

A close-up photograph of a red pencil pointing towards a ruler on a piece of graph paper. The pencil is in the foreground, and the ruler and graph paper are in the background, slightly out of focus. The overall tone is warm and educational.

PROJECT-BASED INSTRUCTION:

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PBL: An “Ill-defined task with a well-defined outcome”

- <https://www.teachingchannel.org/videos/pbl-building-blocks-ntn>
- Students investigate and respond to a complex problem, question, or challenge
- Students are given a desired outcome, set of constraints, then follow their own paths to solve what is asked of them.
 - ▣ Different student groups may either work on a different project, or a different aspect of a larger problem/project
 - ▣ Focus is on an open-ended question or task
 - ▣ Builds 21st Century Skills
 - ▣ Emphasizes student inquiry and independence
 - ▣ Student-focused vs Teacher-focused

PBL: Problem-based vs. Project-Based

➤ Problem-based

- Individual or group activity
- Specific problem is provided by instructor
- Product is often a solution vs. a project
- Often uses a “case study method”
- Aligns to standards as needed
- More prescribed
- Usually shorter in length than project-based
- Usually more single-subject oriented

➤ Project-based

- Individual or group activity
- May or may not address a specific problem
- Results in a project, presentation, or performance
- Typically has timelines, milestones, and includes both formative and formal assessments (authentic assessment)
- Aligns to standards as needed
- Student-centered
- Doing vs. “learning about”
- Often multi-subject

PBL Example (Project-Based)



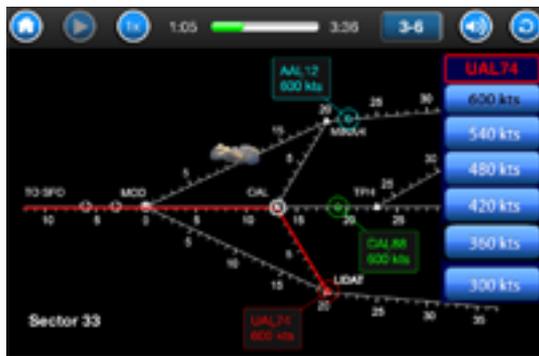
- What does it take to live in space?
 - Students learn about what it takes to keep humans alive (not just in space, but on Earth in a variety of situations), then design a spacesuit that will protect astronauts from a variety of extremes.
 - Primary topic: life science, human body systems
 - Secondary topics:
 - Careers: suit engineers, materials science
 - Engineering: testing space suits
 - Exploration: history of exploration (space exploration and here on Earth)



PBL Examples (Problem-Based)



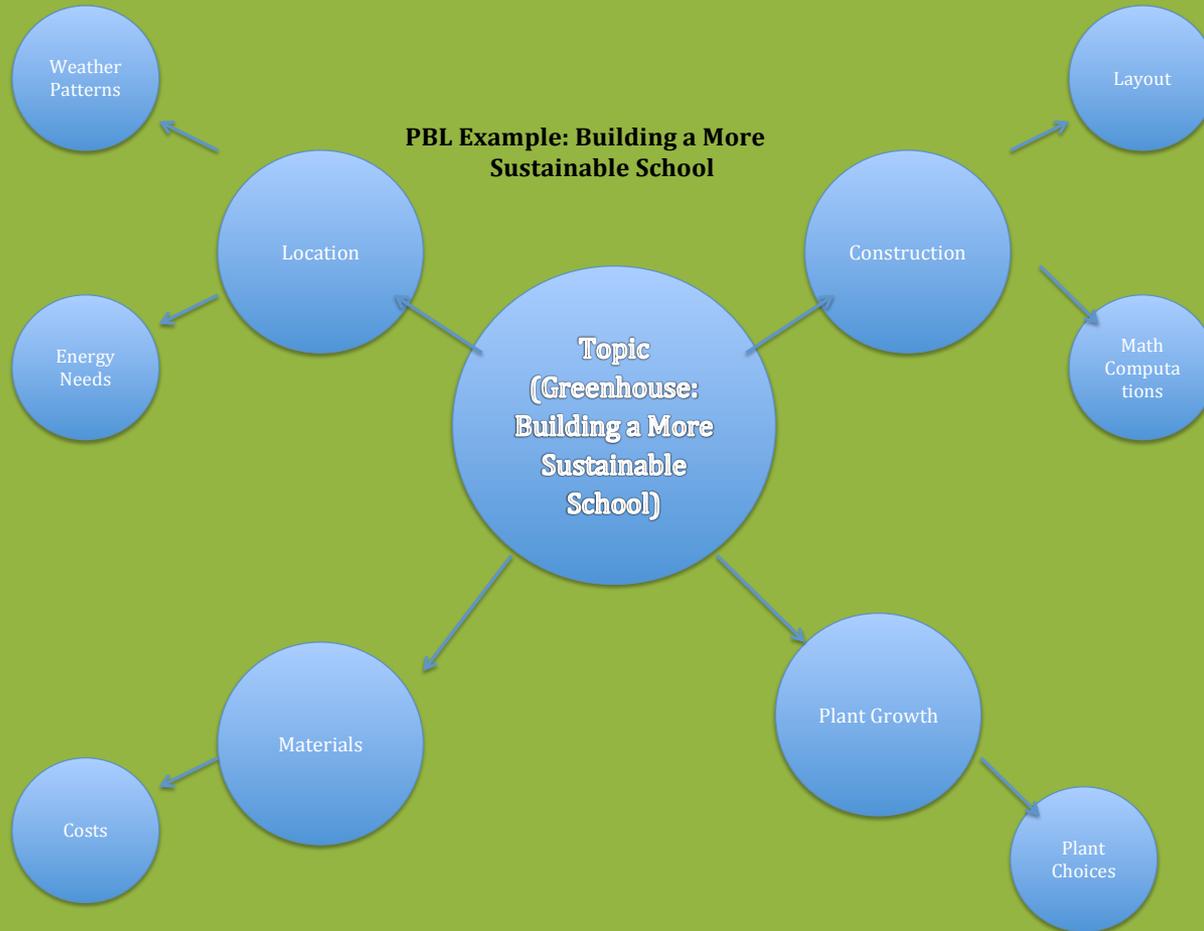
- Will they make it?
 - Students take on the role of air traffic controllers to solve the problem of two planes headed on a collision course...will they be able to land safely?
 - Primary instruction: math
 - Distance, rate, and, and time are addressed with this problem-based scenario.
 - Secondary topics:
 - Careers: air traffic controllers, pilots
 - Skills: map reading, technology



PBL Design

- **Strategy**
 - Are all students working on the same project or problem?
 - Will this occur in one content area class or encompass several content areas?
 - How does this problem/project align to standards?
- **Backwards Design**
 - Bulls-eye or satellite approach
 - Define problem/project: Start with an Essential Question
 - Move out and away from initial topic or problem. Break the problem down into bite-size chunks.
 - Students become experts in specific components of the problem/project
- **Assignment**
 - Each student needs a defined role within their group
 - Hold students accountable (group contracts work great!)
- **Assess**
 - Timeline, checkpoints, and expectations
 - Group and individual assessments
 - Final Presentation—preferably to a more public audience

PBL Example: Building a More Sustainable School



PBL Toolkit

- Project Planner
 - ▣ http://bie.org/project_planner
- Group Contract
- Timeline/Checkpoint
- Rubrics
 - ▣ <http://bie.org/objects/cat/rubrics>

PBL Resources

- BIE (Buck Institute for Education)
 - www.bie.org
- Edutopia
 - <http://www.edutopia.org>
- New Tech Network
 - <http://www.newtechnetwork.org/services/resources/categories/Project%20Based%20Learning>
- Teaching Channel
 - <http://www.newtechnetwork.org/services/resources/categories/Project%20Based%20Learning>

Questions / Discussions



- Question One
 - Discussion
 - Discussion
- Question Two
 - Discussion
- Questions Three
 - Discussion