



New Tech Network

Mapping NTN Experience to PBL Best Practices

Research Summary:

Saavedra, A., Rapaport, A., & Silver, D. (2023, July 31). Project-Based Learning Pedagogy in Two New Tech Networks Schools: A Case Study. University of Southern California, Dornsife Center for Economic and Social Research, Center for Applied Research in Education.

Drs. Anna Saavedra, Amie Rapaport, and Daniel Silver at University of Southern California's Dornsife Center for Economic and Social Research Center for Applied Research in Education conducted a study to describe the teaching and learning of high school students in two New Tech Network (NTN) high schools, contextualized within the most recent literature on project-based learning (PBL) and workforce-aligned skills to answer the question: "How, and in what ways, do the two NTN schools' experiences and practices align with current PBL best practices?"

Project-based learning described by the researchers:

Project-based learning (PBL)—of which problem-based learning is a type—is at the heart of the NTN approach. In PBL, teachers serving as facilitators guide their students, alone and/or in groups, to address real-world challenges and problems through projects (Hmelo-Silver, 2004). With driving questions at the core of every project, students investigate and address authentic problems or challenges, typically over an extended timeframe (Parker et al, 2011). Through PBL, students have opportunities to work productively with others, practice leadership and other inter- and intra-personal skills, and present their work to classroom and external audiences. While lecture is part of PBL, its timing is strategic, used when students have developed a need-to-know certain content or skills to successfully execute their project (Schwartz & Bransford, 1998). Long-term projects culminate in a product of some kind to share with external audiences—a presentation, video, card game, graphic novel, play, whole-day event, off-site event, among other possibilities. Assessment, both formative and summative, including student self-, peer-, and teacher-feedback, is woven throughout project cycles (Barron & Darling-Hammond, 2008).

Research approach

Researchers identified nine areas central to high-quality PBL by building upon extant PBL research, including integrating the High-Quality PBL Framework created by a large consortium of 36 partner organizations involved with PBL including NTN (e.g., PBLWorks, Lucas Education Research), and "Five Characteristics of Rigorous Project-based Curricula" (2021) produced by Lucas Education Research. Research protocols were designed to address these nine areas, including questions used in surveys, focus groups, and building walk-throughs. In all nine areas, on average, teachers in the more experienced school had more effectively mastered the pedagogical principle than had teachers in the less experienced school.



Best Practice	Definition	Takeaways	Exemplars in NTN Classrooms
Projects are central	Projects are at the center of teaching and learning. Students work on projects throughout the year in a cohesive way. Each project builds on the learning that came before and is closely tied to academic standards and learning goals. Projects aren't a side activity – they give purpose to the knowledge and skill building that occurs throughout the course.	<p>(+) This fundamental pillar of PBL is well-understood.</p> <p>(-) There are implementation challenges, particularly for newer, more inexperienced teachers.</p>	<p>(+) Students analyzed a World War II-era FDR speech for examples of pathos, logos, and ethos as an on-ramp to creating annotated bibliographies for persuasive speeches, one product in a larger one about rhetoric.</p>
Projects are authentic	Projects can be authentic to the student (i.e., relevant to their lives), to others (i.e., includes a public audience), and/or with the tools used to create the project (e.g., tools of a historian, scientist, mathematician, filmmaker, etc.) (Polman et al, 2018).	<p>(+) Students in both schools recognize and appreciate authenticity.</p> <p>(-) The challenge for teachers is making authentic projects rigorous.</p>	<p>(+) "...the classes that we do projects in...the information just sticks with me better. And I remember the products because I had fun actually doing it."</p>
Students are motivated and empowered	Related to authenticity, students have choice over topics, approaches, tools used, and/or audiences for their projects, motivating and empowering them, while providing them opportunity to develop creativity and other inter- and intra-personal skills.	<p>(+) Student choice can engage students.</p> <p>(-) Student choice requires intentional structure from teachers.</p>	<p>(+) A teacher randomly called on individuals to report out for their group. All group members needed to be similarly knowledgeable in case their name was selected. Students in this classroom were accustomed to and accepting of the culture.</p>
Students collaborate	Projects provide opportunities for students to collaborate with each other in various ways and repeatedly over time. They each contribute their own unique skills and knowledge and work together to synthesize individual contributions into group products. Students may also work with adults or students beyond their classroom.	<p>(+) Schoolwide culture facilitates successful student collaboration and groupwork.</p> <p>(-) Culture takes time to build.</p>	<p>(+) "When there's multiple people working on a project there's multiple points of view going into it...and I think that's really important if you want a really strong end project."</p>
Public product	Also related to authenticity, students share project work products with relevant audiences beyond the classroom.	<p>(+) The prospect of sharing work publicly deepens student engagement.</p> <p>(-) Finding external audiences is challenging for teachers.</p>	<p>(+) One student presented benefits and consequences of different uses for parkland to an outside audience, another entered an art project into a national competition.</p>

Best Practice	Definition	Takeaways	Exemplars in NTN Classrooms
Project management	Through projects, in addition to sophisticated thinking and communication skills, students learn project and time management skills and strategies.	<p>(+) Projects can provide opportunities to practice “real-world” skills.</p> <p>(-) Teachers vary in their facilitation expertise and require support in developing this skill.</p>	(+) Students described skills that have value outside school. Those experiences “will help us in the real world,” because “let’s say you’re working for a company. They won’t ask you to take a test. They’ll ask you to solve a problem.”
Sophisticated thinking and communication skills	The World Economic Forum Future of Jobs report (2020) emphasizes the importance of critical thinking, innovation, analysis, active learning, problem-solving, creativity, leadership, technology, resilience, stress tolerance, flexibility, emotional intelligence, and collaboration. Through projects, students gain these skills through working independently and in groups on authentic, intellectually challenging work.	(+/-) Creating opportunities for students to develop sophisticated thinking skills is a learned skill for teachers that takes time to develop.	(+) Students shared needing to learn their peers’ points of view and then, “combine our ideas and evaluate... communicate and understand everyone’s point of view to actually form a certain idea.”
Intellectual challenge	Projects are rigorous, providing students with developmentally appropriate intellectual challenge. Through projects, students learn content and skills as well or better than through teacher-driven instruction (e.g., lectures, textbook reading).	(+/-) Depth of transferable knowledge and skill development can be in tension with breadth of content coverage and core skill development.	(+) The teacher’s refusal to provide a quick and binary “right” or “wrong” answer led to a deeper self-analysis of learning by the student and ultimately allowed the teacher to avoid over-scaffolding the student’s classwork, keeping the thinking as rigorous as possible while still promoting student success.
Continuous reflection and feedback	Each project has several deliverables including, for example: a proposal, draft documents, final documents, and public presentation. Through each step of the project, students reflect on their work aided by feedback.	<p>(+) Productive peer-to-peer feedback can contribute to a virtuous culture of collaboration.</p> <p>(-) Facilitating such feedback is a learned teaching skill that takes time and investment to develop.</p>	(+) Students described “respectfully commenting” and giving fellow students “scores for how well they collaborated, how well they ask questions, or listen to other group members.”