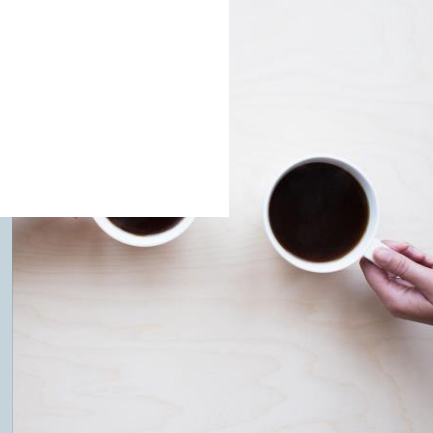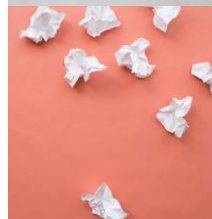# Project Based Learning

Session 2

Welcome Back!

Sum It Up Summaries

Objectives:

By the end of the sessions, all learners will be able to:

1. Differentiate between project based learning and problem based learning
2. Unpack best practices for facilitating professional development
3. Embody strategies for assuming the role of "teacher leader" within a school or school district
4. Outline supporting research for project based learning
5. Create possible solutions to barriers related to project based learning

Session Essential Questions:

Session 1:

What is the difference between project based learning and problem based learning?

What are best practices for facilitating professional development?

Session 2:

What does research say about project based learning?

**What are possible solutions to barriers related to project based learning?**

Session 3:

What are possible solutions to barriers related to project based learning (continued)?

What resources are available for teacher leaders?

Why Project/Problem-based Learning? Why Now?

- Project/Problem-based Instruction (PBL) has become popular because of its apparent impact on student learning.

- Focused on experimental learning organized around the investigation and resolution of messy, real world problems.
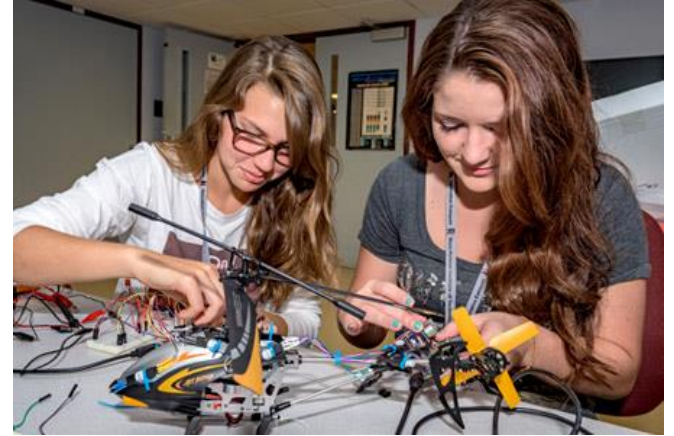
Why Project/Problem-based Learning? Why Now?

- Students retain little of what they learn in traditional lecture form.

- Often, students don't apply the knowledge they have learned.

- Since students forget much of what they learn, teachers create conditions that elevate retrieval in future professional practice.

The impact of PBL on learners?

Increased Motivation

▶ PBL uses the pull of problem dissonance or tension. Students make a personal investment in the outcome.

Adding Curriculum Relevance:

▶ PBL offers students an obvious answer to their questions. Ex: "Why do we need to learn this information?"

Impact of PBL continued…

Exposure to Higher Order Thinking

The ill-structured problem calls upon critical and creative thinking by suspending the guessing game of: "What's the answer that the teacher wants me to find?"

Personal Responsibility for Learning

Students gather information significant to the problem and assess its credibility and validity to solve the problem.

"The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn." Alvin Toffler

Why Should All Teachers Consider PBL?

- PBL is a superior methodology for promoting student engagement in the learning process.

- Numerous national and international reports call for increased use of problem-centered instructional strategies.
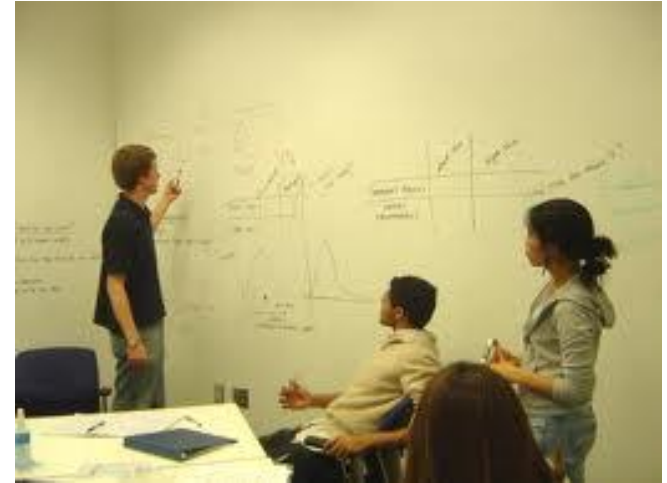
What makes PBL effective?

▶ Educators present the problematic situation (or scenario) first, and it serves as the organizing center and context for learning.

▶ The problem scenario has common characteristics:
  ▷ Ill-structured and messy
  ▷ Often changes with the addition of new information
  ▷ Not solved easily or with a specific formula
  ▷ It does not result in one right answer

Historical Background

▶ PBL was first applied in medical schools, which was used to help test the knowledge of graduates.

▶ Medical professionals need to keep up with new information in their field, and the skill of life-long learning is important- so PBL was well suited for this area.

How Does PBL Relate to the Principles of Learning?

- *Learning is not necessarily an outcome of teaching*
- *Students' existing knowledge-base influences their learning*
- *Learning progresses from concrete to abstract*
- *People learn most effectively through practice*
- *Effective learning requires feedback*
- *Expectations affect performance*

How Does PBL Relate to the Principles of Teaching?

- *Start with questions*
- *Engage students actively*
- *Concentrate on the collection of evidence*
- *Provide historical perspectives*
- *Require demonstration of knowledge and skills*
- *Use a team approach*
- *Do not separate knowing from finding*

A practical guide to Project/Problem Based Learning

- ▶ Anchor learning activities to a larger task or problem.
- ▶ Design authentic problems/tasks.
- ▶ Support the learner in developing ownership for the problem.
- ▶ Design the problem to reflect the complexity of the environment students should be able to function in at the end of learning.
- ▶ Design the learning environment to support and challenge learners' thinking.
- ▶ Encourage testing ideas against alternative views and alternative contexts.
- ▶ Provide opportunity for support and reflection on both the content learned and the learning process.

The Role of the Teacher in PBL

▶ The teacher is the most active in planning the content/problems (based on standards), sequencing projects, and proving feedback.

▶ Teachers should act as coaches, servings as models, thinking aloud with students and practicing behavior they want their students to use.

▶ Good technique: Answering questions with additional questions.

The Role of the Teacher in PBL (Continued)

- Teachers prompt students to ask questions like "What do we need to know more about? What did we do during the problem that was effective?"

- Over time, students become more self-directed learners and teachers fade into the background.

- Students benefit from immediate feedback from teachers so misconceptions can be cleared promptly.

- Teachers should monitor the process within groups so students work effectively.

WRESTLE TIME!
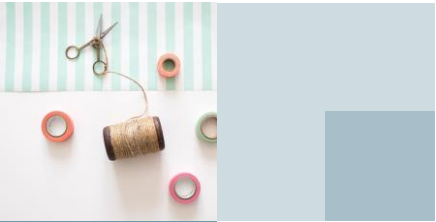
Process

Essential Question #1:

What does research state regarding project-based learning?

Personal Investigation

Complete a personal investigation about this topic.

What resources can you find that speak to the importance about project based learning?

Process

Essential Question #1:

What does research state regarding project-based learning?

Team Tables

Share your findings with your tablemates.

As a table, upload a summary of your findings to our shared google drive.

PAIR
SHARE

Poll Everywhere
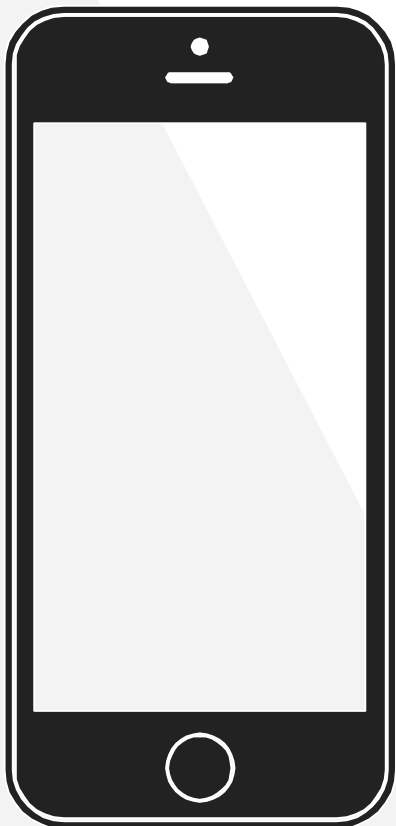
What is the biggest obstacle YOU have faced when facilitating project-based learning?

What will teachers in your district FEAR about implementing project-based learning?

COMMON TEACHER ISSUES WHEN USING PBL IN THE CLASSROOM:

1. Time Management
2. Getting Started
3. Student Self-Management
4. Managing Student Groups
5. Working with Others Outside of the Classroom
6. Managing Technology
7. Assessing Students and Evaluating Projects

If these are common problems,

What are the SOLUTIONS?

COMMON TEACHER ISSUES WHEN USING PBL IN THE CLASSROOM:

1. Time Management
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Sample: Human-Powered Fan Challenge

IT'S HOT!

It's *hot*!
I can't get cool,
I've drunk a quart of lemonade.
I think I'll take my shoes off
And sit around in the shade.

It's *hot*!
My back is sticky,
The sweat rolls down my chin.
I think I'll take my clothes off
And sit around in my skin.

It's *hot*!
I've tried with 'lectric fans,
And pools and ice cream cones.
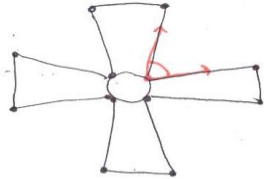I think I'll take my skin off
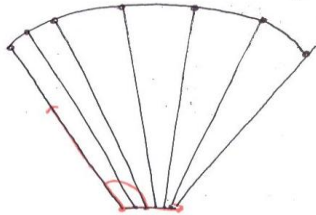And sit around in my bones.

It's *still* hot!

Essential Question:

Can an human-powered fan be designed to cool students in areas where electricity is not available?

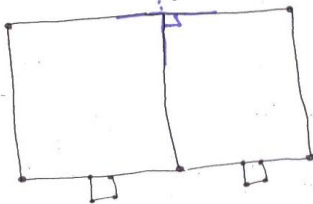# Student Fan Designs

A square paddle
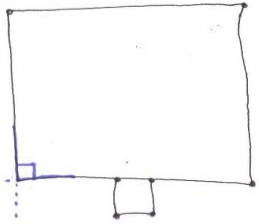
A spread fan

four blades

Three Blades

Two rectangle paddles

Standard: Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines. Identify these in two-dimensional figures.

Task: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Analyze Fan Designs

A square paddle

A spread fan

four blades

Three Blades

Two rectangle paddles
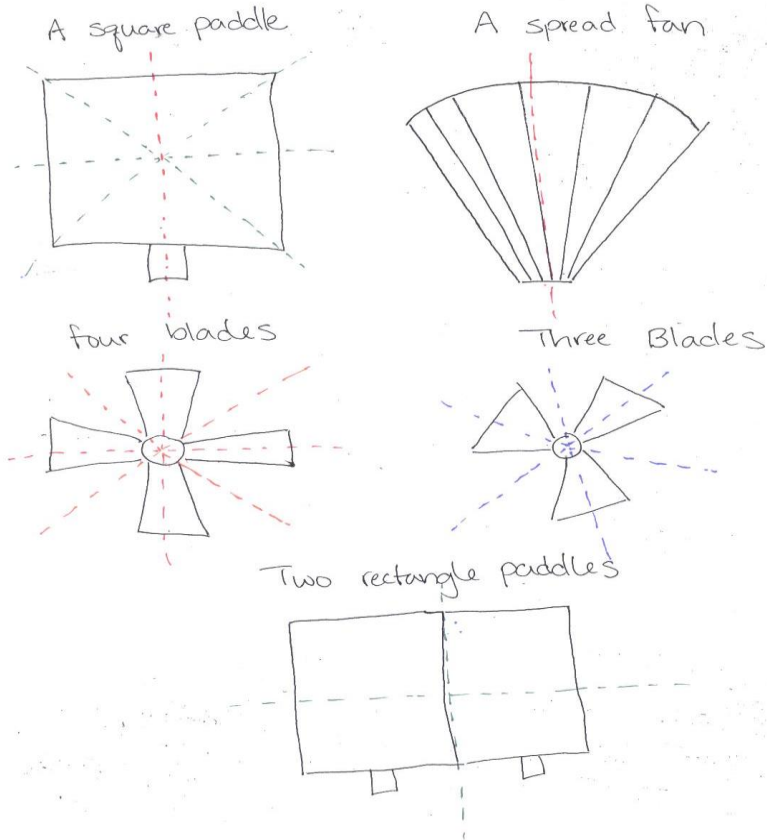
Standard: Recognize a line of symmetry for a two-dimensional figure. Identify line-symmetric figures and draw lines of symmetry.

Task: After students have been working on a fan design explore lines of symmetry in their designs.

Completed Prototypes

Thank You!