Project-Based Learning 101
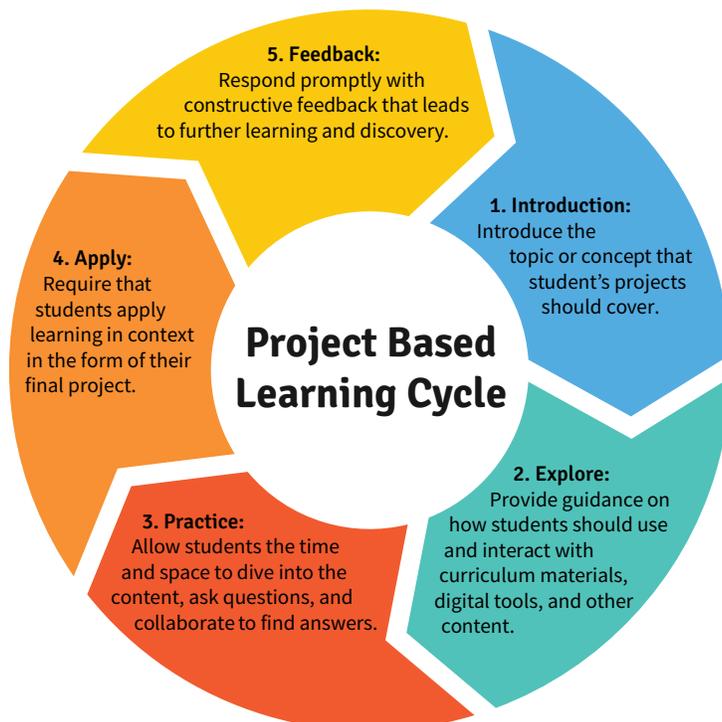
What is Project-Based Learning?

"PBL, otherwise known as project-based learning is an instructional approach designed to give students the opportunity to develop knowledge and skills through engaging projects set around challenges and problems they may face in the real world."

Project-based learning, or PBL, is more than just projects. As the Buck Institute for Education (BIE) explains, with PBL students "investigate and respond to an authentic, engaging, and complex problem, or challenge" with deep and sustained attention. ArchForKids LLC put it even more succinctly: PBL is "learning by doing."

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Why Project-Based Learning? Project-Based World

The truth is, many in education are recognizing we live in a modern world sustained and advanced through the successful completion of projects. Or, as Swiss Psychologist Jean Piaget put it, "knowledge is a consequence of experience."

Project Based Learning Cycle

5. Feedback: Respond promptly with constructive feedback that leads to further learning and discovery.

1. Introduction: Introduce the topic or concept that student's projects should cover.

2. Explore: Provide guidance on how students should use and interact with curriculum materials, digital tools, and other content.

3. Practice: Allow students the time and space to dive into the content, ask questions, and collaborate to find answers.

4. Apply: Require that students apply learning in context in the form of their final project.

It's true! Your weekend chores, an upcoming presentation, or organizing a fundraising event—they're all projects.

For most modern workers, it will be a series of projects that mark their career rather than years of service to a specific organization. "Solving real-world issues that matter is important to us as adults—and it's important to our students," explain Lathram, Lenz, and Vander Ark in their eBook, Preparing Students for a Project-Based World.

In short, if we are to prepare students for success in life, we need to prepare them for a project-based world.

What are the Essential Elements of Project-Based Learning?

Although definitions and project parameters may vary from school to school, and PBL is sometimes used interchangeably with "experiential learning" or "discovery learning," the characteristics of project-based learning are clear and constant. In essence, the PBL model consists of these seven characteristics:

- Focuses the student on a big open-ended question, challenge, or problem to research and respond to and/or solve.
- Brings what students should academically know, understand, and be able to do into the equation.
- Is inquiry-based.
- Uses 21st-century skills such as critical thinking, communication, collaboration, and creativity, among others.
- Builds student choice into the process.
- Provides opportunities for feedback and revision of the plan and the project.
- Requires students to present their problems, research process, methods, and results.

Following fifteen years of literature review and distilled educational experience, the Buck Institute for Education also identified seven essential elements for PBL but focused them on project design. Collectively these elements are called Gold Standard PBL. According to the BIE, the key elements to project design include:

- A Challenging Problem or Question
- Sustained Inquiry
- Authenticity
- Student Voice and Choice
- Reflection
- Critique and Revision
- Public Product

All these elements, if combined well, result in students learning key knowledge, understanding, and skills for success.

An example where all these elements come together is in our high school Business Incubator class. Teams of students propose and design a product based upon a challenging need or intricate problem. These young entrepreneurs pitch their ideas to business and community leaders in an effort to gain support for launching their product.

One team of students designed a mobile app providing real-time air quality readings at locations around the world. Raising awareness about air pollution, supporting health-conscious travelers, and making global connections were galvanizing real-world provocations for their project.

It's worth noting that while project-based learning may seem like some specific or isolated instructional practice, the lists above should look familiar. They are really the elements of great learning experiences. You don't have to subscribe to project-based learning to incorporate elements of it in your classrooms.

Having said that, there are benefits that true project-based learning provides.

Benefits of Project-Based Learning

Too often, traditional learning never ventures beyond the realm of the purely academic. Project-based learning [connects students to the real world](#). PBL prepares students to accept and meet challenges in the real world, mirroring what professionals do every day.

Instead of short-term memorization strategies, project-based learning provides an opportunity for students to engage deeply with the target content, bringing about a focus on long-term retention. PBL also [improves student attitudes toward education](#), thanks to its ability to [keep students engaged](#). The PBL structure lends itself to building intrinsic motivation because it centers student learning around an essential central question or problem and a meaningful outcome.

Daniel Pink, in [his TEDTalk](#) and influential book, [Drive](#), says people are intrinsically motivated by three things—autonomy, mastery, and purpose. Popular terms like grit and rigor become embedded dispositions when learners sink their teeth into meaningful endeavors.

A [recent collaborative study](#) conducted by the University of Michigan and Michigan State University suggests the implementation of project-based learning correlated positively with student achievement, particularly in schools serving high-poverty communities. This research emphasizes the importance of projects being standards-aligned and supported with research-proven instructional strategies.

Because of its focus on 21st-century skills, the PBL model also enhances students' technology abilities. Jennifer Gonzalez noted how project-based learning [helps students develop teamwork and problem-solving skills](#), along with the ability to communicate effectively with others. The collaborative nature of projects also reinforces the social-emotional learning (SEL) programs being implemented at progressive schools around the world.

These interpersonal aspects of PBL dovetail perfectly with the use of technology in the classroom. Technology-based projects are interdisciplinary, collaborative, inquiry-based, self-directed, motivating,

and [address the full range of student needs](#) and learning styles, according to Christa Love of TechnoKids. Additionally, digital literacies and digital citizenship objectives become ingrained in tech-based projects.

Speaking of learning objectives, a quick review of [ISTE's recently revised standards for students](#) will disclose the relevance of PBL to modern learning. By highlighting standards including empowered learner, innovative designer, creative communicator, and global collaborator, you would think these standards were tailor-made with PBL in mind.

Challenges of Project-Based Learning

The Intel Corporation [identified several reasons](#) why project-based learning can represent such a radical departure from what we are used to in education. PBL requires you to coach more and instruct less, to embrace interdisciplinary learning instead of remaining locked in single-subject silos, and to be more comfortable with uncertainty and discovery during the learning process.

For many instructors, PBL is a stark contrast to the traditional education they experienced. Change takes time and is seldom without apprehension and challenges. However, when we consider the types of educational experiences we value for our modern learners, it becomes apparent the traditional "sage on the stage" instructional model falls significantly short. The truth is, though, you can overcome these PBL challenges. Good problems or ideas can come from your students, parents, or community members. Instead of lectures and book learning, teachers can think through the steps required to solve a problem and use those steps as project-learning activities. Instead of planning a massive project, the learning process can be made more manageable by chunking the project into smaller parts, with frequent checkpoints built into the timeline. Instead of a traditional summative exam, authentic assessments can be developed by communicating with professionals in the field regarding what a presentation would look like related to a particular project.

Examples of Project-Based Learning in Action

In [one science-based project](#), students begin with a visit to a zoo, learning about animal habitats and forming opinions on which habitats best suit a selected animal. For this example, the project component included teams of students collaborating to develop a research-supported habitat plan for presentation to professional and student zoologists.

While the sciences fit neatly into a PBL environment, the instructional strategy lends itself naturally to interdisciplinary learning. In an example that [blends English language arts and the social studies](#), students answer the classic essential question, "What role does censorship play in society?" Following introductory

instruction, students select a banned book, read it, compose a persuasive essay and take part in a censorship-related mock trial experience conducted in the presence of experts.

Want to find solace from the boring, "drill and kill" Math lessons? In [this example](#), students assume the role of a National Security Agency code breaker, with a life-or-death project scenario in which they must decode a message potentially revealing the location of a planned terror attack on the United States. Students decrypt the message, send a coded message of their own and present their work. A professional in a related field visits the class to launch the project and connect it to real-world experience.

Are you looking for more examples of PBL in schools? John Larmer, Editor and Chief for the [Buck Institute for Education PBL Blog](#), shares several shining examples of schools making a commitment to deeper learning through PBL instruction. Larmer suggests investigating schools belonging to the [Deeper Learning Network](#). These innovative schools include the essential elements frequently mentioned in BIE's Gold Standard PBL.

Project-Based Learning Lesson Plans You Can Try Today

The Buck Institute also provides a hub for PBL lesson plans that align to Common Core standards. They make it easy to search their database by the source of the lesson plan, the subject, and the course.

A few quick examples of the more than 100 PBL lessons include:

- [The Ultimate Design Challenge](#)—Students design solutions to a current problem using mathematical models.
- [Lending a Helping Hand](#)—Students become financial advisors and are challenged to make the best use of $25 in a way that impacts their community most.
- [Lost!](#)—In this project, students are isolated somewhere in the world and must design a civilization that stands the test of time.

Getting Started with Project-Based Learning

Every journey may begin with a single step, but sometimes that step can seem daunting. Carol Ann Tomlinson, [writing about differentiation in the classroom](#), advised teachers to start with "small, well-orchestrated changes," selecting a few targeted goals each year, focusing on doing those things well and concentrating on growth.

The same concept applies to project-based learning. Dream big, but [start small](#). Writing for Edutopia, Andrew Miller [advised teachers to keep things simple](#) by limiting the scope and duration of a project, using

or renovating an existing project, and taking the time to get meaningful feedback and engage in professional reflection.

You can also flip your understanding of how to get started with project-based learning by approaching it from the students' perspective and providing them with the resources they need to make sense of PBL as a concept and the practical steps once they are engaged in the process.

Tom Vander Ark, writing for Getting Smart, shares a helpful introductory framework for high-quality PBL. This framework includes six criteria meant to support students, parents, and educators as they embark on their PBL journeys. These criteria include; authenticity, challenge, collaboration, and reflection. Additional examples and resources related to project-based learning can be found here.

Project-based learning is easier than you may think and well within your grasp. Sometimes coming up with project ideas can present an initial stalemate for students. This post from TeachThought includes resources for teachers, as well as, project ideas for students. How would you like 42 prompts for your students so they can design their own projects? You can start small, think practically, and change the way you and your students view content learning and mastery.

It's Time to Start Considering Project-Based Learning

What does learning look like? Under what conditions does our most profound and best learning occur? For most of us, we learn best by doing, examining, reflecting, and iterating.

Successful entrepreneur, Richard Branson said, "You don't learn to walk by following rules. You learn by doing … and by falling over." In contrast, but still in line with PBL principles, PBL guru John Dewey said, "We do not learn from experience. We learn from reflecting on experience."

Project-based learning takes the essential characteristics of what we value most about education and puts them front and center of our formal learning environments. It is a popular and noble aspiration for educators to inspire and develop life-long learners. Undeniably, PBL helps prepare students for the "real world" since that is naturally where their learning occurs.

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