

Solutions for Professional Learning Communities

Implementing Project-Based Learning



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Introduction

If you follow the headlines about the state of the U.S. education system, it's easy to feel discouraged. International comparisons show American students lagging behind their peers in South Korea, Singapore, Finland, and many developed countries in measures of academic achievement. Fewer than three in ten Americans think high school graduates are prepared for college, and fewer than two in ten think their grads are ready for the workforce (Gallup, 2014). Teacher turnover is portrayed as yet another symptom of a broken system and dispirited teaching force.

Even worse, students themselves may be abandoning their youthful optimism. While 54 percent of students describe themselves as hopeful about the future, 32 percent say they feel “stuck,” and 14 percent are outright discouraged (Gallup, 2014). Although student engagement still runs high in the early grades, it falls steadily the longer students spend in school (Fullan & Donnelly, 2013).

Get past these negative sound bites and into actual classrooms, however, and you can find plenty of cause for optimism about today's youth and their readiness to tackle challenges. That's especially true in schools that leverage project-based learning (PBL) strategies, combined with ready access to technology.

In schools across the United States and internationally, I regularly encounter students who are working to improve their neighborhoods, address global inequities, and design innovations that will improve their families' and communities' health and economic

Chapter 1

A Strong Foundation—and Then Some

In *Leading the New Literacies*, curriculum expert Heidi Hayes Jacobs (2014) describes 21st century educators as standing at a busy crossroads. Buffeted by rapid change and quickly evolving forms of communication, teachers and school leaders must confront decisions about how to cultivate literate learners in these new arenas. Standing still is not an option if we want students to master the literacies and tools they need to fully engage with their 21st century world.

Consider your current learning environment. Is it a destination where students make meaning with the use of digital tools and ready access to information? Do they take that information at face value, or do they evaluate source material for reliability or bias? Is the curriculum prescribed with predictable outcomes, or is it flexible enough for students to explore interests and discover what matters to them? Do they have opportunities to be makers and content creators themselves, sharing their work with authentic audiences? Does learning stop at the classroom door or extend into the wider world

curricula, these familiar skills are indispensable in PBL. PBL teachers don't consider these important skills to be too *old school* for 21st century students. Instead, they look for opportunities to reinforce them in projects that connect with students' interests.

Teachers can support students' project success by incorporating learning activities that build a strong foundation of literacy and critical thinking. For example, writers' workshops and close-reading techniques may prove useful not only in language arts but also in projects that address social studies or science standards. The same goes for protocols for active class discussions (such as the Socratic seminar and Harkness table methods). Discussions will be more productive if teachers deliberately teach and model how to elaborate, disagree, and make counterarguments. In projects that focus on mathematics and science standards, students use literacy skills for an authentic purpose when they communicate their results with a public audience. All these skills—new and old—are invaluable in building the foundation for PBL.

Four Phases of PBL

The Buck Institute for Education (Boss, 2013) has identified four phases that happen in every well-designed project.

1. **Project launch:** This typically starts with an entry event to ignite curiosity and introduces a driving question to frame the inquiry experience.
2. **Knowledge building:** Students build background understanding and learn new skills to help them answer the driving question.
3. **Product development and critique:** Students apply what they have learned to create something new (such as a product, solution, or recommendation).
4. **Final presentation and reflection:** Students share their polished work with an authentic audience.

Chapter 2

Geoliteracy Projects: Making Global Connections

When Mike Wagner piloted a new course called Geospatial Semester at Heritage High School in Leesburg, Virginia, during the 2006 to 2007 school year, he remembers feeling “completely out of my comfort zone.” Although he was a veteran science teacher, he was largely unfamiliar with geographic information system software, which allows users to visualize and analyze data by creating layered maps. Students were a bit perplexed, too, when their teacher asked them to come up with their own ideas for projects about local issues that they might investigate. “A lot of them struggled at first with learning to think critically and ask good questions,” he recalls. “They hadn’t had much experience with that in the earlier grades.”

Nearly a decade later, Wagner and his students have become adept at collecting, analyzing, and presenting geographic data to address real issues in their community. Where is the best location for offshore wind farms to maximize efficiency and minimize unsightliness? How might a terror threat affect local roads and public services? These are

exported overseas as milk powder. The project helped her understand and explain global supply chains in agribusiness.

One of the challenges students encounter in PBL, Kolvoord says, “is not only finding a problem worth solving but finding a problem that’s solvable. They have to consider the time that they have and the data that are available. Part of the problem-solving process is figuring out what the constraints are. That’s where we push students on the critical-thinking front.”

In PBL, as noted in chapter 1, a defining characteristic of projects is a culminating public presentation or demonstration of results. In Geospatial Semester projects at James Madison University, students make final presentations to a panel of college faculty. “Students have to stand up, present their work, and get poked and prodded a bit. This helps them anticipate what’s coming [in college and careers]. They’re moving out of a place where there’s always a right answer to a time when there may not be a right answer. They learn that there are better-argued answers and better-supported answers. This isn’t easy for many students,” Kolvoord acknowledges.

Teacher Mike Wagner acknowledges that some students “struggle to communicate their data in a visual way. The biggest challenge isn’t getting the data or analyzing it but figuring out how to communicate it.” Presenting complex information in a visually interesting way is an increasingly valued skill in fields ranging from science to business to new media. Students working on GIS projects know they have succeeded when they can “put their map on a wall and everybody who reads it can understand it,” Wagner adds. That’s authentic feedback.

There’s no need for students to wait until high school to start developing geospatial thinking. To show elementary teachers the possibilities of geospatial thinking, Wagner might share a story map about migration made to accompany a children’s book called *Bird, Butterfly, Eel* (Prosek, 2009). He says, “The story map takes

Global education expert Yong Zhao (2014) explains why entrepreneurship has become an essential skill in a world where youth unemployment is rampant. “Entrepreneur-oriented education prepares children to take the responsibility of creating jobs,” he explains (p. 184). That’s a contrast to “employee-oriented education,” which prepares students to fit existing (and quickly diminishing) work opportunities. “As traditional routine jobs are offshored and automated, we need more and more globally competent, creative, innovative, entrepreneurship-minded citizens who are job creators instead of employment-minded job seekers” (Zhao, 2014, p. 189).

Two projects—(1) Shark Tank and (2) Vog Scrubber—illustrate the wide range of possibilities for student innovators. As you read about these examples, watch for evidence of the entrepreneur-oriented skills that Zhao (2014) endorses: variation, diversity, tolerance, autonomy, passion, and interest.

Shark Tank

Shark Tank, a popular reality TV show in which aspiring entrepreneurs pitch to investors, got a makeover in this classroom project involving aquaponics.

Raleigh Werberger, originally a history and humanities teacher, found his way to teaching entrepreneurship out of a desire to revive his students’ intrinsic motivation to learn. He recognized that a prescribed curriculum wasn’t engaging all learners. “Some students just want to get a good score to get into college, but that’s really about pleasing the teacher. I wanted to make the work more intrinsically rewarding,” he says. “How could I create space to let kids dive into things so they can go more deeply, and also the space for them to find their own interests?”

Answers emerged in 2013 when he teamed up with a colleague to design a PBL-based program for ninth graders at Mid-Pacific Institute in Manoa, Hawaii. “We wanted a project that would encompass the

Chapter 6

Storytelling Projects: Cultivating a Strategic Tool

Knowing how to craft a compelling story, a skill that dates back to our cave-dwelling ancestors, has new cachet in the 21st century. A good story can make all the difference in a job interview, on a crowdfunding platform, in a television ad, or in a pitch to investors (Tugend, 2014). Author and executive coach Harrison Monarth (2014), writing in the *Harvard Business Review*, describes storytelling as a *strategic tool*, useful for everything from improving health care outcomes to swaying jurors. As he explains:

A story can go where quantitative analysis is denied admission: our hearts. Data can persuade people, but it doesn't inspire them to act; to do that, you need to wrap your vision in a story that fires the imagination and stirs the soul. (Monarth, 2014)

Storytelling has always had a home in the classroom, especially among teachers who appreciate the power of a good tale to make learning memorable. Used well, the narrative structure provides a hook for grabbing, and holding, attention.