

Research Summary: PBL and 21st Century Competencies

Project Based Learning has been shown to yield a number of benefits for students, ranging from deeper learning of academic content to stronger motivation to learn. Looking specifically at how PBL supports 21st century learning goals, we can find several promising areas, including:

Academic achievement:

Goals for 21st century learning emphasize mastery of significant academic content, which also is the foundation of any well-designed project. Comparisons of learning outcomes in PBL versus more traditional, textbook-and-lecture driven instruction show that:

- Students learning through PBL retain content longer and have a deeper understanding of what they are learning.
(Penuel & Means, 2000; Stepien, Gallagher & Workman, 1993)
- In specific content areas, PBL has been shown to be more effective than traditional methods for teaching math, economics, language, science, and other disciplines.
(Beckett & Miller, 2006; Boaler, 2002; Finkelstein et al., 2010; Greier et al., 2008; Mergendoller, Maxwell, & Bellisimo, 2006)
- On high-stakes tests, PBL students perform as well or better than traditionally taught students.
(Parker et al., 2011)

21st century competencies:

PBL helps students master the key competencies identified as essential for college and career readiness. Research has shown:

- Students demonstrate better problem-solving skills in PBL than in more traditional classes and are able to apply what they learn to real-life situations.
(Finkelstein et al., 2010)
- When teachers are trained in PBL methods, they devote more class time to teaching 21st century skills; their students perform at least as well on standardized tests as students engaged in traditional instruction.
(Hixson, Ravitz, & Whisman, 2012)
- PBL students also show improved critical thinking.
(Beckett & Miller, 2006; Horan, Lavaroni, & Beldon, 1996; Mergendoller, Maxwell, & Bellisimo, 2006; Tretten & Zachariou, 1995)

- Through PBL experiences, students improve their ability to work collaboratively and resolve conflicts.
(Beckett & Miller; ChanLin, 2008)
- Opportunities for collaborative learning provide benefits to students across grade levels, academic subjects, and achievement levels.
(Johnson & Johnson, 2009; Slavin, 1996)

Equity:

- PBL shows promise as a strategy for closing the achievement gap by engaging lower-achieving students.
(Boaler, 2002; Penuel & Means, 2000)
- PBL can work in different types of schools, serving diverse learners.
(Hixson, Ravitz, & Whisman, 2012)
- PBL also can provide an effective model for whole-school reform.
(National Clearinghouse for Comprehensive School Reform, 2004; Newmann & Wehlage, 1995; Ravitz, 2008)

Motivation:

- In PBL classrooms, students demonstrate improved attitudes toward learning. They exhibit more engagement, are more self-reliant, and have better attendance than in more traditional settings.
(Thomas, 2000; Walker & Leary, 2009)

Teacher satisfaction:

- Teachers may need time and professional development to become familiar with PBL methods, but those who make this shift in classroom practice report increased job satisfaction.
(Hixson, Ravitz, & Whisman, 2012; Strobel & van Barneveld, 2009)

For links to full text of studies as well as updates on research about Project Based Learning, visit the Buck Institute for Education at **bie.org**.