Project-Based Learning Approach and Student Engagement among College Students

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ABSTRACT

This study explored the student engagement of college students, focusing on the factors that how learning outcomes and academic achievement could be impacted by students' opinions on project-based learning and their participation in class activities. The study determined the significant relationship between perception of the utilization of project-based learning approaches and student engagement among college students in Santo Tomas, Province of Davao del Norte. The data were gathered from the 225 BTVTEd students. This study used stratified random sampling technique. This study utilized quantitative non-experimental research through a descriptive correlational design. This study utilized adapted instruments that were thoroughly evaluated for precision and relevance. The statistical tools used in this study were mean and person r. Results revealed that perception of the utilization of project-based learning approach and student engagement got a descriptive level of very high which was always observed. The study findings implied that students who have a positive perception of PBL are more likely to be highly engaged, likely because it encourages them to actively participate, collaborate, and apply their knowledge in real-world contexts. The relationship between perception of the utilization of project-based learning approaches and student engagement suggests that increasing the application of project-based learning methods has the potential to improve student engagement and drive in their education.

Keywords: Project-based learning Approach, Student Engagement, Correlational Research Design, Philippines.

INTRODUCTION

Student involvement is defined as the dedication to achieving learning objectives and the active participation in a range of academic, extracurricular, or school-related activities (Ginting, 2021). However low intrinsic motivation was a major obstacle to participation in learning activities (Dicheva et al., 2023). Negative consequences like dropouts and bad behavior could result from disengagement (Zubair et al., 2024). Disinterest and frustration were common emotions among students, and they might cause them to stop participating in class activities (Oliveira & Lathrop, 2022).

In China, low student engagement in activities has been identified as a common issue among universities and found the three elements for student engagement practical relevance, academic validity, and effective collaborations based on data collected from more than half a million Chinese college students but it has been paid relatively little attention in the country (Xu et al., 2023). Moreover, in Nigeria, the result of a study showed that low engagement in learning among college students has increased and as a result, students were not attending their classes and did not pass assignments (Abdullahi et al., 2020). Furthermore, low student engagement in Italy prevents students from actively participating in the educational process because Italian university students' study in a particular setting that has been employed in several research on dropout rates and student engagement (Tani, et al. 2021).

In the Philippines particularly in Cebu, institutions found that even college students taking classes show a lack of engagement and have trouble understanding and numerous studies conducted in various contexts have

demonstrated that the issue of student disengagement was still a global concern, underscoring the continuous battle with low levels of student involvement (Torrejos, 2024). Moreover, 49.53% of college students in Cotabato City exhibit low engagement since they were distracted from their studies by surfing over social media on their phones (Gumban & Tan, 2020). In Davao del Norte's public colleges 40% has dropped due to lack of classroom engagement (Baldon et al., 2022).

Despite recognizing the importance of student engagement, a gap remains between teaching methods and the level of engagement needed for 21st-century success. Traditional approaches often fail to develop adaptability, critical thinking, and lifelong learning skills. Research shows declining engagement leads to lower achievement, higher dropout rates, and inadequate career preparation. Contributing factors include passive teaching methods, lack of personalized learning, and insufficient educator support. While technology has potential, its use in classrooms was often ineffective. Bridging this gap requires active learning, personalized instruction, professional development, and meaningful technology integration to foster a collaborative and engaging learning environment. The researchers urge us to conduct this study in order to fill in the gap.

Statement Of the Problem

This research determined the relationship between the perception of the utilization of project- based learning approaches and student engagement among college students in Santo Tomas, Davao del Norte.

Specifically, this aimed to answer the following questions:

1. What is the level of perception of the utilization of project-based learning in terms of:

1.1. authentic learning;

1.2. collaborative learning;

1.3. disciplinary subject learning; and

1.4. iterative learning?

2. What is the level of student engagement in terms of:

2.1. behavioral engagement;

2.2. emotional engagement; and

2.3. Cognitive engagement?

3. Is there a significant relationship between perception of the utilization of project-based learning and student engagement?

Hypothesis

The hypothesis was tested at 0.05 level of significance and stating that there is no significant relationship between the utilization of the Project-Based Learning (PBL) approach and the engagement of college students.

Theoretical Framework

This study was anchored to the Self- Determination Theory (SDT) of Deci and Ryan (1985). This theory provided a strong framework for describing how project- based learning affects student involvement and motivation. SDT has developed over time to explain how both internal and extrinsic motivation affect students' learning. According to the theory, relatedness, competence, and autonomy were the three fundamental psychological demands that affect motivation. These criteria were essential for establishing a learning environment in which students were more likely to be actively involved because they feel in charge of their education, competent, and

connected to their teachers and classmates. The practical, group-based, and frequently student-driven projects that promote in-depth interaction with the material were how PBL embodies these components. Research backs up the claim that when learning settings were in line with SDT principles, students were more involved and exhibited higher levels of intrinsic motivation (Ahmadi et al., 2023).

This study was supported by the theory of Piaget and Vygotsky (1950) Constructivist Learning Theory. According to constructivist ideas, which emphasize past knowledge and experience, the incorporation of authentic activities into PBL fosters creativity (Kiesler, 2022). Collaboration, social engagement, and scaffolding were all part of project-based learning, which enables students to dive into meaningful work while exploring, innovating, and honing their critical thinking abilities (Kouicem, 2020).

Conceptual Framework

The independent variable of the study was about Utilization of Project-Based Learning Approach which includes the following indicators, Authentic learning, Collaborative learning, Disciplinary subject learning; and Iterative learning of Bernas et al., (2024).

The dependent variable was student engagement, by which Delfino (2024) was marked by several indicators, such Behavioral Engagement, Emotional Engagement, and Cognitive engagement (Delfino 2019). The conceptual framework as shown in Figure 1 presents the study's variables.

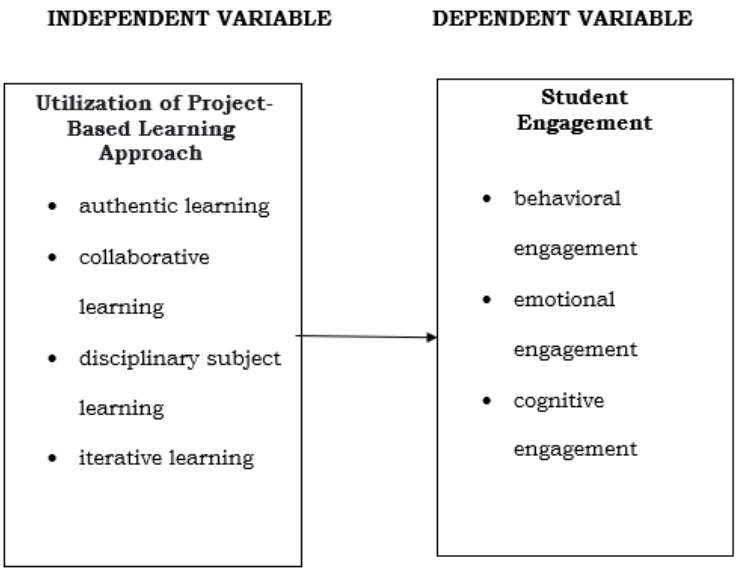

Figure 1. The Conceptual Paradigm of the Study

METHODOLOGY

Research Design

This study used quantitative, non-experimental, descriptive correlational research design. Non-experimental research concentrates on monitoring and studying current phenomena rather than changing variables with randomly allocated groups as in experiments. Descriptive research design's main goal was to methodically observe and record all factors and circumstances affecting the phenomena (Singh, 2024).

According to Sreekumar (2024) one kind of study design that examined the connection between two or more variables was correlational research. Various numerical data were gathered using different techniques for this kind of study, and the data were then statistically examined to aggregate, compare, or illustrate correlations between them. The association between project-based learning and student engagement was determined using this strategy.

Research Subject

The respondents of this study were 225 students out of 539 total population of BTVTEd students studying in the local college in Santo Tomas Davao del Norte. The respondents were selected through stratified random sampling technique. Stratified random sampling makes it possible to analyze both the general population and particular subgroups within it. This implied that scholars learn more about both broad patterns and the distinctive traits of many populations (Nguyen et al., 2020).

Table 1. Distribution of Respondents

Year level	Population	Sample	Percentage
Group A	138	55	25.6%
Group B	118	50	21.89%
Group C	138	60	25.6%
Group D	145	60	26.9%
Total	**539**	**225**	**100%**

Research Instrument

The researchers used two (2) adapted survey questionnaires for independent variable and dependent variable from internationally disseminated articles to achieve the goals of this research. The questionnaires were validated by the panelist and an external validator to test its validity. A questionnaire used to gather information from respondents regarding their attitudes, experiences, and opinions. Questionnaires would be useful for gathering quantitative data (Bhandari, 2022).

Utilization of Project- based learning Approach Questionnaire. The survey questionnaire for the independent variable, utilization of project- based learning approach, was from the research study titled "Project- based Learning Approach, Productive Competence, and Learning Engagement of the Bachelor of Technical-Vocational Teacher Education Students" by Bernas et al., (2024). This consisted of 20 items from the four (4) indicators namely: Authentic learning (5 items), Collaborative learning (5 items), Disciplinary subject learning (5 items), and Iterative learning (5 items).

In describing the utilization of project-based learning approach, the survey used a 5-point Likert scale, ranging from 5 for "Strongly Agree", 4 for "Agree", 3 for "Moderately Agree", 2 for "Disagree", and 1 for "Strongly Disagree".

The parameter and Scaling used for the interpretation of Project- based learning Approach in a local higher education institution in Santo Tomas, Davao del Norte were the following:

Scale	Range of mean	Descriptive Equivalent	Descriptive Interpretation
5	4.20 – 5.00	Very High	Project- based Learning approach was always observed.
4	3.40 – 4.19	High	Project- based Learning approach was oftentimes observed.
3	2.60 – 3.39	Moderate	Project-based Learning approach was sometimes observed.
2	1.80 – 2.59	Low	Project- based Learning approach was less observed.
1.	00 – 1.7	Very Low	Project- based Learning approach was least observed.

Student Engagement. The survey questionnaire for the dependent variable, student engagement, was from the research study titled "Student Engagement and Academic Performance of Students of Partido State University" by Delfino (2019). It consists of 50 items and is composed of five (5) indicators namely: Behavioral Engagement (12 items), Cognitive Engagement (17 items), and Emotional Engagement (11 items).

In describing the student engagement, the survey used a 5-point Likert scale, ranging from 5 for "Strongly Agree", 4 for "Agree", 3 for "Moderately Agree", 2 for "Disagree", and 1 for "Strongly Disagree".

The parameters and Scaling used for the interpretation of Student Engagement in a local higher education institution in Santo Tomas, Davao del Norte were the following:

Scale	Range of Mean	Descriptive Equivalent	Descriptive Interpretation
5	4.20 – 5.00	Very high	Student engagement was always observed.
4	3.4 – 4.00	High	Student engagement was often observed.
3	2.6 – 3.3	Moderate	Student engagement was sometimes observed.
2	1.8 – 2.5	Low	Student Engagement was seldom observed.
1	1.0 – 1.7	Very Low	Student Engagement was least observed.

Statistical Treatment of Data

Mean. A basic statistical measure that shows a dataset's average value, the mean was essential for comparing and comprehending data distributions (Li et al., 2020). This was used to determine the level of utilization of project-based learning approach and student engagement.

Pearson R. A popular metric for assessing the linear relationship between two variables was Pearson R. A perfect negative relationship was represented a value of -1, a perfect positive relationship a value of +1, and a weaker or nonexistent linear relationship a number closer to 0 (Weisburd et al., 2020). This was used to determine the relationship between the utilization of project- based learning approach and student engagement among local colleges.

RESULTS AND DISCUSSIONS

Level of Perception of the Utilization of Project-Based Learning

Table 2 presented the summary of the level of perception of the utilization of project-based learning. As shown, the equivalent overall mean was 4.36 with a standard deviation of 0.66, qualitatively described as very high. This means that Perception of the Utilization of Project-Based Learning was always observed. The highest mean of 4.39, described as very high, was for both indicators 2, "Collaborative Learning" and 3, (Disciplinary Subject Learning) While, the lowest mean of 4.31 was for indicator 1, "Authentic Learning" which was still described as very high.

The overall findings on the level of Perception of the Utilization of Project-Based Learning implied that very high levels of Perception of the Utilization of Project-Based Learning was extensively used and well regarded by students as a useful strategy that improved their educational experience.

The study Azman et al. (2024) showed that through practical and significant learning experiences. Teachers noticed that students were more passionate, which makes the classroom environment morelively and engaging. Also Xu et al. (2024) pointed out the way in which Project Based Learning (PBL) helped students in higher vocational education develop their practical abilities. Extant literature examines how students participating in Project Based Learning improve their critical thinking, problem-solving, and engagement skills. Additionally, as seen by their favorable feedback, students said that PBL was a helpful learning approach that helped them develop their technical skills and insights and increased study motivation as well.

Table 2
Level of Perception of the Utilization of Project-Based Learning

Indicators	Mean	SD	Descriptive Equivalent
1. Authentic Learning	4.31	0.68	Very high
2. Collaborative Learning	4.39	0.65	Very high
3. Disciplinary Subject Learning	4.39	0.65	Very high
4. Iterative Learning	4.35	0.66	Very high
Overall	**4.36**	**0.66**	**Very high**

Level of Student Engagement

Table 3 was presented as a summary of the level of Student engagement. As shown, the equivalent overall mean was 4.23 with a standard deviation of 0.75, qualitatively described as very high. This means that Student engagement was always observed. The highest mean of 4.26, described as very high, was for indicator 1, "Behavioral Engagement ". While, the lowest mean of 4.21 was for indicator 3, “Cognitive Engagement” which is still described as very high.

The overall findings indicated a strong level of student engagement in their education. They were active participants in class, maintain concentration, express enthusiasm for the material, and demonstrate critical thinking and thorough comprehension.

According to the research of Hastomo and Septiyana, (2022), high levels of cognitive, emotional, and behavioral involvement in teaching-learning activities were characteristics of student engagement. These levels were especially raised by collaborative classroom activities, which successfully inspire students and raise their level of engagement in online learning environments. Similarly, Idulsa and Luzano, (2024) concluded that students had high levels of academic engagement, as seen by their timely submissions and high-caliber production. Their extremely high levels of extrinsic and intrinsic motivation were substantially connected with this engagement.

Table 3
Level of Student Engagement

Indicators	Mean	SD	Descriptive Equivalent
1. Behavioral Engagement	4.26	0.72	Very high
2. Emotional Engagement	4.23	0.75	Very high
3. Cognitive Engagement	4.21	0.77	Very high
Overall	**4.23**	**0.75**	**Very high**

Correlation between reading literacy skills and academic performance

Showed in table 11 were the findings about the correlation between perception of utilization of project-based learning, and student engagement with an overall calculated r-value of 0.733 and a p-value of 0.000. Since this p-value was less than 0.05, the null hypothesis was rejected. This result indicated a statistically significant relationship between the perception of utilization of project-based learning and students’ engagement. In other words, the findings indicated, students' level of involvement was found to be more positively impacted by a more positive perspective of project-based learning. Thus, a more successful and well executed project-based learning strategy seems to be linked to increased student engagement and participation in educational activities.

This study is about the effect on student involvement of how project-based learning was perceived. Student participation and involvement were two important metrics used to assess how well project-based learning worked. The results showed that students' views had a big impact on how involved they were in the learning activities. This demonstrated how students' perspectives on project-based learning might influence their level of engagement with academic and cognitive activities.

Table 3

Significance of the Relationship Between Perception of the Utilization of Project-Based Learning and Student Engagement

Variables Correlated	r	p-value	Decision on H_o	Decision on Relationship
Perception of the Utilization of Project-Based Learning and Student Engagement	0.733	0.000	Rejected	Significant

This align to the study of Amerstorfer and Von Münster-Kistner, (2021) stated that the effect on student engagement of project-based learning was perceived. Student participation and involvement were two important metrics used to assess how well project-based learning worked. It showed that students' views had a big impact on how involved they were in the learning activities. This demonstrated how students' perspectives on project-based learning might influence their level of engagement with academic and cognitive activities. Moreover, Zen and Ariani (2022) said that project-based learning was a teaching approach that employs projects as a learning instrument to develop competent attitudes toward knowledge, creativity, leadership, risk-taking, daring, and conceptual mastery. Teaching that was always speaker-centric was replaced by this learning. The project-based learning approach's guiding idea was to highlight students' abilities to solve real-world challenges. Lastly Zhang and Ma, (2023) found that Project-based learning greatly enhanced students' learning outcomes and had a beneficial impact on their academic performance, emotional attitudes, and critical thinking abilities when compared to the traditional teaching paradigm.

The result was confirmed by Self- Determination Theory (SDT) Deci and Ryan (1985) that project- based learning affects student involvement and motivation. SDT has developed over time to explain how both internal and extrinsic motivation affect students' learning, this was affirmed by Piaget and Vygotsky (1950) that Constructivist Learning Theory emphasized past knowledge and experience, the incorporation of authentic activities into PBL fosters creativity. Collaboration, social engagement, and scaffolding were all part of project-based learning, which enabled students to dive into meaningful work while exploring, innovating, and honing their critical thinking abilities.

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary Of Findings

The major findings of the study were the following:

1. The level of perception of the Utilization of Project-Based Learning had an overall mean of 4.36 with a standard deviation of 0.66 with a descriptive equivalent of very high. The highest indicator was both Collaborative learning and Disciplinary subject learning with a mean of 4.39, while the lowest indicator was Authentic learning with a mean of 4.31.

2. The level of Student engagement had an overall mean of 4.23 and a standard deviation of 0.75 with a descriptive equivalent of very high. The highest indicator was Behavioral engagement with a mean of 4.26, while the lowest indicator was Cognitive engagement with a mean of 4.21.

3. The relationship of perception of project-based learning and student engagement showed a strong positive correlation with an r-value of 0.733 and a p-value of <0.000. These results led to the rejection of the null hypothesis.

Conclusions

1. The result of perception on utilization of project-based learning revealed a very high level, which was always observed. The overall findings of perception on utilization of project-based learning implied the use of PBL in

the classroom was well regarded by the students. The findings implied that PBL was extensively used and well regarded by students as a useful strategy that enhanced their educational experience.

2. The level of student engagement was very high, considered as always observed. The overall findings implied that students' participation in class activities was always observed, emphasizing their critical thinking, active participation, and emotional investment in their education.

3. The results showed the significance of the association between perception on utilization of project-based learning and student engagement, indicating a positive, strong, and significant correlation. This indicates that the students' level of involvement was found to be more positively impacted by a more positive perspective of project-based learning. Thus, a more successful and well executed project-based learning strategy seems to be linked to increased student engagement and participation in educational activities.

Recommendations

Based on the findings, analysis, and conclusion drawn in this study, the following recommendations were summarized:

1. The Commission on Higher Education (CHED) was encouraged to support the creation of policies and educational initiatives that prioritize incorporating industrial collaborations, real-world scenarios, and community-based issues into PBL frameworks. In order to guarantee that learning experiences were not just project-focused but also pertinent, significant, and reflective of real-life applications, higher education institutions should be encouraged to coordinate their PBL initiatives with CHED's outcomes-based education (OBE) framework. CHED could enhance the quality of PBL implementation and increase students' readiness for societal and professional issues by encouraging closer ties between academic material and real-world, hands-on experiences.

2. School Administrators may continue college instructors to use student-focused teaching techniques including inquiry-based learning, problem-solving exercises, and group discussions that foster profound comprehension. School Administrators may help with this by providing chances for professional development that center on strategies for cognitive engagement and by praising teachers who successfully create environments that are intellectually stimulating. Furthermore, encouraging a culture of academic curiosity via interdisciplinary projects, learning communities, and mentoring programs would assist students in developing a deeper connection with their curriculum, which would ultimately improve their general engagement and academic performance.

3. College Instructors may continue deeper emotional and cognitive engagement, college instructors may also create projects that are team-based, and related to students' academic and professional interests. College Instructors could enhance perception and engagement by actively incorporating students in PBL's planning, execution, and reflection phases. This would ultimately result in a more dynamic and productive learning environment.

4. Future Researchers may investigate the connection between students' opinions on project-based learning (PBL) and their degree of involvement in college courses using both quantitative and qualitative methods in order to obtain a thorough grasp. Research into the effects of students' views of the relevance, structure, and application of PBL on behavioral, emotional, and cognitive aspects of student participation was advised. Researchers may also look at factors including year level, academic discipline, and previous PBL experience in order to find trends or variations among various student populations. In order to enhance teaching methods and encourage greater student engagement in higher education settings, future research could provide insightful information by looking at these characteristics.

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