

# PBL and Common Core — and Next Generation Science Standards

(Excerpted from the book *PBL for 21st Century Success: Teaching Critical Thinking, Collaboration, Communication, and Creativity*, published by the Buck Institute for Education, 2013)



With the Common Core State Standards adopted by all but a handful of states, efforts are underway across the country to help students meet the higher bar that the new standards set. The overarching goal of the new standards is to better prepare students for college and careers. PBL, with its emphasis on both significant content and 21st century competencies, addresses these new standards in several important ways.

David Ross, director of professional development for BIE, offers this pithy analysis about the alignment of PBL and the Common Core:

*Everyone knows that content is king and Common Core wears the crown. Significant content is one of our eight Essential Elements of PBL. Make an easy connection: Significant Content = Common Core. Now let's use a shorter word. When designing a rigorous, relevant, and engaging project, Common Core is the "what." But what about the "how?" In our minds the answer is obvious: PBL is the solution for Common Core implementation. PBL is the "how."*

Of course, we realize that PBL is not the only way to help students master these new standards. As states move toward implementation of the Common Core, however, more and more schools and districts are focusing on PBL as their go-to instructional strategy to prepare students for deeper thinking. Next-generation assessments aligned to the new standards (still in development at this writing) are expected to emphasize application of knowledge rather than recall of facts. Here, too, we find common ground with PBL, in which students demonstrate and share

what they know or can do through performance assessments. For PBL veterans, student demonstrations of learning are not new at all. They're an essential element of every project.

**Common Core Standards for English Language Arts** include tasks that are very familiar to people who know PBL:

*"Conduct short as well as more sustained research projects based on focused questions"*

*"Prepare for and participate effectively in a range of conversations and collaborations with diverse partners"*

*"Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others"*

*"Conduct short research projects to answer a question (including a self-generated question)"*

**Common Core Standards of Mathematical Practice** also echo PBL best practices. The math standards set expectations for students to do real-world problem solving, use mathematical modeling, apply statistical analysis, and communicate their understanding. "Mathematically proficient students can apply the mathematics they know

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to solve problems arising in everyday life, society, and the workplace,” according to the Standards of Mathematical Practice. Such applications naturally have a place within high-quality projects that ask students to use mathematics concepts and procedures in authentic contexts.

### Next Generation Science Standards

The new national standards proposed for K-12 science shift the focus of instruction from simply acquiring content knowledge to the practice of science skills. Many of the draft Next Generation Science Standards (NGSS) align with practices common to 21st century Project Based Learning. For example, look at what students are supposed to learn how to do in the “Science and Engineering Practices” section:

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

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Some of the standards could actually be used as a stand-alone project idea, such as, “Design, evaluate, and refine a solution for reducing negative impact of human activities on the environment and ways to sustain biodiversity and maintain the planet’s natural capital” (HS-LS2-j). And as blogger and BIE National Faculty member Andrew Miller points out:

*“With the new engineering focus of NGSS, consider design challenge PBL projects, a key component of science, technology, engineering, and mathematics (STEM) education.”*

Even when the standards do not have an explicit project-based tone, there is a focus on the key competencies needed for PBL: inquiry, communication, and critical thinking. Consider what students are asked to demonstrate in order to meet the “College and Career Readiness” standards: “applying a blend of science and engineering practices... to approach problems not previously encountered by the student” and “self-directed planning, monitoring, and evaluation.” Sounds like what happens in PBL!