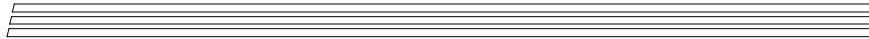


|||| Problem-Based Learning (PBL)

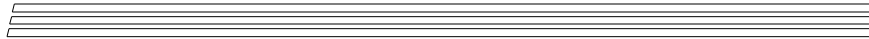
- begun in 1950's as a movement to restructure medical school education
- unlike *traditional instruction* that culminates in a problem after basic instruction on facts and skills, *PBL* begins with a problem, teaching facts and skills in a relevant context



PBL has been used since the 1950's. While it originated in universities, it is now also employed in businesses and K-12 classrooms.

Tenets of PBL

- requires students to solve authentic, open-ended problems with many correct answers possible
- authentic problems faced by scientists, doctors, engineers, lawyers, educators, administrators, counselors, etc.



Problems given to students are ill-defined with many potential solutions. Problems should be authentic and similar to those faced by professionals in a given field. For example, pre-service teachers should be given difficult classroom situations to resolve, or engineering students should be given the task of planning a difficult, new structure.

Tenets of PBL

- emphasizes students' pre-existing knowledge; “start with what you know”
 - students actively participate by helping plan, organize, and evaluate the problem solving process
 - interdisciplinary connections stressed
 - students undertake authentic roles
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Students must be involved in authentic practices. If students in business management are given an organizational problem to overcome, they must diagnose the situation in the same manner as an expert consultant, perhaps interviewing key players and reviewing available documents. It will be necessary to provide students with access to considerable information and resources to solve an open-ended problem. Access is the key word, since students should not be provided a well-structured set of requisite resources, but rather, access to many resources for research. Determining and undertaking appropriate research strategies is an important by-product of PBL.

Basic Steps of PBL

- students divided into groups
- real problem is presented and discussed
- students identify what is known, what information is needed, and what strategies or next steps to take
- individuals research different issues, gather resources

Students are given a problem, they discuss it, then write down what information is known, what information is needed, and what steps to take. When gaps are identified in needed information, these “learning issues” are divided among group members for further research.

Basic Steps of PBL (continued)

- resources evaluated in group
 - cycle repeats until students feel the problem has been framed adequately and all issues have been addressed
 - possible actions, recommendations, solutions, or hypotheses are generated
 - tutor groups conduct peer/self-assessments
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After students share and evaluate the resources they've gathered for the various learning issues, they decide if further information is required. If so, research continues. If not, a recommendation is formed. PBL sessions involve students in critiquing one another's performance. Students must comment on their own efforts and each group member's efforts.

Facilitators and PBL

- a facilitator is key to these learning environments
- models higher-order process skills
- probes for student understanding
- never identifies issues or states an opinion while students frame problems

A facilitator models process skills, or an expert's thinking strategies for open-ended problem solving. They might ask the students to consider, "what is it that you don't know?" or "where can you find that information?" or "what do you think should be done next?" The facilitator does not provide clues to any of these questions, but rather, prompts students to consider "next steps" and processes along the way.

Advantages of PBL

- greater recall of knowledge, retention
- interdisciplinary, can require accessing and using information from a variety of subject domains; better integration of knowledge
- development of life-long learning skills: how to research, how to communicate in groups, how to handle problems



Advantages of PBL

- increased motivation, interest in subject areas
- increased student-student interaction, and student-instructor interaction

