

Project-Based Learning & Measuring the Effects of Implementation: An Action Research Plan

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Project Based Learning (PBL) is a “teaching method in which students learn by actively engaging in real-world and personally meaningful projects” (*What Is PBL?*, 2024). The topic of my action research is how implementing all of the completed phases of Project Based Learning and showcasing the student's learning journey through e-portfolios can potentially impact the achievement, growth, and ultimately engagement of 4th-grade students in mathematics. My study aims to inform and influence other educators on the impact that the Project-Based Learning model and e-portfolios can have on the achievement and growth of elementary students (as it relates to my innovation plan). Depending on the research, Project-Based Learning in the elementary classroom with the use of e-portfolios to showcase work, could potentially achieve great success for our learners.

Fundamental Research Question

My action research plan is centered around the question that follows. In what ways does the Project-Based Learning model, with the combined use of e-portfolios to showcase work, impact student math achievement and growth in my 4th-grade class? This is particularly important to me and the future endeavors of my students being that mathematics is a fundamental life skill and many critical careers and fields rely on the use of math. Recent studies have shown a drastic decline in the math scores of students living in the United States. Mathematics is a stepping-stone subject, meaning that to be successful in later grade levels, students must understand and be successful in the earlier grade levels.

Summary of the Literature Review

In my literature review, I studied the effects of implementing project-based learning in the upper-elementary classroom. The particular effects that I aimed this research on were growth and achievement. The research provided shows a positive correlation between the implementation of PBL and achievement/growth in subjects that utilized PBL. More research would be beneficial as there was scarce information regarding the use of PBL in the upper-elementary math classroom specifically. However, there is plentiful research regarding the implementation and results of PBL in older grade levels in every subject.

Study Information

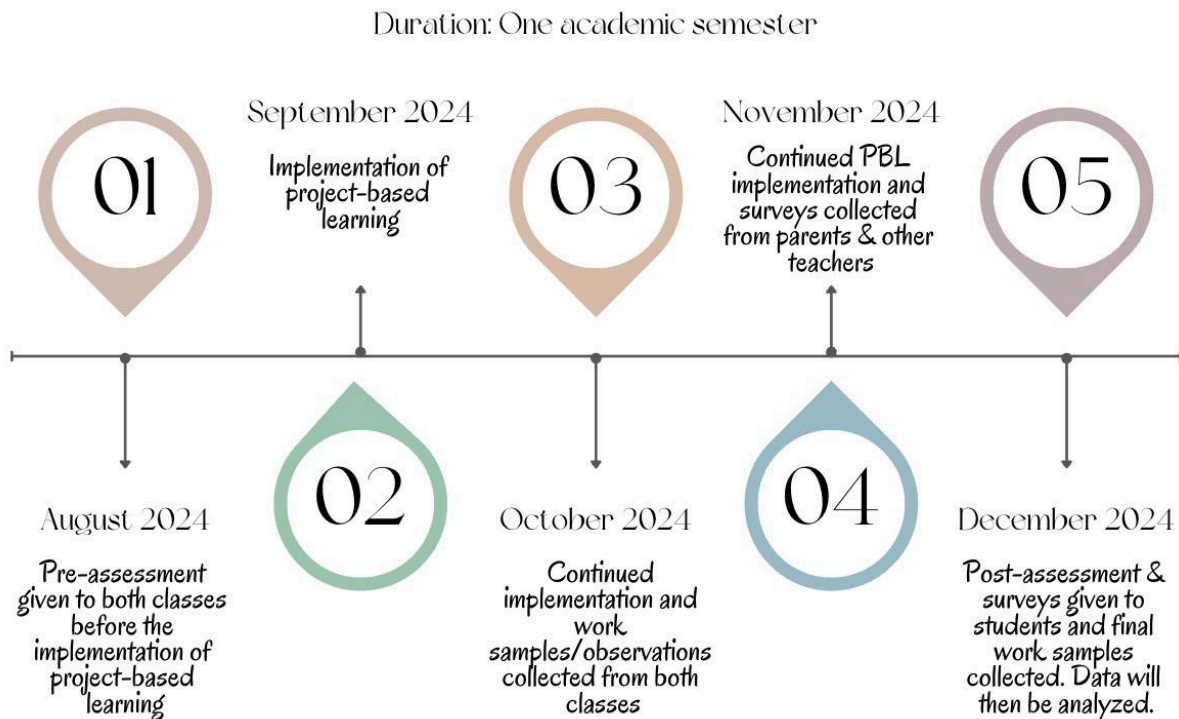
Research Design

My research design will be a combination of both methods. Student achievement can be measured through quantitative data, while student growth can be measured through both quantitative and qualitative data and behaviors. Students can show growth through not only academics but also through behaviors such as the ability to be self-reliant, maturity, independence, and leadership skills to name a few. “In situations where a more comprehensive understanding is required, you may want to consider a mixed methods study that collects and analyzes quantitative and qualitative data. A mixed methods approach that employs both quantitative and qualitative methods can be more time-consuming and cumbersome, but the multiple approaches work hand in hand so that each approach covers the shortcomings of the other” (Qualitative & Quantitative Research, 2024). I will specifically use the Concurrent Triangulation Design to analyze my data. This will allow me to get a full picture of all aspects regarding student achievement, growth, and engagement once the Project Based Learning model is implemented in the classroom with the focus group. Concurrent Triangulation Design involves

both qualitative and quantitative data so that I may observe my research question from multiple methods (What Is Mixed Methods Research?, 2024).

Data Collection and Analysis

To collect and analyze data I will use a variety of tools including surveys, assessments, work samples that will be located on their e-portfolios, reflections, and Google Sheets. I created a detailed timeline for the collection and analysis of this data as follows:



In August, I will administer the pre-assessment, NWEA MAP, to both the controlled and variable classes. This assessment collects data about the students level four different instructional categories of math. These categories include, numerical representations and relationships, data analysis and monetary transactions, computations and algebraic relationships, and geometry and measurement. The NWEA Map assessment also includes a prediction of where the student should be by the next semester and end of the year, as well as their growth in comparison to the average growth of a student their age. I will also administer a pre-survey to the [parents](#) and

[students](#) of the classes to gather the opinions and thoughts about how the student views math.

The last step in August is to have students create their e-portfolios to collect and showcase their work along the way. In September, I will begin implementing project based learning and have students make daily post on their e-portfolios as a sort of exit ticket. In October, we will continue the project-based learning model and I will begin making formal observations using a [rubric](#), while collecting detailed data about engagement, work samples, achievement, and critical thinking/problem solving skills. In November we will continue the project based learning journey, however, at the end of November I will send out another survey to [parents](#) and [students](#) to get their feedback and thoughts of project-based learning and if they feel that the students perceptions of math has changed. I will also send a [post-survey](#) out to specials and other content teachers to get their feedback and see if they have noticed any change in the students perceptions of math and if they notice a change in the students ability to problem solve more independently. In December I will wrap up the action research by administering a post-assessment, which is another NWEA MAP assessment and measures the same data as the pre-assessment. However, it will include comparisons to the pre-assessment in the data results.

Sharing and Communicating Results

I plan to share the results of this action research with the members of my team, instructional coaches, and administrators. These individuals are key influencers and will play a detrimental part in gaining buy-in for further implementation of project-based learning in my institution. I will share these results by organizing all of the data and samples into a professional presentation and include links to the e-portfolios of my students. By including these links, key influencers will be able to literally see the development of the students critical thinking and problem-solving skills over time.

Final Reflection

During the wrap up of this action research, I will update and revise my literature review. I will reflect on the work of myself and my students by either planning to further implement the use of the same innovation project with the rest of my students or finding ways to improve the project to get the desired results. I will also be reflecting on ways that I can further implement project-based learning in the rest of my school. I believe that we can see huge success in the implementation of project-based learning in all grades and content levels. Project-based learning can be differentiated to any level and age.

References

Johnson, C., & Delawsky, S. (2013, July). Academic Research International. *PROJECT-BASED LEARNING AND STUDENT ENGAGEMENT*, 4(4).

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