

THE EFFECTS OF PROJECT BASED LEARNING ON STUDENT OUTCOMES IN A GEOMETRY CLASSROOM

INTRODUCTION

- KUA is a mid-sized independent boarding school.
- Could Project Based Learning (PBL) enhance student outcomes in a KUA geometry classroom?
- To find out, my class collaborated with the school to reimagine an old barn on campus.
- This architecture project supplemented our study of area, volume, similarity, and trigonometry.



STUDENT QUOTES

"This project helped me learn the most about trigonometry because I used it all the time to find lengths and measurements."

"This project helped me understand how to use trigonometry in the real world—it made a lot more sense when it corresponded to something tangible."

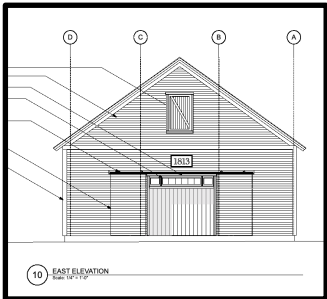
"Working in groups to apply our knowledge to the real world changed my perspective of the importance of the material and the relevance that it has."

"I enjoyed finding real life uses for geometry and actually having an effect on others and the environment."

"I got a lot better at constructing explanations and designing solutions because of the written question practice. Writing made me display an increased understanding."

CONCLUSIONS & IMPLICATIONS

- PBL was effective in improving student attitudes toward math, ability to make connections to their own lives, subject-matter proficiency, and engagement with SEPs.
- Lingering questions include: How long-lasting was the learning? How might I incorporate smaller scale PBL experiences into my curriculum more often?



RESULTS

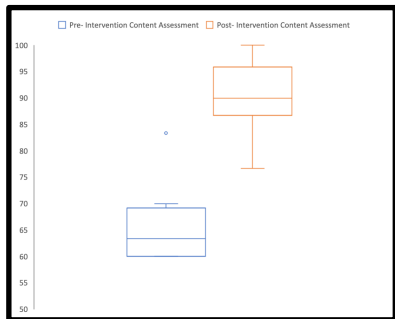


Figure 1. Score distributions of the Pre- and Post- Intervention Content Assessment, (N=12).

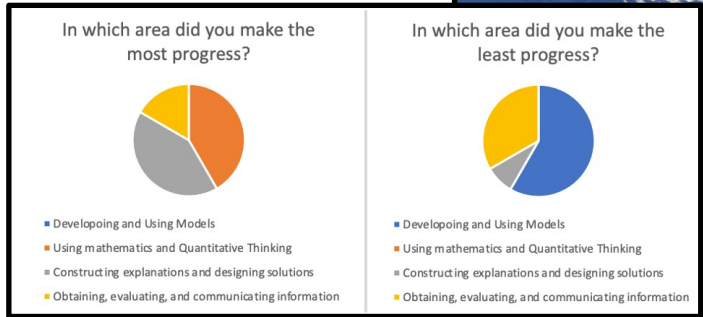


Figure 2. Results of the Post- Intervention Survey question "In which area did you make the most progress? The least progress?", (N=12).

FOCUS QUESTIONS & DATA COLLECTION

Data Collection Instruments	Focus Questions		
	What is the impact of PBL on students' attitude toward math and ability to make connections to their own lives?	What is the impact of PBL on students' subject-matter proficiency?	Can PBL serve as an effective tool for developing students' ability to engage with and utilize applicable SEPs?
Pre and Post Intervention Likert Survey	X		X
Pre and Post Intervention Content Assessment		X	
Student Journals	X	X	X
Student Interviews	X	X	X



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