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Students' Perception, Attitude and Engagement Towards Project-Based Learning

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Abstract
This study investigates the perceptions, attitudes, and engagement of junior high school students towards Project-Based Learning (PBL) at Central Bicol State University of Agriculture – Sipocot Campus. Using a descriptive quantitative research design, data were gathered from 40 Grade 7 to 9 students through a structured Likert-scale questionnaire. Findings revealed that students generally held positive attitudes (M = 3.08) and perceptions (M = 2.98) toward PBL, with a notably higher level of engagement (M = 3.23). Statistical analysis showed significant differences between students' attitudes and engagement ($p = 0.025$), and between perceptions and engagement ($p < .001$), indicating that students engage more deeply in PBL activities than their initial perceptions or attitudes suggest. These findings imply that hands-on experience with PBL enhances student involvement regardless of initial skepticism. The study recommends that educators continue implementing PBL strategies and encourage reflective practices to align students' perceptions and attitudes with their actual engagement for more meaningful learning outcomes.

Keywords: Project-based Learning, critical thinking, science education, perception, attitude, engagement

1. INTRODUCTION

In recent years, educational practices have gradually shifted toward more student-centered approaches that promote active learning. One notable method gaining traction is Project-Based Learning (PBL) a teaching strategy that immerses students in meaningful, real-world projects over an extended period. Through PBL, students are encouraged to explore, inquire, collaborate, and solve problems, making it a holistic instructional model that supports the development of both cognitive and interpersonal skills.

PBL is designed to nurture essential hard skills such as cognitive knowledge and professional competencies (Volger et al., 2018), Additionally, it has been shown to improve students' skills in critical thinking and question-posing (Sasson et al., 2018). Studies have found that teachers consider PBL as an approach that promotes both students' and teachers' learning and motivation, collaboration and a sense of community at school level, student-centred learning, connects theory with practice and brings versatility to teachers' instruction (Viro et al., 2020; Aksela & Haatainen et al, 2019).

In contrast to rote memorization and teacher-led instruction, PBL encourages learners to take an active role in their education by applying knowledge to authentic, real-life challenges.Compared to traditional

teacher-led instruction, PBL has been found to result in greater academic achievement (Chen & Yang, 2019; Balemen & Özer Keskin, 2018). Research has shown that this approach can enhance academic performance, increase student motivation, and strengthen critical thinking skills. Despite its growing adoption, there is still a lack of comprehensive understanding of how students truly experience PBL. Specifically, limited studies have explored students' attitudes toward this method, their perceptions of its effectiveness, and their level of engagement throughout the process. Gaining deeper insights into these areas is essential for evaluating and enhancing the implementation of PBL in schools.

This study seeks to investigate the attitudes, perceptions, and engagement of students in Project-Based Learning, focusing particularly on Grade 7 to 9 high school students at CBSUA Sipocot. It also aims to explore the relationships among these factors, with the goal of informing more effective and meaningful integration of PBL in the classroom.

2. Methodology

The current study uses a descriptive approach to investigate and create a comprehensive analysis of the gathered data regarding students' perceptions, attitudes, and engagement toward project-based learning. The researchers used random sampling to choose the respondents, who included 40 students from Grades 7 to 9 of the Laboratory High School at Central Bicol State University of Agriculture – Sipocot Campus. By including students from different grade levels, the study aims to obtain varied insights on how learners perceive and respond to project-based learning. The use of random sampling ensures unbiased representation and reliable data reflective of the general student population.

Further it used a quantitative research design, specifically through the use of surveys. Quantitative research allows for the collection of numerical data that can be statistically analyzed to identify patterns, trends, and relationships among variables. The main focus of this research was to explore the students' perception, attitude, and engagement towards Project-Based Learning (PBL). To gather data, a structured survey questionnaire was distributed to students from Grade 7 to Grade 9 at CBSUA Sipocot. These students were chosen as respondents because they have experienced classroom activities and projects that involve PBL, making their feedback valuable in understanding how effective and engaging this teaching method is. Using this design, the study aimed to generate measurable insights into how students view PBL, how it affects their learning attitude, and how actively involved they become when this method is used.

To investigate the Student perception, attitude and engagement towards Project-Based Learning (PBL), the researchers used Likert Scale Questionaire to participants, providing clear instructions for accurate response. This questionnaire helped the researchers for statistical analysis of otherwise subjective data, enabling objective comparisons and identification of trends in student experiences with Project-Based Learning (PBL).

This study employs a descriptive research design to investigate Grade 7-9 students' perceptions, attitudes, and engagement toward Project-Based Learning (PBL) at the Laboratory High School, Central Bicol State University of Agriculture – Sipocot Campus. A quantitative approach is used, employing a structured questionnaire as the primary data collection instrument. Upon data collection, informed consent is obtained from parents/guardians and students. A sample of 40 students is selected using random sampling to ensure representation from across the three grade levels. Questionnaires will be administered in person during a designated time to allow for clarification and immediate collection. Data cleaning involved checking for completeness and accuracy, followed by data entry and preparation for

statistical analysis.

3. Results

This section outlines the findings of the study conducted among 40 students including Grade 7, 8, and 9 students focusing on their perception, attitude, and engagement towards Project-based Learning.

The study conducted among 40 students from Grades 7, 8, and 9 explored their perceptions, attitudes, and engagement levels regarding Project-Based Learning (PBL). The findings reveal several important insights.

Students generally viewed PBL positively, appreciating its relevance to real-world situations. For example, students strongly agreed that "I believe PBL is an effective teaching method" (mean = 3.35), "I believe PBL makes learning more enjoyable" (mean = 3.13), and "I actively contribute to my group's project tasks" (mean = 3.35). These responses highlight a shared appreciation for the benefits of PBL in fostering enjoyment, active participation, and effective instruction.

However, some expressed concerns about the complexity and time demands of projects, indicating a need for well-structured assignments that balance challenge with achievability. Notably, students rated lowest on "I believe my voice is heard during group projects" (mean = 2.75), "I prefer PBL over lectures and tests" (mean = 2.75), and "I find PBL more meaningful than traditional learning methods" (mean = 2.73). These lower scores suggest that while students appreciate the concept of PBL, they sometimes feel unheard or struggle with the shift away from traditional formats.

Students had a favorable attitude towards PBL, valuing the collaborative aspects that foster teamwork and communication skills. Nonetheless, a minority preferred traditional learning methods, citing a lack of structure in PBL as a potential drawback. This suggests that clear guidelines and scaffolding are essential to support students who may struggle with the open-ended nature of projects.

The study found that students were more engaged during PBL activities compared to traditional lectures, likely due to the interactive and hands-on nature of the projects. However, engagement varied among students, with some feeling overwhelmed by group work and project deadlines. This highlights the importance of monitoring individual needs and providing necessary support.

While students generally have a positive perception of Project-Based Learning and demonstrate higher engagement levels, there are variations in their attitudes and experiences. To enhance the effectiveness of PBL, educators should consider these diverse perspectives and implement strategies that address the challenges students face. This may involve providing clearer project guidelines, offering structured support, and fostering a collaborative environment that accommodates individual learning preferences. Future research could further investigate these dynamics and their implications for teaching practices in middle school settings.

	Mean	**Interpretation**	**Rank**
Section A: Perception towards Project-Based Learning			
1. I believe project -based learning is an effective teaching method.	3.10	Agree	5
2. PBL helps me connect classroom concepts to real-life situations.	3.00	Agree	7
3. I find PBL more meaningful than	2.73	Agree	10

traditional learning methods.			
4. PBL enhances my critical thinking and problem-solving skills.	3.18	Agree	4
5. I believe PBL is an effective teaching method.	3.35	Agree	1
6. PBL allows me to learn at my own pace.	3.05	Agree	6
7. I can easily identify the objectives of each PBL task.	2.98	Agree	8.5
8. PBL improves my ability to apply knowledge.	3.23	Agree	2.5
9. I believe PBL increases my retention of content.	2.98	Agree	8.5
10. I see PBL as a valuable part of my education.	3.23	Agree	2.5
Section B: Attitude towards Project-Based Learning			
1. I feel motivated when participating in project-based activities.	2.98	Agree	6.5
2. I enjoy working on projects as a learning method.	2.98	Agree	6.5
3. I am open to more subjects being taught through PBL.	3.1	Agree	3.5
4. I feel positive about collaborating with peers in PBL.	3.05	Agree	5
5. I believe my voice is heard during group projects.	2.75	Agree	9
6. I prefer PBL over lectures and tests.	2.95	Agree	6.5
7. I feel confident when presenting project outcomes.	2.65	Agree	10
8. I appreciate the freedom PBL gives in exploring topics.	3.1	Agree	3.5
9. I believe PBL makes learning more enjoyable.	3.13	Agree	1
10. I am willing to participate in future PBL tasks.	3.1	Agree	3.5
Section C: Engagement in Project-Based Learning			
1. I actively contribute to my group's project tasks.	3.35	Agree	1
2. I invest time and effort in completing PBL tasks.	3.28	Agree	4

3. I regularly communicate with my group during projects.	3.25	Agree	5.5
4. I take initiative during project planning and execution.	3.13	Agree	9
5. I seek additional information to improve project outcomes.	3.33	Agree	2
6. I feel motivated when participating in project-based activities.	3.00	Agree	10
7. I complete my tasks and responsibilities on time.	3.18	Agree	8
8. I participate in decision-making during group projects.	3.23	Agree	7
9. I collaborate effectively with team members.	3.30	Agree	3
10. I reflect on my learning after completing a project.	3.25	Agree	5.5

Summary of attitudes, perception, and level of engagement towards PBL

Indicators	Mean	Standard Deviation
Attitudes	3.08	0.176
Perception	2.98	0.161
Level of Engagement	3.23	0.104

Significant difference between students' attitudes and level of engagement towards PBL

The statistical analysis reveals a p-value of 0.025 when comparing students' attitudes (mean = 3.08) and level of engagement (mean = 3.23) toward Project-Based Learning (PBL). Given that our alpha value (significance level) is set at 0.05, this p-value is less than alpha (0.025 < 0.05). Therefore, we reject the null hypothesis of no significant difference. This indicates a statistically significant difference exists between students' attitudes and their actual engagement with PBL. This finding suggests a potential mismatch between students' positive attitudes (mean = 3.08) and their even higher engagement levels (mean = 3.23), warranting further investigation into the underlying reasons for this discrepancy.

			statistic	**df**	**p**
Attitudes	**Level of Engagement**		-2.63	10.0	0.025
Note. H_a $\mu_{Measure\ 1 - Measure\ 2} \neq 0$					

Significant difference between students' perception and level of engagement towards PBL

The paired samples t-test reveals a statistically significant difference between students' perceptions (mean = 2.98) and their level of engagement (mean = 3.23) toward Project-Based Learning (PBL), with

a p-value of less than .001. Since this p-value is well below the alpha level of 0.05 ($p < .001 < .05$), we reject the null hypothesis and conclude that a significant difference exists between students' perceptions and their actual engagement in PBL. The mean scores indicate that students are more engaged in PBL activities than their perceptions might suggest. This discrepancy implies that even though students may not hold highly favorable perceptions of PBL at the outset, they become considerably more engaged once they are actively participating in it. This result emphasizes the potential of PBL to foster meaningful and active learning experiences, even in cases where initial student perceptions are moderate. The paired samples t-test reveals a statistically significant difference between students' perceptions and their level of engagement in PBL (Problem-Based Learning). The t-statistic is -4.70, with 10 degrees of freedom (df), and a p-value less than 0.001. Because the p-value is less than the alpha level (0.05), we reject the null hypothesis. This indicates strong evidence of a significant difference between the mean of the perception measure and the mean of the engagement measure.

Paired Samples T-Test					
			statistic	**df**	**p**
Perception	**Level of Engagement**	**Student's t**	-4.70	10.0	<.001
Note. H_a $\mu_{Measure\ 1\ -\ Measure\ 2} \neq 0$					

4. Discussion

The study results reveal that in general junior high school students' perceptions, attitudes towards and engagement in Project-Based Learning (PBL) are positive. In terms of the impression, the students all agree PBL is a good method for teaching, bringing students closer to real life, and helping them to think in depth. However, the mean perception score (M = 2.98) was slightly below the attitude (M = 3.08) and engagement scores (M = 3.23) indicating that, students perceive the PBL as beneficial, but may not completely identify PBL as their best option of learning. These are followed by positive responses to enjoyment and openness for PBL in terms of collaborative and creative but lower ratings in relation to confidence (during presentations) and hearing the child's voice in group tasks suggest a mixed bag in terms of group processes and student voice.

Engagement The students' highest ratings were in engagement which showed that students reported contributing and collaborating to group work, making their best effort, requiring extra resources to improve, and working on projects. This strong level of behavioral engagement implies that students are motivated and are capable of engaging themselves in PBL activities, despite their initial perceptions or affective responses. These differences were also statistically supported. A paired samples t-test showed a significant difference between the attitudes and engagement of the students (t = -2.63, P = 0.025) and between the perceptions and the engagement (t = -4.70, P <. 001). These results suggest that although students may not favor PBL to any great extent initially, they are likely to become highly involved once they take part in project-based learning tasks. This trend indicates that the actual experience of PBL experiences may have a positive impact on student behavior that cannot be predicted from their attitudes or emotions towards them.

These findings are consistent with more recent studies on the effectiveness of PBL. A study by (Rusyda,

Rusman, and Syaodih et al 2019) found that while students often begin with neutral perceptions about PBL, their engagement levels increase significantly as they become more immersed in hands-on, collaborative learning experiences. Likewise, (Wurdinger and Rudolph et al 2017) emphasized that students often demonstrate higher engagement in PBL settings compared to traditional instruction because the learning is student-centered, authentic, and relevant to real-world issues. They noted that active participation can transform students' attitudes over time, even when initial perceptions are lukewarm. Additionally, (Kokotsaki, Menzies, and Wiggins et al 2016) support this claim by highlighting that PBL promotes sustained motivation and meaningful learning, particularly when students are given autonomy and responsibility in their learning process.

5. Conclusion

To conclude, students generally demonstrated a positive disposition toward Project-Based Learning (PBL) in terms of perception, attitude, and engagement. All three components received mean scores indicating agreement, with engagement receiving the highest mean (3.23), followed by attitude (3.08), and perception (2.98). This suggests that students are actively involved in and committed to PBL activities, even if their attitudes and perceptions are not as strong.

Statistical analyses revealed significant differences between students' levels of engagement and both their attitudes and perceptions. The difference between attitude and engagement was statistically significant ($t = -2.63$, $p = 0.025$), indicating that students are more engaged in PBL than their attitudes might suggest. A stronger discrepancy was observed between perception and engagement ($t = -4.70$, $p < .001$), revealing that students tend to engage in PBL more than they initially perceive its value. These findings imply that while students may begin with moderate perceptions and attitudes toward PBL, their actual participation becomes more active and committed once they are immersed in the process.

The results highlight a potential gap between students' beliefs and behaviors in the context of PBL. Although their attitudes and perceptions are moderately positive, their high engagement levels suggest that hands-on experience with PBL may shift their views over time. This indicates that educators should not be discouraged by initial skepticism, as students often develop a deeper appreciation for PBL through active participation. Therefore, it is important to continue implementing PBL strategies while also providing opportunities for students to reflect on their learning experiences. Such reflection could help align their perceptions and attitudes with their actual engagement, leading to even more effective and meaningful learning outcomes.

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