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## Enhancing Student Engagement through Project-Based Learning among 5th Grade Students

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### ABSTRACT

Student disengagement is a persistent challenge in elementary education, often leading to lower academic achievement. Project-Based Learning (PBL) has been identified as a potential strategy to foster active, meaningful learning. This study aimed to investigate the impact of a PBL intervention on the engagement levels of 5th-grade students in a government school. An action research design was employed over a 20-day teaching practice with a single group of 5th-grade students (N=20). The intervention consisted of 20 hands-on, real-world projects integrated into the curriculum. Data were collected using a pre- and post-assessment engagement checklist (quantitative) and classroom observations with student reflections (qualitative). A paired-sample t-test was used to analyze the quantitative data. Quantitative results showed a statistically significant increase in engagement scores from pre-test (M=3.25, SD=0.97) to post-test (M=4.15, SD=0.75),  $t(19) = -4.72$ ,  $p = .000$ . Qualitative data revealed that students became more active, curious, collaborative, and took greater ownership of their learning. The findings indicate that a well-structured PBL intervention can significantly enhance behavioral, emotional, and cognitive engagement among 5th-grade students. PBL is recommended as an effective pedagogical approach to create more dynamic and student-centered elementary classrooms.

**Keywords:** Project-Based Learning, Student Engagement, Elementary Education, Action Research, 21st Century Skills

### Introduction

Student engagement, defined as the degree of attention, curiosity, interest, optimism, and passion that students show (Fredricks, Blumenfeld, & Paris, 2004), is a critical predictor of academic success and skill development. However, maintaining high levels of engagement, particularly in upper elementary grades, remains a significant challenge. Traditional, teacher-centered methods often fail to foster the deep, intrinsic motivation required for lifelong learning.

Project-Based Learning (PBL) is an instructional methodology that addresses this challenge by organizing learning around complex, authentic questions and carefully



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designed products and tasks (Thomas, 2000). PBL is grounded in constructivist theories (Piaget, 1966; Vygotsky, 1978), which posit that students learn best by actively constructing knowledge through experience and social interaction. For 5th-grade students, who are in Piaget's concrete operational stage, PBL offers developmentally appropriate opportunities for hands-on exploration, problem-solving, and collaboration. Existing research demonstrates that PBL can improve academic achievement, critical thinking, and collaboration (Krajcik & Blumenfeld, 2006). However, much of this research focuses on middle and high school students, creating a gap in the literature regarding its specific impact on engagement in elementary settings.

### Research Questions:

This study seeks to fill that gap by examining the following research question:  
How can Project-Based Learning enhance student engagement among 5th-grade students?

### Research Methodology:

#### Research Design

This study utilized an action research design, following a cyclical process of planning, acting, observing, and reflecting. This approach was chosen for its practicality and focus on implementing an intervention (PBL) within a real classroom context to directly improve teaching practice and student outcomes.

### Participants and Context

The study was conducted in a government elementary school. The participants were a single class of 20 fifth-grade students, selected via purposive sampling. The class represented a typical mix of student abilities and backgrounds.

### Intervention

The 20-day PBL intervention involved the implementation of 20 distinct, hands-on projects. These projects were designed to be interdisciplinary, student-driven, and connected to real-world problems. Examples included:

**Community Helper Project:** Researching and presenting on local professions.

**Recycled Art and Craft:** Creating useful items from waste to learn about sustainability.

**Plant Growth Observation:** Conducting a long-term scientific inquiry.

**Math Puzzle Challenge:** Applying mathematical concepts collaboratively.

**Local History Walk:** Investigating and documenting community history.

Each project emphasized sustained inquiry, critical thinking, collaboration, and a public presentation of work.

### Data Collection Instruments

A mixed-methods approach was used for data collection:

**Engagement Checklist:** A Likert-scale checklist was administered pre- and post-intervention to measure changes in behavioral, emotional, and cognitive engagement. It assessed participation, enthusiasm, and task focus.

**Classroom Observations:** The researcher maintained detailed field notes and used an observational checklist to document student behaviors, collaboration, and overall involvement during PBL activities.



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**Student Reflections:** Informal conversations and reflective journals provided qualitative insights into students' perceptions and feelings about their learning.

### Data Analysis

Quantitative data from the engagement checklist were analyzed using SPSS. A paired-sample t-test was conducted to compare pre- and post-test scores, with a significance level of  $p < 0.05$ . Qualitative data from observations and reflections were analyzed thematically to identify recurring patterns of engagement, such as increased collaboration, curiosity, and self-motivation.

### Results

#### Quantitative Findings

The paired-sample t-test revealed a statistically significant increase in student engagement following the PBL intervention. The mean engagement score rose from 3.25 (SD = 0.97) in the pre-test to 4.15 (SD = 0.75) in the post-test. The mean difference was -0.90 (SD = 0.85), which was significant ( $t(19) = -4.72, p = .000$ ). The 95% confidence interval for the mean difference ranged from -1.30 to -0.50, confirming the reliability of the increase.

\*Table 1: Paired Samples t-test for Pre- and Post-Intervention Engagement Scores\*

	Mean	N	Std. Deviation	t	df	Sig. (2-tailed)
Pre-test	3.25	20	0.97	-4.72	19	.000
Post-test	4.15	20	0.75			

#### Qualitative Findings

Thematic analysis of observational and reflective data supported the quantitative results, highlighting three key dimensions of improved engagement:

**Behavioral Engagement:** Students were visibly more active and participative. They took initiative, managed their time within groups, and consistently remained on-task.

**Emotional Engagement:** A marked increase in enthusiasm and interest was noted. Students expressed excitement about projects, showed pride in their work, and demonstrated greater perseverance when facing challenges.

**Cognitive Engagement:** Students asked more inquisitive questions, engaged in deeper discussions to solve problems, and made connections between project work and real-life contexts. The reflective journals showed evidence of metacognition and personal investment in learning.

### Discussion

This study provides compelling evidence that Project-Based Learning is an effective strategy for enhancing student engagement among 5th-grade students. The significant quantitative improvement, corroborated by rich qualitative data, confirms that PBL can successfully address the common issue of disengagement in elementary classrooms.

The findings align with existing literature that posits PBL fosters engagement by making learning meaningful and relevant (Thomas, 2000). The hands-on, collaborative nature of



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the projects resonated with the students' developmental needs, providing them with autonomy and a sense of purpose. The observed increase in curiosity and problem-solving initiative supports constructivist theories that children build knowledge most effectively through active discovery (Piaget, 1966) and social interaction (Vygotsky, 1978).

While the study yielded positive results, some challenges were noted, such as the need for careful scaffolding for students unaccustomed to self-directed learning and ensuring equitable participation in groups. These challenges underscore the importance of the teacher's role as a facilitator and the need for structured support within the PBL framework.

### Implications for Practice

Based on the findings, the following recommendations are offered:

**For Teachers:** Integrate PBL units into the curriculum, starting with shorter projects. Provide clear structures and roles while allowing for student choice and voice. Act as a facilitator, guiding inquiry rather than dictating steps.

**For School Leaders:** Allocate time and resources for PBL, including professional development for teachers to build capacity in designing and managing project-based classrooms.

### Limitations and Future Research

This study was limited by its short timeframe and focus on a single classroom, which affects the generalizability of the results. Future research should involve larger, longitudinal studies across multiple schools to examine the long-term impact of PBL on engagement and academic achievement. Comparative studies with other active learning strategies would also be valuable.

### Conclusion

This action research study demonstrates that Project-Based Learning is a powerful pedagogical approach for transforming the 5th-grade classroom into a dynamic and engaging learning environment. By shifting from a traditional, passive model of instruction to one centered on student-driven, authentic projects, educators can significantly enhance behavioral, emotional, and cognitive engagement. Fostering such engagement in elementary school is crucial for developing the motivated, critical, and collaborative learners needed for the 21st century.

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