, 12].

The application of project-based learning also has an effect on improving students' communication skills because this method is based on teaching students to be able to interpret each process, step by step passed during this learning practice [13]. This mastery helps students describe the results of meaning and observation, are able to answer questions logically and communicatively and are able to draw conclusions from the project being worked on. Because project-based learning frees up in planning, organizing designs, and conducting scientific investigations of a particular project. So that the level of understanding and learning success is easier to achieve [14].

Students' critical thinking skills and communication skills will increase if the application of project-based learning methods is applied not only to one course, but to each course that has case study material. The study material for the Health Development System course comes from case studies or health problems faced at the national and regional levels. So based on the results of this study, the application of project-based learning is a learning innovation that can help students achieve the expected final ability of the course, hone critical thinking skills and communication skills.

4 Conclusion

The conclusions of this study are: 1) The percentage of scores with the highest score range (81–100) on the assessment of students' critical thinking skills is more in classes that apply project-based learning methods (55.6%) than classes with conventional learning methods (16.7%). 2) The percentage of scores with the highest score range (81–100) on the assessment of communication skills is more in classes that apply project-based learning methods (50%) than classes with conventional learning methods (16.7%). 3) There was a significant difference in students' average critical thinking skills between the application of project-based learning methods ($M = 84.72$; $SD = 10.357$) and the application of conventional learning methods ($M = 73.06$; $SD = 10.451$), $t(34) = 3.364$; $p = 0.002$. 4) There is a significant difference in students' average communication skills between the application of project-based learning methods ($M = 85.00$; $SD = 11.246$) and the application of conventional learning methods ($M = 74.72$; $SD = 8.484$), $t(34) = 3.095$; $p = 0.004$. 5) There is an influence of project-based learning on students' critical thinking skills ($p = 0.002$) and communication skills ($p = 0.004$) in the National and Regional Health Development System courses.

It is recommended that the application of project-based learning be applied to each course in various study programs in higher education, especially case study-based teaching materials. The application of the PjBL method provides opportunities for students to be directly involved in completing the problem-solving projects learned so that it is expected to improve students' thinking power to think critically and hone communication skills by being actively involved in complex learning processes.

Acknowledgments. We would like to thank the Institute for Research and Community Service of Jambi University (LPPM-UNJA) for facilitating the funding of this research and to the health policy administration specialization students who have supported this research.

References

1. Stacey K. Pandangan PISA terhadap literasi matematika di Indonesia. *Pendidikan Matematika J.* 2011;2(2):95–126.
2. Rati NW, Kusmaryatni N, Rediani N. Model pembelajaran berbasis proyek, kreativitas dan hasil belajar mahasiswa. *JPI (Jurnal Pendidik Indones.* 2017;6(1):60–71.
3. Azizah IN, Widjajanti DB. Keefektifan pembelajaran berbasis proyek ditinjau dari prestasi belajar, kemampuan berpikir kritis, dan kepercayaan diri siswa. *J Ris Pendidik Mat.* 2019;6(2):233–43.
4. Lestari ID, Leksono SM, Hodijah SRN, Agustina W. Pengaruh penerapan model pembelajaran berbasis proyek (project based learning) terhadap kemampuan komunikasi siswa pada konsep biodiversitas. *Emasains J Edukasi Mat Dan Sains.* 2016;5(2):83–7.
5. Dewi F. Proyek buku digital: Upaya peningkatan keterampilan abad 21 calon guru sekolah dasar melalui model pembelajaran berbasis proyek. *Metod Didakt J Pendidik Ke-SD-An.* 2015;9(2).
6. Kristanti YD, Subiki S. Model Pembelajaran Berbasis Proyek (Project Based Learning Model) pada Pembelajaran Fisika Disma. *J Pembelajaran Fis.* 2017;5(2):122–8.

7. Hidayat S, Susilawati S, Soeprianto H. Pengaruh Model Pembelajaran Berbasis Proyek Terhadap Penguasaan Konsep Ditinjau Dari Keterampilan Berpikir Kritis Pada Mata Kuliah Optik. *Lensa J Kependidikan Fis.* 2014;2(2):220–6.
8. Rachmawati I, Feranie S, Sinaga P, Saepuzaman D. Penerapan pembelajaran berbasis proyek untuk meningkatkan keterampilan berpikir kreatif ilmiah dan berpikir kritis ilmiah siswa SMA pada materi kesetimbangan benda tegar. *WaPFI (Wahana Pendidik Fis.* 2018;3(2):25–30.
9. Sastrika IAK, Sadia W, Muderawan IW. Pengaruh model pembelajaran berbasis proyek terhadap pemahaman konsep kimia dan keterampilan berpikir kritis. *J Pendidik dan Pembelajaran IPA Indones.* 2013;3(2).
10. Kurniawati W, Harjono A, Gunawan G, Busyairi A, Taufik M. Pengembangan Perangkat Pembelajaran Fisika Berbasis Proyek untuk Meningkatkan Kemampuan Komunikasi Peserta Didik. *J Pendidik Fis dan Teknol.* 2021;7(2):141–6.
11. Putri AD, Syutaridho S, Paradesa R, Afgani MW. Peningkatan Kemampuan Komunikasi Matematis Mahasiswa Melalui Inovasi Pembelajaran Berbasis Proyek. *JNPM (Jurnal Nas Pendidik Mat.* 2019;3(1):135–52.
12. Anita IW. Implementasi pembelajaran berbasis proyek untuk menumbuhkan kemampuan berpikir kreatif matematis siswa. *JPPM (Jurnal Penelit dan Pembelajaran Mat.* 2017;10(1).
13. Hrp NA, Rahma IF. Keefektifan Penerapan Model Pembelajaran Berbasis Proyek Dalam Pencapaian Aspek Kemampuan Representasi dan Komunikasi Matematis Siswa Kelas VI SD Negeri 118296 Beringin Jaya Pinang Damai. *Pendidik PHI J Mat.* 2020;4(2):113–20.
14. Tinenti YR. Model Pembelajaran Berbasis Proyek (PBP) dan Penerapannya dalam Proses Pemelajaran di Kelas. Terbitkan dalam-dalam; 2018.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

