# Project-based Learning

## A Constructivist Approach

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# New Information Landscape

As long as schools are primarily about **teaching** rather than **learning**, there is little need for expanded information capabilities. Considering the reality that schools and publishers have spent decades compressing and compacting human knowledge into efficient packages and delivery systems like textbooks and lectures, they may not be prepared for this **New Information Landscape** which calls for

- *independent thinking,*
- *Exploration*
- *Invention*
- *intuitive navigation.*

- [www.edutopia.org/project-based-learning-overview](www.edutopia.org/project-based-learning-overview)

# What is Project-based Learning?

- a systematic teaching method that engages students in learning essential knowledge and life-enhancing skills through an extended, student-influenced inquiry process structured around complex, authentic questions and carefully designed products and tasks.

# Characteristics of Authentic Learning Activities

- **Real-world relevance**: Activities match as nearly as possible the real-world tasks of professionals in practice rather than classroom-based tasks which are out of context.

- **Complex, sustained tasks**: Activities are completed in days, weeks, and months rather than minutes or hours. They require significant investment of time and intellectual resources.

- **Multiple perspectives**: Provides the opportunity for students to examine the task from different perspectives using a variety of resources.

- **Collaborative**: Collaboration is integral and required for task completion.

- **Student-directed:** Students are engaged through a system of inquiry-based directives.

# Characteristics of Authentic Learning Activities

- **Value laden**: Provide the opportunity to reflect and involve students' beliefs and values.

- **Interdisciplinary**: Activities encourage interdisciplinary perspectives and enable learners to play diverse roles and build expertise that is applicable beyond a single well-defined field or domain.

- **Authentically assessed**: Assessment is seamlessly integrated with learning in a manner that reflects how quality is judged in the real world.

- **Authentic products**: Authentic activities create polished products valuable in their own right rather than as preparation for something else.

- **Multiple possible outcomes**: Activities allow a range and diversity of outcomes open to multiple solutions of an original nature, rather than a single correct response obtained by the application of predefined rules and procedures.

(Adapted from Reeves, T. C., Herrington, J., & Oliver, R. (2002). Authentic activity as a model for web-based learning. 2002 Annual Meeting of the American Educational Research Association, New Orleans, LA, USA.)

## Students pursue solutions to problems by…

- asking and refining questions
- debating ideas
- making predictions
- designing plans and/or experiments
- collecting and analyzing data
- drawing conclusions

# Students pursue solutions to problems by…

- communicating their ideas and findings to others
- asking new questions
- creating artifacts
- There are two essential components of projects:

    - 1. A driving question or problem that serves to organize and drive activities, which taken as a whole amount to a meaningful project
    - 2. Culminating product(s) or multiple representations as a series of artifacts, personal communication

    (Krajcik), or consequential task that meaningfully addresses the driving question. (Brown & Campione, 1994).

# Overview

- **Overview: What should you consider before planning a project?**

  Great projects begin with planning for the end result. Learn to design engaging, standards-focused projects that help students develop in-depth knowledge and important skills.

- **Explore: Learn how to develop project ideas and themes.**

  Review the seven steps in planning a rigorous, engaging project.

# Six Steps to Help You Begin Planning

- **Develop a Project Idea**
- **Decide the scope of the project**
- **Select Standards**
- **Incorporate simultaneous outcomes**
- **Work from project design criteria**
- **Create the optimal learning environment**

## Overview:
## Look at a few driving questions

- Intriguing Driving Questions are at the heart of effective projects. Learn how to write Driving Questions that spark interest and propel students through the project.

# Explore: What makes good Driving Question?

- Learn how to generate and refine Driving Questions.

- http://www.pbl-online.org/driving_question/drivingquestion.html

# Explore

- Develop a project idea
- Decide the scope of the project
- Select the standards
- Incorporate simultaneous outcomes
- Work from project design criteria
- Create the optimal learning environment

# Project planning is organized according to five design principles

1. **Begin with the end in mind**
2. *Craft the driving question*
3. **Plan the assessment**
4. *Map the project*
5. **Manage the process**

Design Principle #2
Craft the Driving Question

Design Principle #3
Plan the Assessment

Design Principle #1
Begin with the End in Mind

Design Principle #5
Manage the Process

Design Principle #4
Map the Project
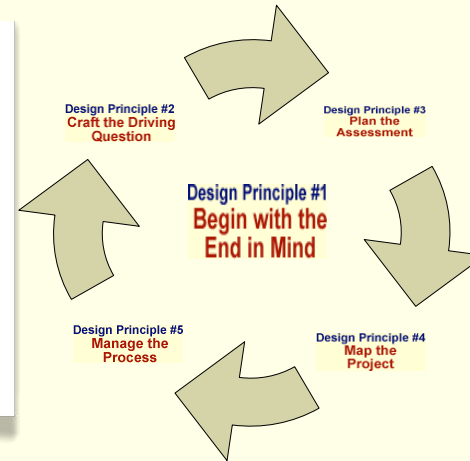
# Develop a project idea

- Work backward from a topic.

**U.S. thrust nears capital**

Project ideas come from articles, issues, current events, conversations, and wonderment. Often they emerge from discussions between members of a teacher team.

Once an idea comes to you, work backwards to shape the idea to meet your curriculum outcomes and standards.

# Decide the scope of the project

- **Length**
  A project generally cannot be shorter than a week. Most projects are conducted over a two to three week period.

- **Information/data collection**
  In projects, students generally do active research in the field, including interviews, library visits, and community inquiry. These activities take time and tend to lengthen the time for a project.

- **Issues**
  Some teachers prefer broad, open-ended questions, with many different solutions, to be the focus for a project. Broader questions require more time for student research and preparation.

# Select the standards

- Less is better.  Use two or three important standards or benchmarks as the focus for your project.

- **What about assessment?** The important task is to be clear about which standards will be assessed in the project and how the products will give all students the opportunity to demonstrate what they have learned.

- **Use Literacy as a Core Standard** The literacy of students is a central concern in schools.  Including at least one literacy outcome in your project--along with a major product that can be used to assess writing, speaking or reading strategies--is recommended for projects.

# Work from project design criteria?

Good projects don't just happen, but are based on important design criteria that support the success of the project. Using criteria helps you carefully structure the project for success. They also help you avoid a common pitfall of projects: creating activity-based teaching strategies that are often called a 'project' but lack a driving question and powerful assessments that bring a clear problem-solving focus to a project.

# Distinguish between **projects and activity-based teaching**

Does the project:

- Meet standards?
- Engage students?
- Focus on essential understanding?
- Encourage higher-level thinking?
- Teach literacy and reinforce basic skills?
- Allow all students to succeed?
- Use clear, precise assessments?
- Require the sensible use of technology?
- Address authentic issues?

A rubric can also help distinguish the quality of your project planning.

# Create the Optimal Learning Environment

Expert teachers have identified three conditions that generally contribute to successful projects and satisfied students:

(1) A strong teacher-student relationship, characterized by respectful communication and flexible roles

(2) rigorous, challenging performance standards, with plenty of support and feedback to help students do well; and

(3) the opportunity for 'voice and choice', in which students and teachers work together to design and shape the project. This field of research, known as resiliency, shows that PBL can be an important contributor to lifelong learning and the transition to adulthood.

# Connections

**Give your project one or more connections beyond the classroom.**

One of the most powerful motivational effects of Project-Based Learning can be observed when students are given authentic work to do, outside of the school, in collaboration with experienced partners.

Possibilities include partnerships or associations with other classrooms, other schools, or the external community, electronic linkages with distant individuals, groups, or classrooms, and mentorships with community organizations.

# Alter your classroom's look and feel

Many Project Based Learning teachers turn their classrooms into an office or a laboratory to heighten the authenticity of the project.

They partition their room to give groups private spaces to collaborate and store their work.

This encourages students to take ownership of their project and can heighten student interest.

# See the whole before practicing the parts.

Young children see their parents walk before their own motor skills begin to develop. Apprentices in a tailoring shop learn to assemble a garment from precut pieces before they learn to cut out the pieces themselves. In these situations, the learners see the whole before they work on the parts. Yet this is rarely the case in school. As one student said, "In school, I do little pieces of everything, but they don't really stick in my brain." Help the students put the puzzle together!

# Study content and apply it to authentic problems.

Expertise consists not only of knowing concepts, information and procedures but also of being able to apply them to problems.

At the work site, adults draw on knowledge of both content and process.

However, high school students spend most of their time learning content (e.g., significant events in American history, the stages of cell mitosis or quadratic equations) and almost no time learning problem-solving strategies and thinking processes.

# Make schoolwork more like real work.

Learning environments inside and outside of school differ in several important ways. For example, learning in school can be primarily an individual mental activity that requires little or no engagement with tools or materials.

Learning outside of school often involves other people as well as available tools and materials.

Learning in school depends heavily on symbol systems that are not related to things and situations that make sense to students; outside of school, thinking and actions are grounded in the logic of immediate

# Create a balanced assessment plan

A balanced assessment plan for a project will include a variety of assessments closely tied to the outcomes-the content standards, skills, and habits of mind-of the project. Most important, multiple indicators for performance give different kinds of students, each with different strengths, the opportunity to succeed.

A balanced assessment plan also includes methods you will use to gather the evidence of student performance, interpret that evidence, and make judgments about the evidence. The assessment plan should include both formative assessments-assessments that allow you to give feedback as the project progresses-and summative assessments-assessments that provide students with a culminating appraisal of their performance.

# Culminating Products

A *culminating product* is due at the end of the project and often represents a blend of content knowledge and skills that give students an opportunity to demonstrate learning across a variety of topics and skills

•**Research Papers**:  traditional essay or research paper.

•**Reports** Students investigating a major issue in a project may conduct an analysis or do research on an important societal or community question. This can culminate in a report to the community or to the school.

•**Multimedia Presentations** Using digital media, students can create an electronic presentation that can be included in an on-line portfolio or shown at an exhibition.

•**Presentations Within the School** Presentations or demonstrations to schoolwide assemblies or other classrooms are effective environments for increasing the quality of student performances.

•**Exhibitions Outside of School** Presentations to parents and community members can consist of oral presentations or presentation of an art or media project.

# Vision – Structure - Understanding

- Project Based Learning is a powerful but challenging instructional method that requires *vision, structure*, and a solid *understanding* of the learning process.
- Good projects do not occur by accident. They result from rigorous up front planning that includes
  - thoughtful outcomes
  - performance assessments
  - authentic learning activities.
- **Planning -** Begin with the End in Mind - you will improve your ability to plan projects, as well as communicate the purpose and context of a project to your students.
  - Students who understand the meaning of what they are learning retain more information and apply their knowledge more skillfully, and feel more motivated to achieve.

# Resources

- http://www.iearn.org/circles/
- http://www.pbl-online.org/end_in_mind/empractice/empractice.html