Making Project-Based Learning Work
Jaclyn Zubrzycki
Contributing writer, *Education Week*

Follow Jackie on Twitter: @JZubrzycki
Making Project-Based Learning Work

Expert Presenters:

Andre Daughty, Buck Institute for Education national faculty and educational technology instructor in Oklahoma City Public Schools

John Larmer, editor-in-chief, Buck Institute for Education, and co-developer of the "gold standard project-based learning" guidelines

Eric Wycoff, Buck Institute for Education national faculty and social studies teacher, El Molino High School, Forestville, Calif.
An on-demand archive of this webinar will be available at www.edweek.org/go/webinar in less than 24 hrs.
Google Searches for “Project Based Learning”
Project Based Learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question, problem, or challenge.
1. Exploration of a Philosophical Question

Secondary Example:

**Project Title:** Old Enough To...?

**Grades:** 9

**Project Idea:** Students read *The Catcher in the Rye* and short stories whose themes are adolescence and growing up. They conduct interviews with people of various ages, survey their peers, then write their own reflections on the topic, which they publish on a class blog.

**DQ:** when do we grow up?

**Content:** (ELA) theme in literature (RL.9-10.2); narrative writing (RL.9-10.3); knowledge of language (L.9-10.3)

**Major Products:** Various literary analysis writing assignments; interview questions and edited responses; survey and analysis of results; blog posts

**Public Audience:** online readers of the class blog

---

Elementary Example:

**Project Title:** Pizza and the world of work*

**Grades:** 2

**Project Idea:** Students interview adult family members and friends and visit local businesses to find out what it’s like to work. They plan how to run a pizza restaurant in their classroom, gather ingredients and supplies, test recipes, create menus and advertisements, and operate it for two days.

**DQ:** what does it mean to work?

**Content:** (math) measurement & data (MD.2.4); addition & subtraction (NBT.2.5); (Biological Science) types of plants; (Social Studies) community & economics; (ELA) reading informational text (RL.2.1); informative writing (W.2.2; W.2.5)

**Major Products:** Journal; recipes, schedules, advertisements, menus, pizza

**Public Audience:** school staff, other students

*This project is described in more detail in BIE’s book, *PBL in the Elementary Grades*
4. Examination of a Controversial Issue

Secondary Example:

**Project Title:** Get'Em If They Smoke'em  
**Grade:** 12  
**Project Idea:** Students research the relevant political, economic, and social issues as they weigh the pros and cons of raising taxes on cigarettes. They draw conclusions and write persuasive essays in the form of op-ed pieces for local print and online media, and letters to state legislators.  
**DQ:** Should we raise taxes on cigarettes?  
**Content:** (Government) state government; taxation; public health policy; (ELA) argumentative writing (W.11-12.a-e); informative writing (W.11-12.a-f)  
**Major Products:** Research report; persuasive essays  
**Public Audience:** Readers of print and online media; state legislators

Elementary Example:

**Project Title:** To Bus or Not To Bus  
**Grade:** 5  
**Project Idea:** Since the district is considering the elimination of school bus service, students study the issue and make recommendations. They interview administrators, survey parents, collect data, and write reports, which they summarize and present at a school board meeting.  
**DQ:** Should our school keep the buses?  
**Content:** (Math) fractions (NF.4-8); decimals (NBT.4-8); (ELA) opinion writing (W.5.a-c); presentation of knowledge and ideas (SL.5.A-6)  
**Major Products:** Written report and presentation to district administrators & school board  
**Public Audience:** district administrators & school board
5. Challenge to Design, Plan, Produce or Create Something

Secondary Example:

Project Title: Equations of Art
Grades: 8

Project Idea: The principal feels the school lacks visual artifacts of school spirit and culture, so she asks students for proposals for an interdisciplinary mural for the wall near her office. Student teams use algebra to design murals and principles of art to create prototypes.

DQ: How can we use algebra to artistically showcase our school spirit?

Content: (math) linear equations, graphing, coordinate points, slope of a line (EE.8.5); (Art) mural design and materials, use of color and shape; (ELA) presentation of knowledge and ideas (SL.8.4-6)

Major Products: linear equations for mural design; written design rationale; design pitch presentation

Public Audience: school leadership team and staff members

Elementary Example:

Project Title: Local Pride!
Grades: 3

Project Idea: Students learn about the history of their community through field trips, guest speakers, interviews with residents, and reading primary source documents. Working in teams, they write reports on various topics, create exhibits focused on different aspects of their history—economic, social, and geographic—which are displayed at an evening event they plan for the community.

DQ: How can we create museum exhibits and plan an event that explains and celebrates the history of our community?

Content: (Social Studies) local and state history; (ELA) reading informational text (RI.3.1-6); informative writing (W.3.2a-d); (math) geometric measure (G.3.2; G.3.4; MD.3.8)

Major Products: research report; visual display, with written explanations of visual elements; community event

Public Audience: parents and community members attending the evening event
WHY PBL?

- Greater Student Engagement
- Real-World Connection
- Improved Outcomes (content retention & 21st c. skills)
- Enables Use of Technology
PERILS OF PBL’S POPULARITY*

- Teachers under-prepared and under-supported
- PBL-lite
- Only used for special occasions or some students

* See: bie.org blog post by this title
PBL: Once Hot, Now Not

Dessert Projects, Lack of Results Doom Promise of PBL

Schools Reject PBL

Teachers Ask: What’s the Next Trend?

Yesterday’s News: Project Based Learning
Teachers and school leaders need to understand that PBL is not just another, perhaps more engaging way to “cover standards.” It represents a different philosophy about what and how students should learn.

- What John Dewey would have said
Support PBL Teachers

Need

- TIME
- Professional Development & Pre-Designed Resources
- Changes in school/district structures & policies
PROJECT BASED TEACHING PRACTICES

- Design & Plan
- Align to Standards
- Engage & Coach
- Build the Culture
- Manage Activities
- Scaffold Student Learning
- Assess Student Learning

GOLD STANDARD PBL

KEY KNOWLEDGE, UNDERSTANDING, & SUCCESS SKILLS
Services

Core Professional Development Services

For Schools & Districts. BIE provides Core Professional Development Services to hundreds of schools yearly in the U.S. and abroad, giving teachers the skills and knowledge needed to design, assess, and manage rigorous, relevant, and standards-based projects through our foundational Gold Standard PBL 101 Workshop and Sustained Support Visits. Learn more »

Systemic PBL Implementation Services

For Districts. BIE provides Systemic PBL Implementation Services to more than 25 U.S. school districts, supporting more than 10,000 teachers and leaders nationwide. With this three-year partnership, BIE not only supports the development of teachers with our Core Professional Development Services but also focuses on the leadership and organizational development needed to sustain system-wide Gold Standard PBL implementation. Learn more »

PBL World & PBL Academies

For Teachers, Schools & Districts. PBL World and PBL Academies are the premier conferences in the field of education for Project Based Learning (PBL). The conferences feature BIE’s Gold Standard PBL 101 Workshop, as well as advanced practice workshops and two-day academies on leadership and instructional coaching.
FEATURES OF PBL SCHOOLS

- Longer class periods/ flexible use of time
- Aligned assessment policies & practices
- Collaborative planning time for teachers
- Whole-school commitment
PERILS OF PBL’S POPULARITY*

- Teachers under-prepared and under-supported
- PBL-lite
- Only used for special occasions or some students

* See: bie.org blog post by this title
The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative.

- John Dewey
Main Course, Not Dessert
Habitat Research & Diorama Project.

by:
Octane Testing at the Pump

HYPOTHESIS
I hypothesize that the fuel with the highest octane level will produce the highest level of carbon monoxide emission.

GAS

RESULTS

Which octane produces the most carbon monoxide emission?

MATERIALS

PROBLEM

PROCEDURE

87 89 91 95.5 100

1. Set up the equipment
2. Fill a 1-liter beaker with the fuel
3. Place the beaker on the hot plate
4. Record the temperature of the fuel
5. Heat the fuel to the desired temperature
6. Remove the beaker from the hot plate

CONCLUSION
FAMOUS
MATHEMATICIAN
WEBQUEST

Including:
- Descartes
- Euclid
- Newton
- Pythagoras
- Euler
- Archimedes
- And more!
The EPIC ODYSSEY

Scylla and Charybdis

Ithica (TURN OVER)

Phaeacia

Circe

Laistrygonions

CICONES

Illa of Aeolia

Cyclops

Latus Eaters

Start: Calypso

Finish: Calypso

© 2015 Buck Institute for Education
The Romans Curriculum Project Plan

An estimated 1,800 years ago Rome, in Italy, was the centre of a huge and successful empire. Explore life as a Roman with these cross-curricular project plans for use in Key Stage 2 literacy, numeracy and science.

The Victorians Cross Curriculum Project

Inventions and discoveries helped make our

Democracy Cross Curriculum Project

This democracy citizenship scheme of work introduces
## “DOING PROJECTS” vs. PROJECT BASED LEARNING

<table>
<thead>
<tr>
<th>“DOING PROJECTS”</th>
<th>VS. PROJECT BASED LEARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplemental to a unit</td>
<td>The project <em>is</em> the unit (or it is the major vehicle for teaching content within the unit)</td>
</tr>
<tr>
<td>Task based on following directions; often repeated year after year</td>
<td>Open-ended task with student voice &amp; choice; often differs from year to year</td>
</tr>
<tr>
<td>Typically done individually</td>
<td>Often done in teams, with individual components</td>
</tr>
<tr>
<td>Done independently, often at home</td>
<td>Done with teacher guidance, much of it at school</td>
</tr>
<tr>
<td>Focused on the product; product may even be called “the project”</td>
<td>Project includes sustained inquiry process <em>and</em> creation of product</td>
</tr>
<tr>
<td>Not authentic to the real world or to students’ lives</td>
<td>Authentic to the real world and/or to students’ lives</td>
</tr>
</tbody>
</table>

*(from Setting the Standard for PBL, ASCD/BIE 2015)*
Dear Keepers of the Missions of Alta California, 

the Church is eager to establish another mission, the 22nd, after we build the one now being planned for Sonoma.

Please tell us exactly where you think the mission should be located and what it should look like. When you present your ideas, explain how the mission will help meet our urgent goals for this part of the world.

With gratitude,

Archbishop Fonte

Mexico City, 10 June 1818
ESSENTIAL PROJECT DESIGN ELEMENTS

- CHALLENGING PROBLEM OR QUESTION
- SUSTAINED INQUIRY
- PUBLIC PRODUCT
- AUTHENTICITY
- CRITIQUE & REVISION
- STUDENT VOICE & CHOICE
- REFLECTION

KEY KNOWLEDGE, UNDERSTANDING, & SUCCESS SKILLS

GOLD STANDARD PBL

© 2015 Buck Institute for Education
SETTING THE STANDARD FOR
PROJECT BASED LEARNING
A PROVEN APPROACH TO RIGOROUS CLASSROOM INSTRUCTION

JOHN LARMER | JOHN MERGENDOLLER | SUZIE BOSS
DOES THE PROJECT . . .?

- Focus on Key Knowledge, Understanding, & Success Skills
- Start with a Challenging Problem or Question
- Engage Students in Sustained Inquiry
- Show Authenticity
- Encourage Student Voice & Choice
- Incorporate Reflection
- Include Critique & Revision
- Result in a Public Product

© 2015 Buck Institute for Education
SUCCESS SKILLS

- Critical Thinking / Problem Solving
- Collaboration
- Self-Management
PBL: Results Show
It’s Here to Stay

Students Prepared
For College and
Career with PBL

Schools
Using PBL
Worldwide

Teachers Ask:
How Can We
Ever Go Back?

Project Based
Learning: 21st
Century’s Pedagogy
---
WHERE STEAM & PROJECT-BASED LEARNING INTERSECT.
Andre Daughtey

• Educator for 16 years
• Elementary, Secondary & Administrative Experience
• Loves inspiring teachers to discover those “A-ha” moment!
Title: iLeggo!
Subject: Language Arts/English
Duration: 7 Weeks (1 hour sessions)
Grade Level(s): 7\textsuperscript{th} and 3\textsuperscript{rd}
Success Skills: 4C’s, Active Listening, Self-Mgt., Organization, Technology
Project Summary:

• Students create a story that promotes teamwork and heroism using the elements of a story.
• The story will be done digitally through the app, Stop Motion.

http://vignette3.wikia.nocookie.net/p_/images/2/22/BatmanLegoMovie.png/revision/latest?cb=20131223142349
&path-prefix=protagonist
Driving Question:
What makes a great story? (3rd Grade)

How can we, as film makers, provide a family event for our community? (7th Grade)
- 19 years in the classroom
- Social Studies (Econ., Govt., U.S.)
- M.A., Curric., Teaching & Learning
- CA Admin. Credential
- “There are no smart sheep”

Eric Wycoff
Critical Thinking
Collaboration
Self Management
connection
Title: Then & Now
Subject: U.S. History
Grade Level: 11th grade
Duration: 3 Weeks

Features:
- students self-select teams & topics
- Google doc and slides
  - “Presentation Zen”
  - must include a video clip
- community connection
  - interview
  - identify resources
Then & NOW

Women’s Suffrage / Civil Rights = LGBTQI Rights
War = Iraq / Afghanistan
Social Darwinism = 1% / 99%
Economic Development = Homelessness / Food Insecurity
Propaganda = Propaganda
Immigration / Settlement Houses = current resources
✓ Interview
✓ Script
✓ Slide Deck
✓ Presentation
# Collaboration Rubric for PBL
(for grades 6-12; CCSS ELA aligned)

<table>
<thead>
<tr>
<th>Individual Performance</th>
<th>Below Standard</th>
<th>Approaching Standard</th>
<th>At Standard</th>
<th>Above Standard</th>
</tr>
</thead>
</table>
| Takes Responsibility for Oneself | ▶ is not prepared, informed, and ready to work with the team  
▶ does not use technology tools as agreed upon by the team to communicate and manage project tasks  
▶ does not do project tasks  
▶ does not complete tasks on time  
▶ does not use feedback from others to improve work | ▶ is usually prepared, informed, and ready to work with the team  
▶ uses technology tools as agreed upon by the team to communicate and manage project tasks, but not consistently  
▶ does some project tasks, but needs to be reminded  
▶ completes most tasks on time  
▶ sometimes uses feedback from others to improve work | ▶ is prepared and ready to work; is well informed on the project topic and cites evidence to probe and reflect on ideas with the team (CC 6-12.SL.1a)  
▶ consistently uses technology tools as agreed upon by the team to communicate and manage project tasks  
▶ does tasks without having to be reminded  
▶ completes tasks on time  
▶ uses feedback from others to improve work |  |
| Helps the Team | ▶ does not help the team solve problems; may cause problems  
▶ does not ask probing questions, express ideas, or elaborate in response to questions in discussions  
▶ does not give useful feedback to others  
▶ does not offer to help others if they need it | ▶ cooperates with the team but may not actively help it solve problems  
▶ sometimes expresses ideas clearly, asks probing questions, and elaborates in response to questions in discussions  
▶ gives feedback to others, but it may not always be useful  
▶ sometimes offers to help others if they need it | ▶ helps the team solve problems and manage conflicts  
▶ makes discussions effective by clearly expressing ideas, asking probing questions, making sure everyone is heard, responding thoughtfully to new information and perspectives (CC 6-12.SL.1c)  
▶ gives useful feedback (specific, feasible, supportive) to others so they can improve their work  
▶ offers to help others do their work if needed |  |
| Respects Others | ▶ is impolite or unkind to teammates (may interrupt, ignore ideas, hurt feelings)  
▶ does not acknowledge or respect other perspectives | ▶ is usually polite and kind to teammates  
▶ usually acknowledges and respects other perspectives and disagrees diplomatically | ▶ is polite and kind to teammates  
▶ acknowledges and respects other perspectives; disagrees diplomatically |  |
johnlarmer@bie.org

#pbl @biepbl
twitter.com/biepbl
pblu.org
youtube.com/biepbl
plus.google.com/+BIEPBL
pinterest.com/biepbl/
facebook.com/biepbl
Students at the Colonial District in PA were challenged to design ways to improve standards of living for Americans with disabilities.

Sawyer, a 5th grader, invented an enlarged keyboard for a fellow student born with limited hand movement.
Max, a 6th grader, invented a machine that would play human sounds whenever cats approach their feeder—making them more adoptable.

And the invention won the science fair!
Libraries are becoming hubs for project-based learning & STEAM. Students are going at all times during the day to invent, make and learn.
OUR MISSION

TO EMPOWER EVERYONE TO CREATE INVENTIONS, LARGE AND SMALL, WITH OUR PLATFORM OF EASY-TO-USE ELECTRONIC BUILDING BLOCKS.
HOW IT WORKS

BLUE = POWER
Power Bits, plus a power supply, run power through your circuit.

PINK = INPUT
Input Bits accept input from you or the environment and send signals that affect the Bits that follow.

ORANGE = WIRE/LOGIC
Wire Bits connect to other systems and let you build circuits in new directions.

GREEN = OUTPUTS
Output Bits do something—light up, buzz, move...

ORDER IS IMPORTANT*
Power Bits always come first and input Bits only affect the Bits that come after them.
EASY-TO-TEACH LESSONS

[Image of a STEAM Student Set invention log with text and a pen on a wooden surface]
CONNECTS WITH CURRICULUM

NEXT GENERATION SCIENCE STANDARDS

CREATE  PLAY  REMIX  SHARE

NGSS PRACTICE STANDARDS (K-12)
DEVELOPING & USING MODELS
ASKING QUESTIONS AND DEFINING PROBLEMS
PLANNING & CARRYING OUT INVESTIGATIONS
ANALYZING & INTERPRETING DATA
CONSTRUCTING EXPLANATIONS & DESIGNING SOLUTIONS
ENGAGING IN AN ARGUMENT FROM EVIDENCE
OBTAINING, EVALUATING, & COMMUNICATING INFORMATION
THANK YOU.

LEARN MORE AT:

littlebits.cc/education
An on-demand archive of this webinar will be available at www.edweek.org/go/webinar in less than 24 hrs.
Required Reading from *Education Week*:

**Spotlight on Project-Based Learning**
In this Spotlight, read firsthand accounts from teachers engaging students with projects, explore how leaders are making project-based learning a cornerstone in some schools, and learn how English-language learners can thrive in a project-based environment.