Writing Effective PBL Problems

Courtesy of Deborah Allen
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Step One: Identify Learning Objectives

Think of a learning objective in your course.

How do you usually address this learning objective? What kind of problem or activity do you usually assign?

– Typical end-of-chapter problem?
– A reading?
– Other?
Example from Physics: Solving Problems Using Conservation of Momentum

Traditional examples:
- Pool balls colliding
- Bullets hitting blocks of wood
A 1500-kg car traveling east with a speed of 25 m/s collides at an intersection with a 2500-kg van traveling north at a speed of 20 m/s. Find the direction and magnitude of the velocity of the wreckage after the collision, assuming that the vehicles undergo a perfectly inelastic collision (ie, they stick together).

Types of Learning Objectives

Content-oriented: subject specific
- Basic knowledge and understanding of specific concepts, techniques, etc. in the discipline

Process-oriented: global skills
- Effective communication: oral and written
- Acquiring and evaluating information
- Working effectively with others
- Higher order, critical thinking
Step 1: Writing Learning Objectives

- Identify several learning objectives for your PBL development; consider both content and process goals.
- Traditionally, how might these learning objectives be addressed? What kind of problem or activity would you assign?
Step Two: Identify Real-World Context

Name a realistic application of the concept.
Outline a scenario.

Ideas:
• Add story-telling to end-of-chapter problem.
• Add motivation, require students to go beyond rote learning, do research.
• Include decision-making, analysis, or both.
• Other?
A Real Traffic Accident

- Based on police sketch
- Students need to make assumptions and approximations
- Information given gradually throughout problem
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• Add story-telling to end-of-chapter problem.
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• Include decision-making, analysis, or both.
• Other?
Step Three: Draft the problem

Outline the problem (create a ‘story board’) First consider, “What will be on the first page?”

Suggestions:

• Good PBL problem has multi-page, multi-stage construction – progressive disclosure.
• Not all information given in chapter or text - students look for resources.
• Challenge students to come to consensus, reach conclusions, and make judgments.
Sources and Strategies for Writing Problems

Newspaper articles, news events
Popular press in the discipline
Make up a story – based on content objectives
Adapt a case to a problem
Research papers
Other?
PBL Clearinghouse

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