

Writing Effective PBL Problems

Courtesy of
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Effective PBL Problems...

- relate to real world, motivate students
- require decision-making or judgments
- are multi-page, multi-stage
- are designed for group-solving
- pose open-ended initial questions that encourage discussion
- incorporate course content objectives, higher order thinking

Writing Your Own Problem Starter



Step One:

Identify Learning Objectives

Think of a learning objective in your course.

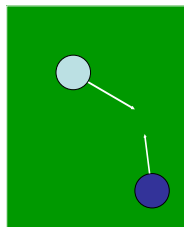
How do you usually address this learning objective? What kind of problem or activity do you usually assign?

- 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



Example from Physics: Traditional End-of-Chapter Problem



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).

Serway and Faughn. 3rd ed. *College Physics*, Saunders, 1992.



Consider the Following Problem Types:

Explanation or Analysis Problems

'What is going on here?'

Decision or Dilemma Problems

'What would you do?' 'What do you think?'

Task-Oriented Problems

Doing an activity or carrying out a project - for example, interviewing patients or designing a brochure.

Step Three: Draft the problem

Outline the problem (create a 'story board') First consider, "What will be on the first page?"

Suggestions:

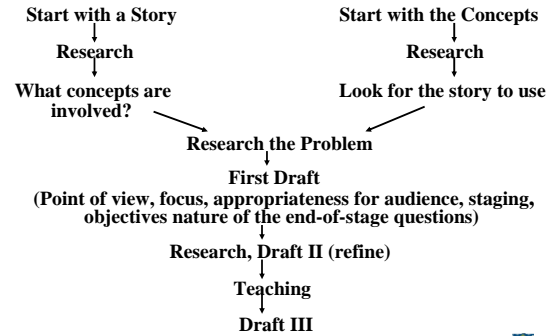
- Good PBL problem has multi-page, multi-stage construction - leave students guessing!
- Not all information given in chapter or text - students look for resources.
- Challenge students to come to consensus, reach conclusions, and make judgments.

Problem Progress Report

For presentation:

- Basic features of course
- Objectives for student learning
- Synopsis of problem
- Scenario for first page, including guiding questions
- What comes next?

Writing PBL Problems



From C. F. Herreid, SUNY Buffalo & W. Welty, Pace University



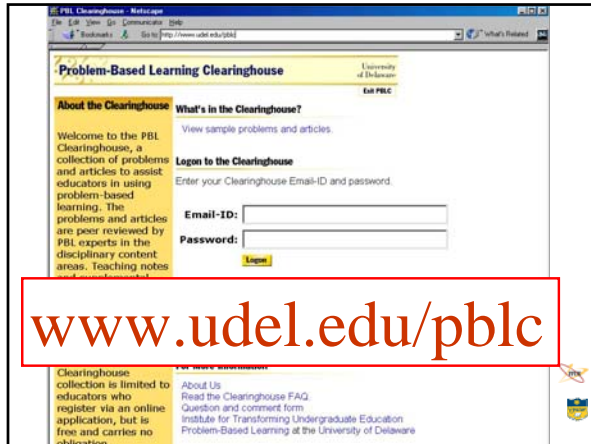
Sources and Strategies for Writing Problems

- 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

An online database of PBL articles and problems.

- All material is peer-reviewed by PBL practitioners for content and pedagogy.
- All problems are supported by learning objectives and resources, teaching and assessment notes.
- Holdings are searchable by author, discipline, keywords, or full text.
- Fully electronic submission, review, and publication cycle.
- Controlled access by free user subscription,



Problem Writing Step 4

Continue to draft the storyline beyond a sketchy scenario – begin to write the first stage
Think about point-of-view, nature of the end-of-stage questions, suitability for 'audience,' alignment with problem and course objectives

Some Additional Considerations for Step 4

A good PBL problem leaves just the right information out!
Challenge students to come to consensus, reach conclusions, and make judgments.