

# Evaluating the Implementation of Project-Based Learning (PjBL): A Study at the English Language Education Study Program, Faculty of Education, Jambi University

Adrefiza Adrefiza<sup>ID</sup>, Ahmad Ridha<sup>ID</sup>, and Habizar Habizar<sup>ID</sup>

English Language Education Study Program, Faculty of Teacher Training and Education, Jambi University, Jl. Jambi Ma Bulian, Mendalo, Jamni, Indonesia

## Abstract

The present study evaluated the implementation of Project-Based Learning (PjBL) by the lecturers at the English Language Education Study Program, Faculty of Education, Jambi University. Using information from 100 selected students through electronic email questionnaires with Likert's 5 points-scale of frequency levels (*never to always*) concerning ten PjBL main principles, the results fell into the "good" category with an average score of (3.17). Principle 1 (Starting the class with driving questions/issues/problems); 2 (Students work independently in small groups based on a selected project); and 7 (The groups do project presentations for feedback) received the highest rate in the evaluation with an average score of (3.8) each, followed by the principle 4 (The groups discuss, pose, inquire, analyze, and evaluate issues or problems related to the topics) and the principle 9 (The students develop new soft-skills e.g. collaboration, problem-solving, critical thinking, and management skills) with the average scores of (3.5 & 3.2) respectively. The other principles such as "collecting information, facts, evidence, and data outside the classroom for the project work" (principle 5) and "receiving feedback and controls from the lecturers" (principle 6), still need to be improved and developed to achieve better results in the future.

**Keywords:** English, evaluation, project-lased Learning (PjBL), tertiary education

## Introduction

Project-based learning (PjBL) has been regarded as an innovative approach to learning in education (Greenier, 2020; Thu, 2018). Such an approach has been implemented in many educational disciplines and various levels or grades (Bell, 2010). According to Bell (2010), PjBL has been applied in various contexts and stages of education, from the lowest to the highest globally. PjBL is expected to help increase the learners' learning autonomy and experience in a systematic process of exploration and inquiry (Barak, 2012). Bell (2010) adds that with PBL, students are encouraged to learn independently through scientific discovery, invention, and inquiry. Students work collaboratively with strong socialization and become intrinsically accustomed to working out in the learning process at their own level Kokotsaki et al. (2016).

Maros et al. (2021) claim that PjBL is an instructional method that increases the students' active participation. They state that this active participation can be developed through active interaction and communication between the tutors and the students, along with setting up challenges such as brainstorming, role-playing, didactic games, and case studies. According to Maros et al. (2021), PjBL efficiently develops twenty-first-century skills, such as critical thinking, problem-solving, interpersonal communication, information and media literacy, cooperation, and leadership.

The impetus of implementing PBL along with case-based teaching methods (CM) has been recently recommended in

Indonesian tertiary education. Such a scheme has been emphasized as one of the eight key performance indicators (IKU) that must be followed and fulfilled by all universities and seven other indicators (The Ministry of Education and Culture regulation, No 754 Year 2020). The seventh indicator is specifically measured by the number of subjects taught through either PjBL or CM by the lecturers. Such an order encourages the student's active participation and collaboration during the learning process. As stipulated in the regulation of the Ministry of Education and Culture, the Republic of Indonesia number 3 in 2000 article 11, the teaching and learning process should fulfill the criteria of interactive, holistic, integrative, scientific, contextual, thematic, effective, collaborative, and student-centered (verse 1); and the interactive mode in the above point is targeted to achieve a maximum learning outcome through reciprocal interaction between students and lecturers (verse 2).

The two recommended teaching methods (PjBL and CM) are then characterized by a few criteria. The implementation of CM, for example, should include at least three aspects: (a) students play an active role as "a doer" in the learning process and are given ample opportunities to solve contextual cases or problems; (b) the students are directed to analyze the case through group work discussion to develop suitable solutions towards the case or problem; and (c) the class is addressed to active discussions over selected cases and the students take an active role and dominate the discussion under the supervision and direction from the

© 2024 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<https://creativecommons.org/licenses/by/4.0/>). DOI: <https://dx.doi.org/10.22159/ijoe.2024v12i1.49787>. Journal homepage: <https://journals.innovareacademics.in/index.php/ijoe>.

**Acknowledgment:** The authors acknowledges colleagues and relatives who supported and assisted in completing this research article. The researcher's special thanks go to all participants who participated in this study and from whom the data were collected. Finally, The authors reported that the deepest thank is addressed to IJOE editor for reviews and help so that this article is accepted and published. **Authors' Contribution:** All authors have equally contributed to this paper. **Conflict of Interest:** We have no conflicts of interest to disclose. **Funding Source:** The present article was written based on a personal budget.

Correspondence concerning this article should be addressed to Adrefiza Adrefiza, English Language Education Study Program, Faculty of Teacher Training and Education, Jambi University, Jl. Jambi Ma Bulian, Mendalo, Jamni, Indonesia. **Email:** [adrefiza@unja.ac.id](mailto:adrefiza@unja.ac.id)

lecturers. PjBL, on the other hand, is determined through (a) students work in small groups over a selected project for a certain time; (b) each group is given a complex task or project assignment to do and work collaboratively to design an innovative product through a small research project; and (c) each group presents the project for discussions and feedback.

### **Review of the Related Literature**

Many scholars and experts in education have pointed out the pivotal concepts of PjBL. Evidently, PjBL has been regarded as an innovative approach (Thu, 2018) that helps learners gain optimal achievement and understanding in the learning process. Kokotsaki et al. (2016) suggest that PjBL is a form of student-centered learning that encourages students to learn actively through personal inquiry and collaborative work. It probes both explorative and descriptive methods of inquiry that focus on an end product or work under the supervision of the teachers. The students actively learn through a contextual and meaningful experience (Wurdinger et al., 2007). Styla and Michalopoulou (2016) claim that PjBL has been proven to increase students' social skills in four areas (cooperation, empathy, assertion, and self-control). These skills are crucial for the students to cater to their real-life experience. Guo et al. (2020) further stress that PjBL has been viewed as an auspicious approach to be implemented in higher education and has been empirically proven to improve the student's affective and cognitive outcomes. These outcomes are associated with students' perception, knowledge, and behavior.

Cocco (2006) provides three basic principles of PjBL. First, the learning is set up in a specific context, which allows the students to follow the content according to their learning capacity. Furthermore, every individual actively participates in the learning process through which everyone is creatively involved in every learning phase. Finally, they work collaboratively to achieve their goals in participative social interactions, discussions, and knowledge and skill sharing. Al-Balushi and Al-Aamri (2014) claim that PjBL is an innovative approach that requires a collaborative work of learning and a type of inquiry-based learning where the context of learning is provided through authentic questions and problems within real-world practices.

PjBL is often associated with other teaching approaches or methods that are student-centered in nature. Helle et al. (2006) assert that PjBL has a clear connection with problem-based learning as both focus on collaboration in achieving learning goals and the fact that both are based on problems or cases that need to be solved or answered. The two methods, however, differ from one to another in the process and the target outcome. According to Helle et al. (2006), PjBL emphasizes the end product, while problem-based learning emphasizes the learning process. They further argue that PjBL may also be similar to other methods of instruction, such as experiential learning, as both consist of an element of experience and collaboration of the students in the learning process. These instructional methods also rely on every individual's active reflection and conscious engagement in learning (Wurdinger et al., 2007).

Besides a collaborative aspect, PjBL is also regarded as a method that provides learners enormous opportunities, freedom, and challenges to investigate problems (Wurdinger et al., 2007). According to Wurdinger et al. (2007), in PjBL, students are guided to actively engage in the determination of the project with strong affective, ethical, and aesthetic dimensions of collaboration. Helle et al. (2006) suggest that PBL encourages learners to develop new knowledge, skills, and understanding, which are useful to achieve a concrete product at the end of the learning adventures. To achieve an optimal result, according to Holubova (2008), the ultimate product or project work can be completed through the use of videos, photographs, sketches, reports, models, and other collected artifacts.

Another essential element is that PjBL promotes links to students' active engagement in learning. Blumenfeld et al. (2000) and Krajcik et al. (1994) point out that such an active engagement is quite evident in PjBL as the learners are progressively involved in every single phase of observation, inquiry, discovery, and conclusion of the project. The students show and use their

deeper understanding of essential ideas and apply them simultaneously in learning. They claim that PjBL allows the students to learn by doing and applying ideas to real-world activities and experiences. In this mechanism, the students conduct some sort of mini-research project where they will have to investigate questions, propose hypotheses and explanations, analyze the processes, discuss their findings and conclusions, challenge the ideas of others, draw conclusions, and set up recommendations. (Krajcik et al., 2002; Marx et al., 2004; William & Linn, 2003).

### **Basic Principles of PjBL**

Thomas (2007) proposes five essential principles of PjBL (centrality, driving questions, constructive investigation, autonomy, and realism). Patton (2012) adds a few more characteristics central to PjBL, such as reflection, redrafting, presentations, and project publications. Blumenfeld et al. (1991), Krajcik et al. (1994), and Krajcik et al. (2002) come up with five essential aspects, including (1) the class starts with a driving question; (2) students explore the driving question by participating in authentic, situated inquiry – processes of problem-solving that are central to expert performance in the discipline. As they explore the driving question, they learn and apply important ideas in the discipline; (3) students, teachers, and community members engage in collaborative activities to find solutions to the driving questions. This mirrors the complex social situation of expert problem solving; (4) while engaged in the inquiry process, students are scaffolded with learning technologies that help them participate in activities normally beyond their ability; and (5) students create a set of tangible products that address the driving question. These are shared artifacts that are publicly accessible external representations of the class's learning.

Thu (2018) ultimately provides a few prominent features of PjBL: active learning, real-world problems, interdisciplinary, cooperative learning, and an end product. These features are considered distinctive to PjBL, although other methods, such as problem-based and inquiry-based learning, are also believed to share some of the PjBL features. However, PjBL is associated with the feature of active learning, which is often viewed as the core focus of its nature. This is so because students are intensively involved in learning through various activities that connect to the students' real-life experience through enhancement of inquiries, planning, learning, organization, strategies management, and project evaluation. The feature of real-world problems characterizes PjBL in that it brings the concept of authentic content from various disciplines to be discussed in the learning process (Bell, 2010; Hanney & Savin-Baden, 2010; Thomas, 2000). It is argued that this concept of learning helps connect academic purposes and external social, political, and environmental aspects in the learning process (Bell, 2010).

### **The Historical Background of PjBL**

Thu (2018) stresses that PjBL as an instructional teaching method is not a recent finding. Although its popularity has increased in the last few decades, according to Thu (2018), the original concept has been discovered over a hundred years since the recognition of the work of Dewey (1959), an educator and philosopher from the Laboratory School of the University of Chicago since (1959). PjBL has recently been adopted enormously all over the globe and has gained the spotlight in the field of education and sciences (Harmer & Stoke, 2014; Kolmos, 2009; Lehmann et al., 2008).

Dewey (1959) argued that through PjBL, students will develop a personal investment in the materials if they engage in real, meaningful tasks and problems that emulate what experts do in real-world situations. In the last two decades, learning sciences researchers have refined and elaborated Dewey's original insights that active inquiry results in deeper understanding. Discoveries in the learning sciences have led to new ways to understand children's learning (Bransford et al., 1999). We build on four major learning sciences ideas: active construction, situated learning, social interaction, and cognitive tools (p. 318).

## Statement of Problem

The present research is focused on evaluating the implementation of PjBL by the lecturers. The research is based on the students' evaluation of the learning process in which PjBL was implemented and its basic principles. The study is deemed important as the quality of PjBL implementation affects the university performance and ranking capacity that will be measured periodically at national levels by the Ministry of Education and Culture. Ten basic principles of PjBL are set up based on government criteria or relevant theories.

### Research Questions

Two research questions were posed in the study:

1. What is the student's evaluation of the implementation of PBL by the lecturers in the teaching and learning process?
2. How is the students' satisfaction with the implementation of PBL by the lecturers?

### Methodology

The present research employs a mixed method of analysis: a descriptive-quantitative method or design with a simple statistical analysis. In this type of research, the data were based on qualitative measures, but simple statistics was also used in measuring frequencies, percentages, or other statistical techniques for comparison purposes (Creswell, 2014; Nassaji, 2015).

The research began with observing the latest phenomenon in Indonesian Higher Education Institutions where PjBL is being encouraged to be applied in teaching and learning. The data were collected from 100 purposively selected students to whom the questionnaires were sent electronically to their emails. The research was conducted online by distributing a Google Form questionnaire to the participants. The participants were selected from the English Language Education Study Program, Faculty of Education, Jambi University, who were studying in odd semesters (first, third, fifth, and seventh). One hundred of them (around 25 in each semester were selected as participants. The questionnaires consist of 10 items about ten principles of PjBL with 5 Likert Scales, ranging from "never" to "always" categories.

To satisfy the naturality of the responses from the participants, their names and identities were not revealed and treated as confidential. There would be no intervention to the data and the participants, but they would be expected to select each option according to their evaluations. Finally, the researchers analyzed the data through categorization, tabulation, and table or figure presentations, followed by interpretation through the findings and discussion section. The procedures are as follows:

1. Grouping and tabulation
2. Mapping and categorization
3. Comparison of frequency (occurrence)
4. Table presentation
5. Analysis and interpretation
6. Conclusion

Then, the questionnaire responses were tabulated, analyzed, and presented in tables and figures. The researchers referred to the frequency level with an interval of one point derived from the five-scale tabulation. The frequency level is presented in Table 1.

**Table 1**  
Category and Score

Category	Score
Never	1
Seldom	2
Sometime	3
Often	4
Always	5

After getting the frequency level of each PjBL principle, the researchers then interpret the level of evaluation obtained by calculating the interval of five scales of 1.00 on each category. The category level is presented in Table 2.

**Table 2**  
Category of Evaluation

Category	Score range
Very bad	0-1.00
Bad	1.01-2.00
Moderate	2.01-3.00
Good	3.01-4.00
Very good	4.01-5.00

Finally, all the data were gathered, concluded, and communicated respectively to answer the research questions posed in the study.

### Results

#### The General Posture of the Evaluation

Despite the PjBL ten principles, the findings show that the students' evaluation spread over all five options (*never, seldom, sometimes, often, and always*). The highest selection was given to the "often" category, with a total number of (24.8 %), followed by the category "sometimes" with a total of (23.3 %) in the students' evaluation. The category "never" had the lowest rate, with only (14.6 %), while the categories "always" and "seldom" were relatively low, with only (19.5 %) and (18.8 %) respectively (see Table 3).

**Table 3**  
The Distribution of Students' Evaluation

Options	Category	f	%
1	Never	146	14.6
2	Seldom	178	17.8
3	Sometime	233	23.3
4	Often	248	24.8
5	Always	195	19.5
Total		1000	100

#### The Average Score

A simple statistical calculation shows that the overall score of the students' evaluation falls to (3.17) out of 5 maximum scores (Good category).

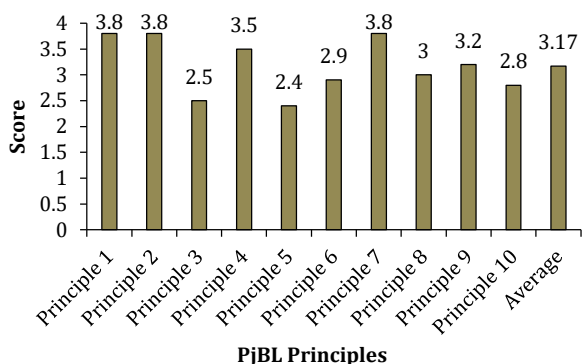
As presented in Table 4, the students' evaluation of the PjBL implementation by the lecturers can be categorized into the "good" category with an  $M = 3.17$ . The result reveals that according to the student participants, the lecturers have applied the most basic principles of PjBL in their teaching. However, a few of them were still not fully implemented. The figures represent how the students evaluated each principle.

**Table 4**  
The Average Score of the Evaluation

Category	Score	f	Sum of score	M
Never	1	146	146	0.146
Seldom	2	178	356	0.356
Sometime	3	233	699	0.699
Often	4	248	992	0.992
Always	5	195	975	0.975
Total		1000	3168	3.17

As presented in Figure 1, the posture of the evaluation distribution remains uneven. Three principles (1, 2, and 7) are the highest ones, with a score of (3.8) each, while principles 3 and 5 are the lowest ones in the evaluation, with only (2.5) and (2.4) respectively. The other principles fall between (2.8) and (3.5).

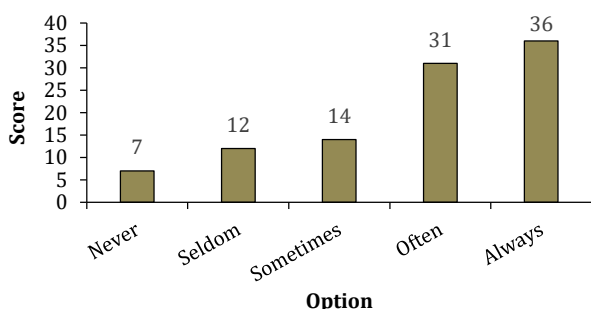
**Figure 1**  
The Overall Score of Evaluation



Principle 1: The class begins with driving questions/issues/problems.

When looking at each principle, it is obvious that the posture shows an uneven rate. Principle 1, for example, received a relatively good evaluation from the students. As presented in Figure 2, the highest rate was given to "always" category (36), followed by "often" (31). At the same time, other categories such as "never," "seldom," and "sometimes" were small in rate with only (7), (12), and (14) respectively. Figure 2 shows a negatively skewed trend with many scores addressed to the "often" and "always" categories (67 in total). Data reflects that the lecturers' teachings were characterized mostly by beginning the class with driving questions/problems/issues related to the topics.

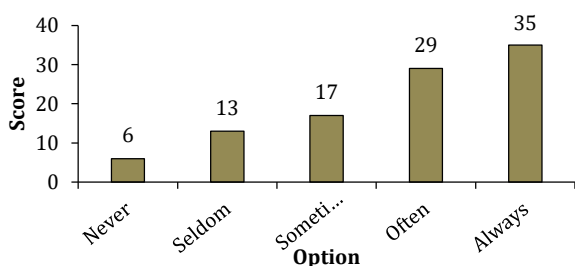
**Figure 2**  
The Class Begins with Driving Questions/Issues/Problems



Principle 2: Students work independently in small groups based on a selected project.

The evaluation of principle 2 shows a similar posture. The highest proportion was addressed to the "always" category with a total score of (35), followed by the category "often" (29) and the category "sometimes" (17). Categories "seldom" and "never" were relatively low in rate, with only less than 10 in total. Like principle 1, principle 2 (students work independently in small groups based on a selected project) also displays that the lecturers will apply it in their teaching (see Figure 3).

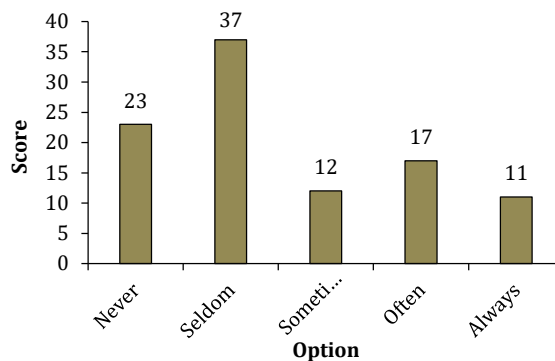
**Figure 3**  
Students Work Independently in Small Groups Based on a Selected Project



Principle 3: The groups work based on schedule and timesheet as described in the syllabus.

Principle 3 shows a diverse trend in the student's evaluation. Unlike principles 1 and 2, this principle receives a negative evaluation, indicating that the lecturers did not do very well applying it. As presented in Figure 4, almost 60% of the rate falls into the "seldom" and "never" categories, and the rest falls into other categories. The "always" category was given the lowest rate with only (11) in total. While "often" and "sometimes" receive less (29). Response reflects a low frequency of implementing this principle in the lecturers' teaching.

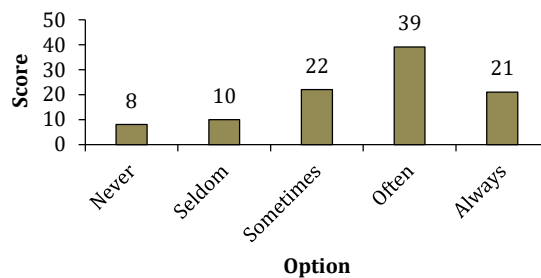
**Figure 4**  
The Groups Work Based on Schedule and Timesheet as Described in Syllabus



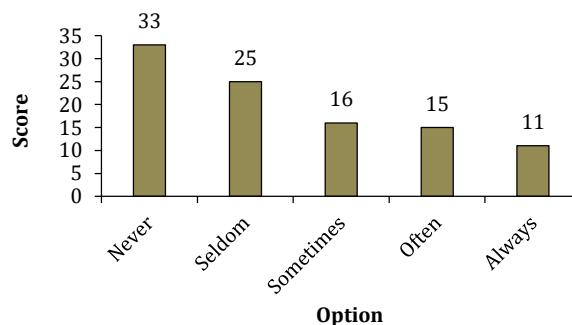
Principle 4: The groups discuss, pose, inquire, analyze, and evaluate issues or problems related to the topics.

The evaluation of principle 4 shows another posture. Figure 5 represents the evaluation distribution, in which the highest rate was given to the category "often," with a total of (39). The categories "always" were relatively high (21) and "sometimes" (22). The categories "never" and "seldom" were low in rate, with only less than (20) in total.

**Figure 5**  
The Groups Discuss, Pose, Inquire, Analyze, and Evaluate Issues or Problems Related to the Topics



**Figure 6**  
The Groups Implement Small Projects Independently Outside the Classroom Collecting Information, Facts, Evidence, and Data, to Solve Problems, Build Hypotheses, Analyze and Interpret Data, and Draw Conclusions



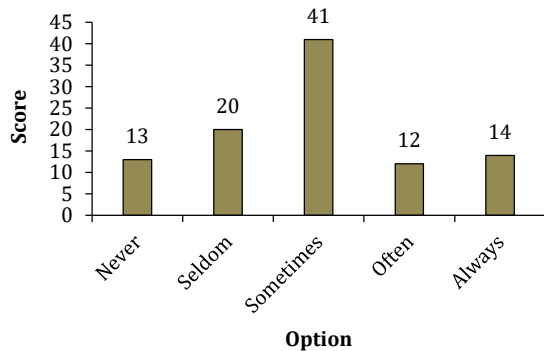
Principle 5: The groups implement small projects independently outside the classroom collecting information, facts, evidence, and data, to solve problems, build hypotheses, analyze and interpret data, and draw conclusions.

The student's evaluation of principle 5 shows a different trend. This principle receives a relatively bad evaluation where many responses were addressed to categories "never" (33) and "seldom" (25). Responses reflect that the students' independent implementation of small projects outside the classroom was not evident in the lecturers' teaching. By contrast, the categories "always" and "often" have a small rate in the evaluation (see Figure 6).

Principle 6: The groups receive supervision, feedback, evaluation, information, and control from the lecturers over the project process and completion.

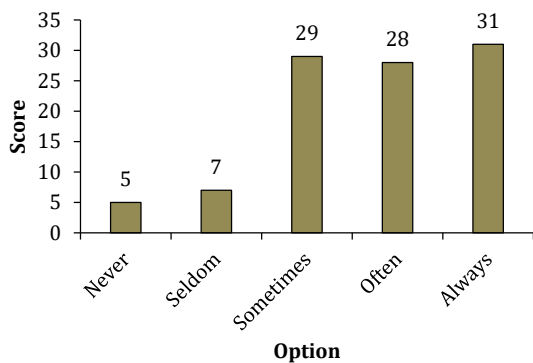
Another different trend in the evaluation is seen in principle 6 (The groups receive supervision, feedback, evaluation, information, and control from the lecturers over the project process and completion). The category "sometimes" dominates the evaluation with a total of more than (40), while other categories such as "always" and "often" were lower in rate compared to "seldom" and "never" categories with a ratio of (26:33). This indicates that this principle was moderately implemented (see Figure 7).

**Figure 7**  
The Groups Receive Supervision, Feedback, Evaluation, Information, and Control from the Lecturers over the Project Process and Completion



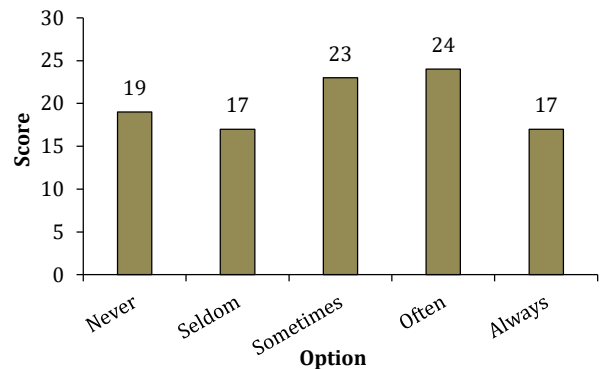
Principle 7: The groups do project presentations for feedback. The evaluation of principle 7 was relatively good. The majority of the responses fall to a positive trend, which is dominated by categories "always," "often," and "sometimes," with a total rate of (88). The rest falls into categories "seldom" and "never." Figure 8 presents the distribution of feedback.

**Figure 8**  
The Groups do Project Presentations for Feedback



Principle 8: Students have individual/group evaluations. Figure 9 represents the evaluation of principle 8. The responses fall into all categories with a flat proportion. However, categories "often" and "sometimes" have the highest rate (47) in total. The other three categories receive a relatively balanced rate (see Figure 9).

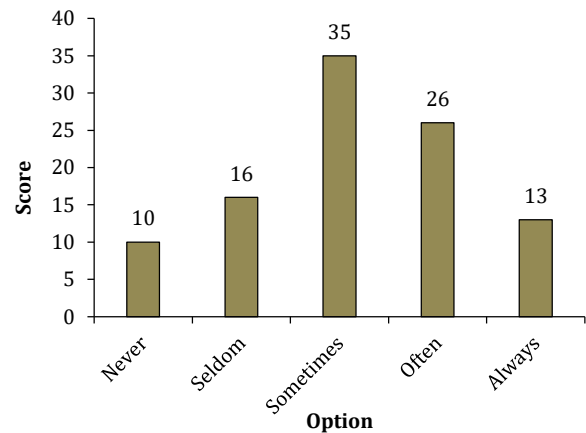
**Figure 9**  
Students have Individual/Group Evaluations



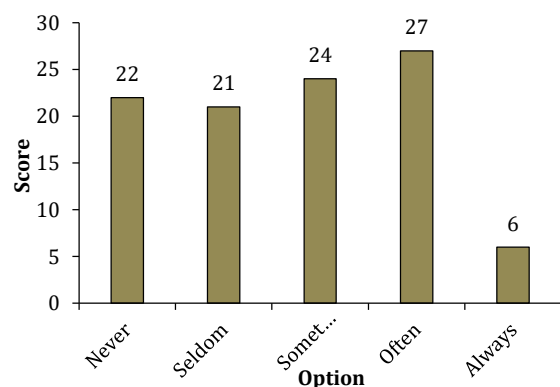
Principle 9: Each group develops new skills (collaboration, problem-solving, critical thinking, and management).

Principle 9 the students' evaluation of whether PjBL increased their soft skills (collaboration, problem-solving, critical thinking, and management). In their evaluation, it is evident that the responses look moderate, although category "sometimes" dominates the rate (35) and categories "always" and "often" were significantly higher than categories "seldom" and "never" with a ratio of (39: 26). This reflects that in general, the students feel that their soft-skill development was better developed through PjBL. Figure 10 represents the data distribution.

**Figure 10**  
Each Group Develops New Skills (Collaboration, Problem-Solving, Critical Thinking, and Management)



**Figure 11**  
Students Receive Enough Resources from Lecturers to Complete the Projects



Principle 10: Students receive enough resources from lecturers to complete the projects.

Regarding the provision of learning resources by the lecturers to support the students' projects, the students evaluate that it falls mostly into "often" and "sometimes" categories (more than 50) in total, although the rate for categories "seldom" and "never" were also high with a total of (43) in rate (see Figure 11).

### Discussion

The results have shown that the implementation of PjBL by the lecturers in the teaching and learning process was categorized as "good." However, a few principles were still not fully implemented. As suggested by Cocco (2006), an essential principle of this teaching method is the active engagement and participation of the students in the learning process. The lecturers have implemented such a principle well. The learning has been set up in a specific context, which allows the students to follow the content according to their learning capacity, and every individual engaged in active participation in which everyone was creatively involved in every learning phase. Furthermore, a collaborative measure has also characterized the learning processes and the students maintained conducive and interactive discussions and knowledge and skill sharing. Such an aspect plays an important role in PjBL, as stressed by Al-Balushi and Al-Aamri (2014), who claim that PjBL has both innovative and collaborative features. It also encourages students to expose inquiries by asking authentic questions, problems, and issues related to the topics of the lessons.

A few other essential principles of PjBL still need attention from the lectures. As shown through the findings, it is obvious that students have not yet been exposed to work independently outside the classroom, especially in collecting data from various resources in their attempts to solve the problems they were investigating. Such a dilemma may be affected by a limited capacity and lack of practice in classroom learning. Students were not accustomed to doing this, so they found it hard to implement it. Limited resource availability may also be another drawback from which information and data can be obtained in the students' areas. Publication of the project, which leads to the product that the students were trying to propose, remained low in the study. In fact, as Patton (2012) suggested, presentation and publication have become central features of PjBL. Again, the student's lack of practice and control from the lecturers may be a factor that triggers this.

The use of technology to support the student's project was not apparent in the study. As stated by Blumenfeld et al. (1991), Krajcik et al. (1994), and Krajcik et al. (2002), this aspect is deemed important as it drives students to be scaffolded with learning technologies that help them participate in classroom activities normally beyond their ability; and students are encouraged to create a set of tangible products that address the driving question. Such a phenomenon can be understood as neither students nor lecturers being fully supported by updated technological equipment.

The feature of real-world problems the lecturers have exposed in teaching and learning processes is another interesting thing to note. As Thu (2018) points out, real-world problems are said to characterize PjBL in a way that it is a distinctive nature of PjBL, which is often viewed as the core focus of its nature. This is so because students are intensively involved in the process of learning through various activities that connect to the students' real-life experience through enhancement of inquiries, planning, learning, organization, strategies management, and project evaluation. The feature of real-world problems characterizes PjBL in that it brings the concept of authentic content from various disciplines to be discussed in the learning process (Bell, 2010; Hanney & Savin-Baden, 2010; Thomas, 2000). It is argued that this concept of learning helps connect academic purposes and external social, political, and environmental aspects in the learning process (Bell, 2010). Although the results of the present study have shown a relatively high evaluation from the students (especially principal 1), the selection of the real-world problems exposed in the classroom might not have been well achieved.

### Conclusion

The study has shown that the lecturers' implementation of the PjBL method in the teaching and learning process was evaluated as

"Good" by the students, with an overall score of (3.7). The ten main principles of the method were well presented and applied and they increased the students' soft skills such as collaboration, management, problem-solving, and critical thinking. The student's ability to work out the project independently outside the classroom, especially in collecting supporting data, information, and evidence from various external resources, still needed to be improved, along with providing students with valuable insights, feedback, and control from the lecturers during the discussion and presentation work.

### References

- Al-Balushi, S. M., & Al-Aamri, S. S. (2014). The effect of environmental science projects on students' environmental knowledge and science attitudes. *International Research in Geographical and Environmental Education*, 23(3), 213-227. <https://doi.org/10.1080/10382046.2014.927167>
- Barak, M. (2012). From 'doing' to 'doing with learning': Reflection on an effort to promote self-regulated learning in technological projects in high school. *European Journal of Engineering Education*, 37(1), 105-116. <https://doi.org/10.1080/03043797.2012.658759>
- Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 83(2), 39-43. <https://doi.org/10.1080/00098650903505415>
- Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist*, 26(3-4), 369-398. <https://doi.org/10.1080/00461520.1991.9653139>
- Blumenfeld, P., Fishman, B. J., Krajcik, J., Marx, R. W., & Soloway, E. (2000). Creating usable innovations in systemic reform: Scaling up technology-embedded project-based science in urban schools. *Educational Psychologist*, 35(3), 149-164. [https://doi.org/10.1207/S15326985EP3503\\_2](https://doi.org/10.1207/S15326985EP3503_2)
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (1999). (Eds). *How people learn: Brain, mind, experience, and school*. National Academy Press.
- Cocco, S. (2006). *Student leadership development: The contribution of project-based learning* [Unpublished master's thesis]. Royal Roads University.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and Mix-methods approaches* (4th ed.). SAGE Publication.
- Dewey, J. (1959). *Dewey on education*. Teacher's College Press.
- Greenier, V. T. (2020). The 10Cs of project-based learning TESOL curriculum. *Innovation in Language Learning and Teaching*, 14(1), 27-36. <https://doi.org/10.1080/17501229.2018.1473405>
- Guo, P., Saab, N., Post, L. S., & Admiraal, W. (2020). A review of project-based learning in higher education: Student outcomes and measures. *International Journal of Educational Research*, 102, 1-13. <https://doi.org/10.1016/j.ijer.2020.101586>
- Hanney, R., & Savin-Baden, M. (2010). The problem of projects: Understanding the theoretical underpinnings of project-led PBL. *London Review of Education*, 11(1), 7-19. <https://doi.org/10.1080/14748460.2012.761816>
- Harmer, N., & Stoke, A. (2014). *The benefits and challenges of project-based learning: A literature review*. Plymouth University.
- Helle, L., Tynjälä, P., & Olkinuora, E. (2006). Project-based learning in post-secondary education - theory, practice and rubber sling shots. *Higher Education*, 51(2), 287-314. <https://doi.org/10.1007/s10734-004-6386-5>
- Holubova, R. (2008). Effective teaching methods—Project-based learning in physics. *US-China Education Review*, 5(12), 27-36.
- Kokotsaki, D., Menzies, V., & Wiggins, A. (2016). Project-based learning: A review of the literature. *Improving Schools*, 19(3), 267-277. <https://doi.org/10.1177/1365480216659733>
- Kolmos, A. (2009). Problem-based and project-based learning. In O. Skovsmose, P. Valero, & O. R. Christensen (Eds) *University Science and Mathematics Education in Transition*. Springer. [https://doi.org/10.1007/978-0-387-09829-6\\_13](https://doi.org/10.1007/978-0-387-09829-6_13)
- Krajcik, J. S., Blumenfeld, P. C., Marx, R. W., & Soloway, E. (1994). A collaborative model for helping middle grade science teachers learn project-based instruction. *Elementary School Journal*, 94(5), 483-497. <https://doi.org/10.1086/461779>

- Krajcik, J. S., Czerniak, C. M., & Berger, C. F. (2002). *Teaching science in elementary and middle school environment: A project-based approach* (2nd ed.). McGraw-Hill.
- Thu L. T. K. (2018, October). *Project-based learning in 21st century: A review of dimensions for implementation in university-level teaching and learning*. 4th ICEAC International Conference on English Across Cultures. Bali, Indonesia
- Lehmann, M., Christensen, P., Du, X., & Thrane, M. (2008). Problem-oriented and project-based learning (POPBL) as an innovative learning strategy for sustainable development in engineering education. *European Journal of Engineering Education*, 33(3), 283–295. <https://doi.org/10.1080/03043790802088566>
- Maros, M., Korenkova, M., Fila, M., Levicky, M., & Schoberova, M. (2023). Project-based learning and its effectiveness: Evidence from Slovakia. *Interactive Learning Environments*, 31(7), 4147–4155. <https://doi.org/10.1080/10494820.2021.1954036>
- Marx, R. W., Blumenfeld, P. C., Krajcik, J. S., Fishman, B., Soloway, E., Geier, R., & Tal, R. T. (2004). Inquiry-based science in the middle grades: Assessment of learning in urban systemic reform. *Journal of Research in Science Teaching*, 41(10), 1063–1080. <https://doi.org/10.1002/tea.20039>
- Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis. *Language Teaching Research*, 19(2), 129–132. <https://doi.org/10.1177/1362168815572747>
- Patton, M. (2012). *Work that matters: The teacher's guide to project-based learning*. Paul Hamlyn Foundation.
- Styla, D., & Michalopoulou, A. (2016). Project Based Learning In Literature: The teacher's new role and the development of student's social skills in upper secondary education. *Journal of Education and Learning*, 5(3), (307–313). <https://doi.org/10.5539/jel.v5n3p307>
- Thomas, J. W. (2000). *A review of research on project-based learning*. [http://www.bobpearlman.org/BestPractices/PBL\\_Research.pdf](http://www.bobpearlman.org/BestPractices/PBL_Research.pdf)
- William, M., & Linn, M. (2003). WISE inquiry in fifth grade biology. *Research in Science Education*, 32(4), 415–436.
- Wurdinger, S., Haar, J., Hugg, R., & Bezon, J. (2007). A qualitative study using project-based learning in a mainstream middle school. *Improving Schools*, 10(2), 150–161. <https://doi.org/10.1177/1365480207078048>

Received: 03 November 2023

Revised: 03 December 2023

Accepted: 13 December 2023

## Appendix 1

To what extent do you evaluate the implementation of Project-Based Learning (PjBl) by the lecturers in the classroom activities/practices?

No	Learning practices	Options					Total	Ave
		1	2	3	4	5		
1.	The class starts with a driving question/issue/problem related to the topic to be discussed or solved	7	12	14	31	36	100	3.8
2.	Students work independently in small groups based on a selected project	6	13	17	29	35	100	3.8
3.	The groups work based on schedule and timesheet as described in Syllabus	23	37	12	17	11	100	2.5
4.	The groups discuss, pose, inquire, analyze, and evaluate issues or problems related to the topics raised by lecturers	8	10	22	39	21	100	3.5
5.	The groups implement small projects independently outside classroom collecting information, facts, evident, data, to solve problems, build hypotheses, analyze and interpret data, and draw conclusions	33	25	16	15	11	100	2.4
6.	The groups receive supervision, feedback, evaluation, information, and control from the lecturers over the project process and completion	13	20	41	12	14	100	2.9
7.	The groups do project presentations for feedback	5	7	29	28	31	100	3.8
8.	Students have individual/group evaluation	19	17	23	24	17	100	3.0
9.	Each group develops new skills (collaboration, problem-solving, critical thinking, management, etc)	10	16	35	26	13	100	3.2
10.	Students receive enough resources from lecturers to complete the projects	22	21	24	27	6	100	2.8
	Total	146	178	233	248	195	1000	31.7
	%	14	18	23	25	20	100	Ave=3.17

Note. 1 = never; 2 = seldom; 3 = sometime; 4 = often; 5 = always.