

VAI EDUCATION SPOTLIGHT

Classrooms that Matter: Making PBL a Reality

What Is Project-Based Learning Anyway?

Whether you call it project-based learning or problem-based learning or any of the other buzzwords out there, we all know that schools are often lacking in instruction that is authentic and relevant to students' lives. If we take the jargon out of it, PBL really comes down to providing an authentic learning experience, something that students find purpose in, and are thus more motivated to learn and perform well. In order to clearly define what PBL means to you, begin by establishing a set of characteristics that you think exemplify an authentic learning experience. Here are some characteristics that I find useful, so feel free to use this list, adapt it, or create your own altogether. But having a clear picture of what success looks like is critical to helping teachers make PBL a reality in the classroom.

Characteristics of Project-based Learning

- **Sustained Inquiry:** Scientists and researchers study problems for years, decades even. Yet so often we relegate our instruction to 1-hour increments. We need to provide students with opportunities to develop the academic perseverance required to tackle big problems that require sustained inquiry.
- **Iterative Thinking:** We're always pressed for time, so we are often quick to move from one thing to the next without giving students critical time to reflect upon their learning, get feedback from others, and revise their work to a new level. The design thinking process is critical in today's workforce. Getting students comfortable with seeking and implementing feedback will serve them well in our classrooms and beyond.
- **Real-World Application:** Too often students feel like the only purpose of an assignment is to get a grade. If they are applying what they have learned to real-world problems outside the classroom, not only are they more engaged, but the community places more value on schools and the role they play.
- **Authentic Audience:** When students present their learning to the teacher alone, there's minimal engagement. But the moment you bring in someone outside the classroom, especially someone with expertise in the subject matter being studied or someone who is personally impacted by the subject, the level of engagement skyrockets.



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- **Student Choice/Ownership:** Employers value most those employees who are self-driven, who can figure out the path forward without having every detail laid out for them. So, offering students opportunities for choice and ownership not only increases engagement, but it also develops their sense of self-direction, better preparing them for the future workplace, and saving you valuable time not having to direct every students’ every move.
- **Cross-Curricular:** A surprising number of concepts are taught across disciplines as if the concept was brand new each time. Consider comprehension strategies often taught in elementary reading: cause and effect, sequencing, making predictions, main idea and details, etc. These concepts are also found in science, social studies, and math, so instead of teaching them by discipline, we can save time by teaching them through a PBL unit and then applying them as needed in content-area learning.
- **Collaboration:** Most professions require workers to engage in at least some level of collaboration. STEM fields are particularly dependent on workers’ ability to combine their focused efforts in one area with someone else’s work to move ideas forward. We can provide meaningful, rich opportunities for students to make meaning together.
- **Engagement:** Genuine student engagement is the ultimate goal of any authentic learning experience. When students feel a connection to the content, when they feel like their work has purpose, they work harder and smarter. They retain learning because it was memorable, meaningful, and fun.

Project vs. PBL

According to a recent [article from Phi Delta Kappan](#), one of the biggest challenges to PBL is defining what PBL really is. In order to successfully implement PBL into your classrooms, it’s helpful to establish a foundational understanding of what PBL is and what it is not. This is a critical step since some educators think that because they do fun, engaging projects with their students, that they are doing PBL, when that isn’t always the case. Here are 3 pairs of scenarios to help view PBL as a continuum, such that projects can always be enhanced to offer more authentic learning characteristics, and thus deeper learning experiences.

Project	PBL Unit
After learning about nutrition, students design and create chef hats.	Students learn about nutrition, create healthy recipes, and hold a family feast day with the community.
Students learn about all the planets and create a travel poster advertising the planet of their choice.	Students investigate what it takes to preserve Earth and what it takes to live on Mars. They choose which cause they want to support and create a commercial to solicit donations for their selected cause.
Students learn about energy conservation and hold a poster session for parents to share what they have learned.	Students conduct an energy audit of their school and petition the school board to make changes based on their learning.

The secret to making PBL work for you is to align the project with as many content standards as possible. In the beginning, teachers may feel more comfortable tackling fewer content standards at a time, but once they are comfortable with the flow of a project, they might be surprised by how much content they can integrate into the project. The more content standards teachers address within a project, the more students make connections across the various learning objectives and the less time teachers spend transitioning to a new piece of learning and establishing a whole new purpose for learning each time.

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Successfully aligning content standards to PBL units requires flipping the order teachers typically think about lesson planning in.

Typical Lesson Planning Thought Process	PBL Lesson Planning Thought Process
“I have to teach X; how can I make it interesting and relevant?”	“What would my students find interesting; how can I connect X to that?”

Here are a few project examples to illustrate the wide range of content standards that can be aligned to any given PBL unit.

Project Example: Food for Thought

In the Blue Apple project, [Food for Thought](#), students create, test, and revise healthy recipes using a Top Chef Competition format. They present their dishes to a live audience and create a cookbook to sell for charity. Here is an overview of the learning targets by lesson for the project and a select set of Grade 4 content standards this project could align to.

Project Learning Targets	Possible Content Alignment (Grade 4)
<p>Lesson 1: Students understand that nutrition is really, really important.</p> <p>Lesson 2: Students evaluate whether foods are healthy or not.</p> <p>Lesson 3: Students discuss and debate perspectives on nutrition.</p> <p>Lesson 4: Students think mathematically to analyze nutrition labels.</p> <p>Lesson 5: Students use creative thinking to generate multiple recipes.</p> <p>Lesson 6: Students collaborate to make their healthy recipes.</p> <p>Lesson 7: Students use data to improve their recipes.</p> <p>Lesson 8: Students present their food with poise, polish, pizzazz, and also panache.</p>	<p>ELA</p> <ul style="list-style-type: none">• Writing Explanatory Texts• Literature• Publishing with Technology• Collaboration <p>Math</p> <ul style="list-style-type: none">• Equivalent Fractions• Graphing• Multiplication• Measurement <p>Science</p> <ul style="list-style-type: none">• Sensory Information• Data Analysis• Comparing Multiple Solutions• Constraints <p>Social Studies</p> <ul style="list-style-type: none">• Role of Science and Technology• Comparisons with History• Economic Interdependence• Group Decision-Making

Project Example: Moments to Remember

In the Blue Apple project, [Moments to Remember](#), students make friends with a resident of a retirement home, listen to their story, and craft a biography that they share with their new senior friend and their friend’s family. Here is an overview of the learning targets by lesson for the project and a select set of Grade 5 content standards this project could align to.

Project Learning Targets	Possible Content Alignment (Grade 5)
<p>Lesson 1: Students learn the importance of sensitivity in relation to aging.</p> <p>Lesson 2: Students make connections between young and old, then and now.</p> <p>Lesson 3: Students relate to cross-generational audiences through play.</p> <p>Lesson 4: Students craft hand-written letters to learn more about their senior friend.</p> <p>Lesson 5: Students learn the characteristics of biographies by examining models.</p> <p>Lesson 6: Students use graphic organizers to prepare their thoughts for writing.</p> <p>Lesson 7: Students accurately describe the memories of their senior friend.</p> <p>Lesson 8: Students think iteratively to refine their biographies.</p> <p>Lesson 9: Students present biography books to their friends.</p>	<p>ELA</p> <ul style="list-style-type: none">• Determining the Theme• Discuss with Diverse Partners• Comparing Stories within a Genre• Integrate Informational Texts <p>Math</p> <ul style="list-style-type: none">• Number Sense• Add and Subtract Fractions• Powers of Ten• Whole-Number Division <p>Science</p> <ul style="list-style-type: none">• Patterns of the Night Sky Matter and its Interaction• Protecting Earth’s Resources• Needs of Plants and Animals <p>Social Studies</p> <ul style="list-style-type: none">• Life in Different Eras• Questions about Historical Figures• Cultural Influences on Perspective• Differing Points of View

Create Your Own PBL Experience

Preparing PBL units doesn’t need to be overly time consuming or complicated. Here’s a 4-step process that provides some specific scaffolds and supports to take some of the mystery out of the process.

- Select an Idea:** There are no shortages of PBL ideas on the internet, but I like to look at lists that include about a paragraph of information. That’s just enough to get a good idea of whether or not my students will like it or not, but not so much that it takes hours of reading just to understand the project. Check out these [Blue Apple Project Ideas](#) and select one that you think will resonate with your students (or come up with your own).
- Answer These Three Questions:** To begin fleshing out a project, use these three questions to ensure it engages students’ hearts, hands, and heads.

 - How will this idea engage students emotionally?
 - What will students do or make (big picture)?
 - What will students learn (big picture)?

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3. **Complete Storyboard:** Fill out the front side of the [storyboard](#) to flesh out the project outline. In this step, teachers focus on what real-world connections they can make, what content standards they want to address, and what opportunities there might be for collaboration.
 - **Real-World Connection:** First think about ways you can bring the world to your students. What industry experts might be able to share their knowledge with your class? Then think about how you can bring your students to the world. Where can you display their work so that it can be viewed well beyond the classroom, ideally by an audience authentic to the topic?
 - **Content Standards:** When you have an engaging project to start with, you can usually connect it to a large number of content standards. You don't have to hit all content areas, but the more you do, the better the context will be for learning, and the more instructional bang you can get for the time spent on the project.
 - **Collaboration:** Look beyond simple cooperation to complete a task. Explore opportunities for students to make meaning together. How can one group within the class support the understanding of another? How might student understanding be improved if they worked with another group outside their classroom, perhaps in another part of the country?
4. **Build Lesson Plans:** Use the back side of the [storyboard](#) to develop lesson plans and identify resources that complete the project path:
 - **Start with Why:** Motivate students with a compelling question and engaging hook.
 - **Think it Through:** Guide students in exploration and discovery.
 - **Work it Out:** Support collaborative teams as they apply critical and creative thinking to real-world problems.
 - **Fix it Up:** Encourage iterative thinking with purposeful feedback and revision.
 - **Share your Awesome:** Give work relevance and meaning by presenting it to authentic audiences.

Here's a [sample completed storyboard for the project: Take a Stand](#).



Making PBL a Reality: One More Project



If you'd like to try project-based learning to connect to your future scientists, check out the Blue Apple Project, [What's in Your Water?](#), where students learn about all things water; from watersheds to water pollution. They will investigate water samples to determine what's in their water, develop ways to improve water quality, and share what they've learned by creating a fundraiser to raise money for a water-specific charity.

- This [Project Overview](#) provides a lesson-by-lesson summary of this project.
- Here is a [Recommended Book List](#) of rich, diverse literature on the topic of water and watersheds.
- Check out [K-8 Content Standard Connections](#) for this project.
- To see this project in action, check out the [project video](#).



Conclusion

Whether your teachers are established PBL educators or are brand new to the concept, the key is to tap into the elements that drove them to choose this profession in the first place. If you long to create memorable, meaningful experiences that give an authentic context for learning, then I hope the information in this article proves helpful to you and your teachers. Your support is key to helping them make PBL a reality!

[Click here](#) if you would like to see a 30-minute webinar presentation of this content:
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