



SETTING THE STANDARD FOR PROJECT BASED LEARNING

A PROVEN
APPROACH TO
RIGOROUS
CLASSROOM
INSTRUCTION

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Why Project Based Learning?

In the hundreds of “PBL 101” workshops conducted each year by the Buck Institute for Education across the United States and in other nations, we ask teachers and administrators to describe an “ideal graduate” from the K–12 system. Our school and district partners sometimes do the same exercise in their communities with parents, people from local businesses and civic organizations, and other stakeholders. Every time, everywhere, the lists generated are remarkably similar, with items such as these:

- Problem solver
- Responsible
- Works well with others
- Can work independently
- Critical thinker
- Confident
- Manages time and work effectively
- Communicates well with a variety of people

When asked *how* students learn these qualities of an ideal graduate, teachers and administrators say that it sometimes happens in traditionally taught classrooms, but they acknowledge that it’s inconsistent at best. Our workshop participants then go on to learn how

project based learning (PBL) provides opportunities for students to build these qualities, as well as more deeply learn traditional academic content and understand how it applies to the real world.

We do have to be wary of excessive hype in today's education landscape. Some advocates for PBL make it sound like a cure-all for what ails schools: PBL will inspire and motivate passive students, restore the joy of teaching, rebuild communities, help solve world problems, and... dramatically raise test scores! Although PBL is not a panacea, there is some truth behind (most of) these claims. We can confidently state that project based learning is a powerful teaching method that does the following:

- Motivates students.
- Prepares students for college, careers, and citizenship.
- Helps students meet standards and do well on tests that ask students to demonstrate in-depth knowledge and thinking skills.
- Allows teachers to teach in a more satisfying way.
- Provides schools and districts with new ways to communicate and to connect with parents, communities, and the wider world.

Let's take a closer look at how PBL benefits students, teachers, and schools.

Motivating Students

Elementary school children are typically motivated to learn and do good work in school because they arrive with a natural desire to learn about the world and they want to be able to read, write, and use numbers. They also tend to like and want to please their teachers, and the teaching methods—especially in the primary grades—often still have an element of fun and play. But even young students may grow tired of worksheets, drills, or other traditional instructional methods if such approaches are used too much.

Once they reach middle school and especially high school, many students report that they are not engaged at school for much of the

time. Some might still be motivated by the desire to earn good grades and please their teachers and parents, but far too many simply go through the motions of listening to their teachers, completing assignments, doing homework, and studying for tests. Even many “model” students with high GPAs who take challenging courses admit that, although they know how to play the game of school, they don’t find their work intrinsically interesting or meaningful. Generally speaking, students are driven to learn by external factors, not the real “need to know” that is one of the keys to PBL’s motivational effect.

The High School Survey of Student Engagement (Yazzie-Mintz, 2010) surveyed 275,925 students in the United States from 2006 to 2009. It found that 49 percent of students in grades 9 through 12 reported being bored in at least one class every day; another 17 percent were bored in every class, every day. In response to a question about why they were bored, the students gave various reasons, with these as their top three:

- “Material wasn’t interesting” (81 percent)
- “Material wasn’t relevant to me” (42 percent)
- “No interaction with teacher” (35 percent)

The students were also asked about what instructional methods engage them most. Here are their top four responses:

- Discussion and debate (61 percent)
- Group projects (60 percent)
- Projects and lessons involving technology (55 percent)
- Student presentations (46 percent)

Grant Wiggins, author and cofounder of Understanding by Design, found similar results when he recently surveyed students at a “typical American high school” in a Midwestern suburban community. Most students reported being bored much of the time and suggested that teachers should “make learning active and fun,” do more “hands-on activities,” and provide opportunities to “discuss my ideas with others” (Wiggins, 2014).

More Motivated, Better Behaved

Experienced teachers know that when students are deeply engaged by a topic or a task, a lot of classroom management issues fade away. Students who used to disrupt class behave differently when they're doing active work on a project that engages them (Lambros, 2002). Students who previously did not do their assignments, or turned in shoddy work, become more responsible and step up their work quality when they care about a project.

The results of these surveys clearly point to the need for instruction that's more engaging, and project based learning is just that. Interesting and relevant topics, issues, and challenges are central to every well-designed project. Interaction with the teacher is likewise baked into the whole process, as we describe in detail in the following chapters. Discussions and debates occur frequently in projects, whether as a whole class or in small groups. Most projects today involve technology to some extent, and student presentations are also a key element.

A survey of gifted high school students showed they, too, were often bored and disengaged from classroom learning (Kanevsky & Keighley, 2003). The researchers listed five features that distinguished "boring from learning experiences": control, choice, challenge, complexity, and caring teachers. Once again, project based learning fits the bill.

Motivating Students to Stay in School

Students drop out of school for many reasons, and one of them is being bored and disengaged. According to a 2006 report on high school dropouts (Bridgeland, Dilulio, & Morison), the response "classes were not interesting" was the top vote-getter in surveys, a reason given by 47 percent of students. When asked in the survey about what might help them stay in school, 81 percent of the students said there should be more real-world learning. The report's authors recommended that schools "improve teaching and curricula to make school more relevant and engaging and enhance the connection between school and work" (p. iv). This is exactly what well-designed project based learning does.

Motivating Students to Stay in School—(continued)

In another study of the dropout problem (Balfanz, 2007), the author noted an additional benefit that projects give to students who are at risk:

It is also paramount that avenues for short-term success through projects, performances, and experiential learning be built in. If you enter high school significantly below grade level it will require hard work and considerable time to produce quality high school work. In the meantime, students need to be experiencing success. (pp. 19–20)

Preparing Students for College, Careers, Citizenship, and Life

Much of the talk about getting students “ready for college and career” focuses on making sure they take the right courses and learn enough in math, science, English/language arts, history, and other subjects. But being ready for the next step beyond the K–12 school system has another aspect, which has more to do with attitudes, habits, and skills that fall outside the boundaries of traditional academic disciplines.

A major study (Conley, 2005) of what it takes to succeed in entry-level college courses found the following general “habits of mind” to be key, along with subject-specific knowledge and skills:

- Critical-thinking skills
- Analytical-thinking skills
- Problem-solving skills
- Open to and utilizes critical feedback
- Open to possible failures at times
- Clear and convincing written and oral expression
- Can weigh sources for importance and credibility
- Can draw inferences and reach conclusions independently
- Time management skills

When employers are asked what it takes to succeed in the workplace, in addition to job-specific knowledge and skills, they generate a similar list. Take a look at one example:

- Critical-thinking and analytical-reasoning skills
- The ability to analyze and solve complex problems
- The ability to effectively communicate orally
- The ability to effectively communicate in writing
- The ability to apply knowledge and skills to real-world settings
- The ability to locate, organize, and evaluate information from multiple sources
- The ability to innovate and be creative
- Teamwork skills and the ability to collaborate with others in diverse group settings (Hart Research Associates, 2013, p. 8)

The consensus is clear: students need more than basic subject-area knowledge. The competencies and personal qualities included in these various lists have been given many names: 21st century skills, cross-curricular skills, soft skills, interdisciplinary skills, habits of mind and work, deeper learning, and college- and career-readiness skills. We call them “success skills.” Some are as old as Socrates; some are products of the modern age. But can traditional schooling meet the need to teach them?

As we mentioned at the beginning of this chapter, many of the things educators, parents, colleges, and employers want to see in a graduate tend to fall between the cracks of traditional subject areas and teaching methods. Some teachers might teach, say, critical-thinking skills as they pertain to a specific discipline, but others may not at all. And even if such opportunities are provided, they may only be implicit or assumed to be embedded in an assignment or activity.

But a good project brings it all together like nothing else can. In PBL done well, students not only find themselves needing to use college- and career-readiness skills; they are explicitly taught them, assessed on them, and asked to reflect on their growth in them. Students who graduate from school systems in which they have completed multiple projects over the years will have had many more opportunities to gain these skills, and systematic support in doing so, than students who have had only scattered or unfocused opportunities.

By the way, we are *not* saying that students should learn college- and career-readiness skills at the expense of learning how to read, write, do math, and know something about history, literature,

and other traditional subjects. Even though information on any topic is readily available in our digital age, people still need some background knowledge to be able to make sense of the information and to be well-rounded, culturally literate members of society. Learning key knowledge and understanding should always be one of the twin goals of a project, along with gaining key success skills. After all, students need something to think critically or communicate *about* in a project, and they can't solve a problem simply by applying a process devoid of content knowledge.

College Challenges

When some educators and parents hear about PBL, they might say, "But that's not how students are taught in college, so wouldn't we be doing them a disservice? Shouldn't they learn to listen to lectures, take notes, and take tests that measure how much information they've memorized?"

We offer two responses to this concern. First, it's true that listening and note taking are important skills that students should practice in high school, but such opportunities can be included within a project. Contrary to some stereotypes, there's still room for lectures in PBL. During a project, the best way for students to learn something—once they see a genuine need to know it—might, in fact, be a lecture by the teacher. Or they might be called upon to interview an expert and take notes. Likewise, a test on content knowledge might be an effective and necessary assessment tool in a project.

Second, as students advance through college they will encounter more and more courses that are not lecture based. Even at fairly traditional colleges and universities, undergraduates will be asked to work in teams, to use knowledge in real-world applications, to analyze problems, and to communicate findings to an audience. A growing number of postsecondary institutions are using an explicitly project-based approach, particularly in the fields of engineering, architecture, and business. Olin College of Engineering, for example, emphasizes collaborative projects throughout its curriculum. Harvard University's undergraduate Applied Physics 50 course is entirely project based (Perry, 2013). Stanford University's popular Design for

Extreme Affordability and MIT's D-Lab are multidisciplinary project based courses in which students develop products and services for the world's poor.

Additionally, students who develop a sense of being independent learners through PBL are well prepared for the self-advocacy and initiative it takes to thrive in a college environment. Although the findings are preliminary, because most of its graduates have not yet completed college, students from the PBL-infused New Tech Network high schools have been found to have high rates of persistence into their second year of college (New Tech Network, 2014). Envision education schools show similar results (www.envisionschools.org/impact/). A 2014 study found high rates of college success among students from high schools that feature "student-centered instruction," which researchers defined as including project based teaching, collaborative learning, relevant curriculum, and performance-based assessments (Friedlaender, Burns, Lewis-Charp, Cook-Harvey, & Darling-Hammond, 2014). For example, 97 percent of the graduates from City Arts and Technology High School in San Francisco who enrolled in four-year colleges were still enrolled in their fourth year, as were 69 percent of the graduates from Life Learning Academy in Oakland. Both schools far exceeded national averages for their high-minority populations, which included many students who were the first in their families to attend college.

The Modern Economy

School systems designed more than a century ago to send workers into that era's industrial economy emphasized only the basics: the 3 Rs and a little knowledge of history and civics. Factory jobs did not require much else and mainly called for the ability to follow routines. Although jobs like that still exist, they're fewer in number, and even those require more complex skills than they used to.

In today's "knowledge economy," success at most jobs demands the kinds of skills seen on the lists presented earlier in this chapter. The report *Dancing with Robots: Human Skills for Computerized Work* (Levy & Murnane, 2013) makes the case that because of technology, "the future of middle-class work will necessarily have to rely on