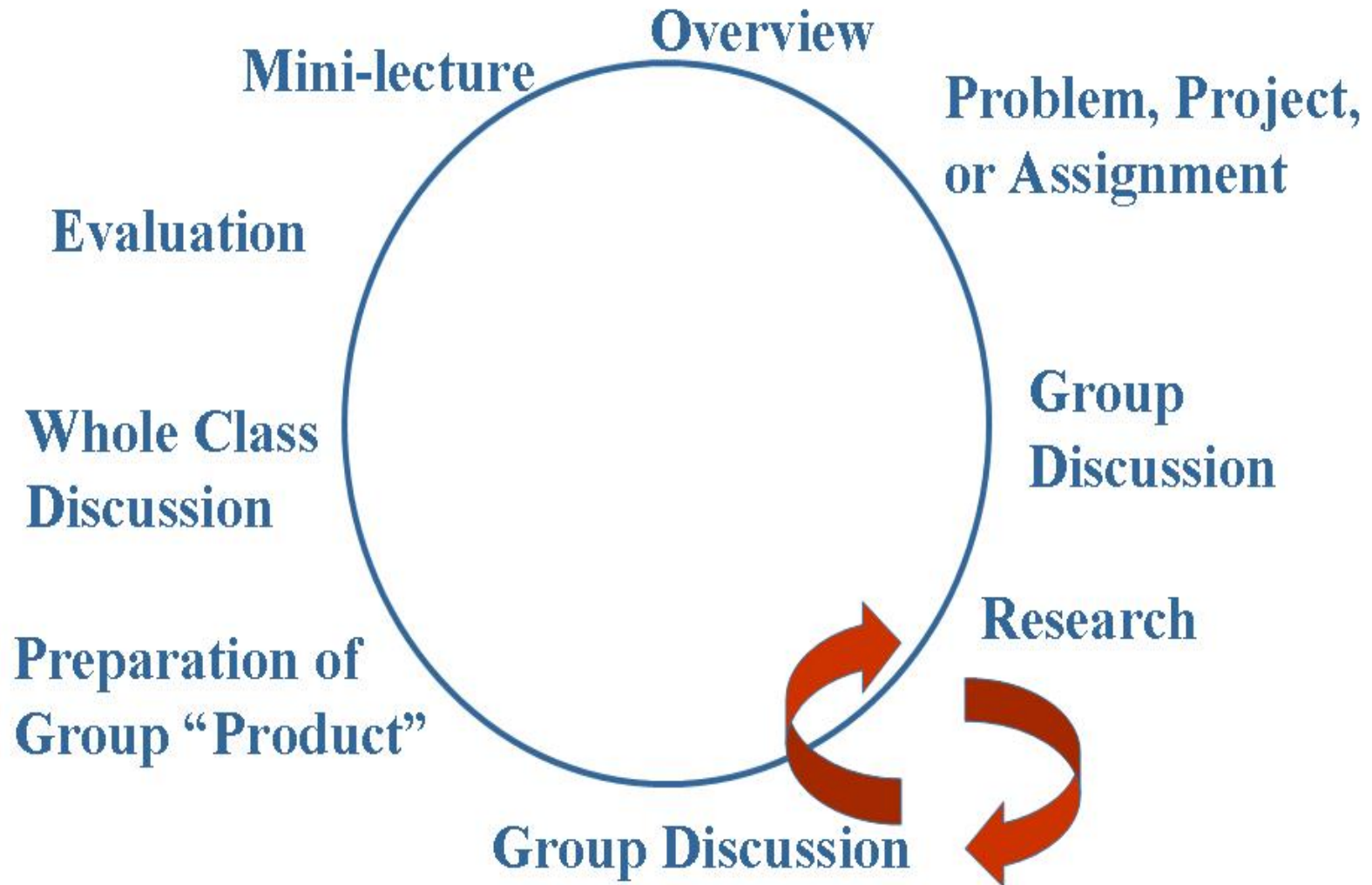


PBL in the Tech Class

Your Guide: Helen Teague





Common Features of PBL

- Learning involves solving a problem.
 - ▶ Outcomes
- Problems are based on real-world situations.
- Information needed to solve problem is not initially given. Students identify, find, and use appropriate resources.
- Students work in teacher-selected groups.
- Learning is active, integrated, cumulative, and connected. (Project-Based Service Learning)
- Teacher serves as coach, facilitator



Example of Problems

- What are all the ways you can think of to exit this room?
- Rename the 13 original colonies if the Pilgrims had landed on Los Angeles Rock.
 - ▶Source: <http://www.piecesoflearning.com> Nancy Johnson
- Why do we have to fight wars?
- What is the South had won the Civil War?
- Imagine that your parents have been given job offers in 3 cities. Where should your family relocate?
 - ▶Source: <http://www.fno.org> Jamie McKenzie



PBL: The Process

- Students receive a problem. They organize ideas around previous knowledge.
- Students pose questions, defining what they know and don't know.
- Students use “Text & Tech” resources to gain information
- Students reconvene, explore newly learned information, refine questions.
- Students create product to demonstrate what they have learned.



PBL Components

☺ Introduction,

☺ Content,

☺ Learning Objectives, Expected
Outcome,

☺ Guiding Questions,

☺ Resources,

☺ Assessment,

☺ Time Frame

▲ Source: (Bridges, 1992)

Characteristics of Problems

- ↻ Serves as a template for other situations
- ↻ Plausible
- ↻ Interdisciplinary
- ↻ Covers objectives
- ↻ Task-oriented
- ↻ Complex enough to incorporate prior knowledge

▶ Source: (Albanese & Mitchell, 1993).



Characteristics of Problems (con't)

↻ Contains a Question to Solve

↻ <http://www.questioning.org/index.html>

↻ <http://www.udel.edu/pbl/problems/>

↻ Involves Research

↻ <http://www.questioning.org/rcycle.html>

↻ Maintains Student Interest

↻ <http://www.mcli.dist.maricopa.edu/pbl/ubuystudent/index.html>

Give Students Jobs/Roles

- Think Tank Department
 - ❖ Thinks of new products to be made from recycled trash
 - ❖ Makes a list of all materials needed to make each product
 - ❖ Suggests a selling price to people in the advertising department
 - ❖ Gives the production department a list of required materials.

Give Students Jobs/Roles

- Production Line Department
 - ❖ Makes a sample of each product to be sold
 - ❖ Decides the easiest way to make each product
 - ❖ Lists the steps needed to make each product
 - ❖ Responsible for making a good product
 - Quality Control
 - ❖ Must finish production of products on time

Give Students Jobs/Roles

- Advertising Department
 - ❖ Decides on a Sales Slogan
 - ❖ Decides on an advertising plan
 - ❖ Decides the price of the item to be sold
 - ❖ Evaluates what sold well

Give Students Jobs/Roles

- Sales and Accounting Department
 - ❖ Design and set up the sales booth
 - ❖ Sell the products, take down the sales booth
 - ❖ Tally the items sold, graph sales results
 - ❖ Report sales results and findings




Other Roles to Consider

- Reader
- Writer
- Materials Monitor
- Facilitator
- “Wildcard”—Assumes the role of any missing member/



Sample Project I: Introduction

- You and your classmates have decided to enter a “Design For the Future” contest. The contest rules say you must construct a new home for at least 5 people . As part of the architectural team, you must design the blueprint for the house of the future. You have a budget of \$80,000.



Sample Project I: Learning Objectives/ Content/ Outcome/Time Frame

- In their study of Perimeter, Writing, and Technology, students will research and locate home blueprints, figure perimeter, and demonstrate what they have learned by creating a blueprint schematic with caption. {1 week}



Sample Project I: Guiding Questions

- What are some of the most important rooms in a home?
- What is the best way to arrange these rooms?
- How would you figure the perimeter of each room?
- How many rooms does our new home need?
- Are there any models available to help us?



Sample Project I: Resources

- House Plans:
 - <http://www.houseplanguys.com/>
- Math Solutions:
 - <http://www.mathsolutions.com/>
- AJ Kids: <http://www.ajkids.com>
- Lowes: <http://www.lowes.com>
- Math Textbook



Sample Project I: Assessment

- You will receive a rubric grade on how well you work with your group, the accuracy of your blueprint, the correct computation of the area of each room in your house, and the quality of your home caption.



Sample Project II

Can we predict the weather?

1. Students measure the temperature in their backyard tonight. Students check today's weather forecast on [The Weather Channel](#) Web site for the closest major city.




Sample Project II

- Tomorrow, students compare their actual measurements with the temperature given on the Web site. Compare this temperature with the forecast. How well did the weatherman predict the temperature?



Sample Project II

- Students download a map of the U.S. from the [NOAA Satellite and Information Services](#), showing [Record High Temperatures](#), [Record Low Temperatures](#), and [Monthly Temperature Extremes, by State](#). Compare today's maximum or minimum temperature with the ones shown on the maps for the record high and low temperatures.



Sample Project II: Guiding Questions

- ❖ What is the difference between today's temperature and the extreme temperatures shown on these maps?
- ❖ Would students agree that today's temperature is relatively high, low, or average for this season, when compared with these extremes?



Sample Project II

Learning Objectives/ Content/ Outcome/Time Frame

- In their study of, _____
- students will _____, and demonstrate what they have learned by creating a _____ {1 week}



Sample Problem II

Assessment

- You will receive a rubric grade on how well _____,
- the accuracy of your _____,
- the correct computation of _____,
- and the quality of your _____.



Is this PBL activity worth it?

1. Feasibility Test: Are resources available? Is there enough time and energy? Is there a compelling educational purpose for the activity?
2. Appropriateness Test: Can students with their learning needs, complete this project?
3. Relative Advantage Test: Will it enable us to do something not possible before or will it enable us to do something in a better way?



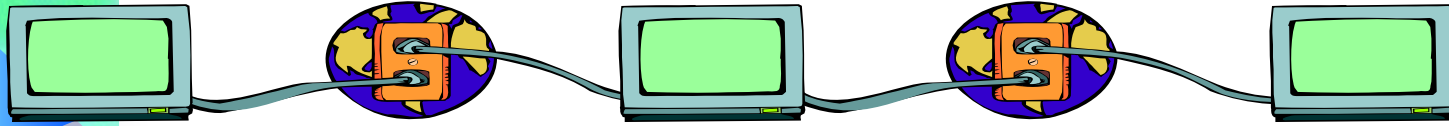
Assessment: Questions to Ask

- Look at the product created and the Process
 - ❖ Did the student do the required planning?
 - Storyboards/timelines/run throughs
 - ❖ Was the student able to use the hardware and software applications effectively?
 - ❖ Did the student provide the required content?
 - ❖ Did the student add a personal touch to the project~~show evidence of creativity?
 - ❖ Did the student edit the project before presenting the finished product?

Assessment

Which way to assess is best?

- WIP and Production Grades
- Landmark Project: <http://landmark-project.com/>
- PBL
Checklists: <http://pblchecklist.4teachers.org/>
- Rubric Links:
<http://school.discovery.com/schrockguide/assess.html>
- Teach-nology: <http://www.teach-nology.com>



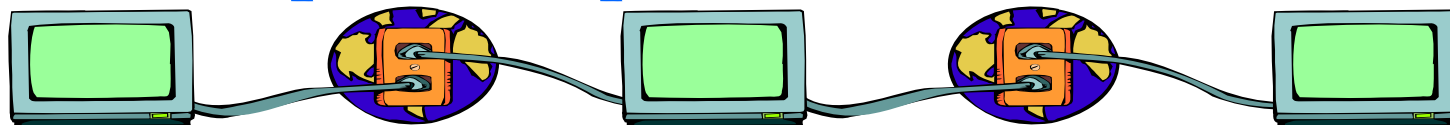
Thank you for a great workshop!


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“Once teachers relinquish the lecturer's role, they develop and enhance their repertoire of teaching responses: listening to students; answering questions; helping students frame good questions; formulate problems, and make effective decisions; directing students to appropriate resource materials/faculty; and being fellow learners.”

Source:

<http://edweb.sdsu.edu/clrit/learningtree/PBL/PBLFacilitatingExample.html>