



Characteristics Needed in College Graduates

High level of communication skills
 Ability to define problems, gather and evaluate information, develop solutions
 Team skills -- ability to work with others
 Ability to use all of the above to address problems in a complex real-world setting

Quality Assurance in Undergraduate Education (1994)
 Wingspread Conference, ECS, Boulder, CO.



What Is PBL?

“The principal idea behind PBL is that the starting point for learning should be a problem, a query, or a puzzle that the learner wishes to solve.”

Boud, D. (1985) PBL in perspective. In “PBL in Education for the Professions,” D. J. Boud (ed); p. 13.



What Is PBL?

*“...careful inspection of methods which are permanently successful in formal education...will reveal that they depend for their efficiency upon the fact that they go back to the type of situation which causes reflection out of school in ordinary life. They give pupils **something to do, not something to learn; and if the doing is of such a nature as to demand thinking, or the intentional noting of connections; learning naturally results.**”*

John Dewey (1916)

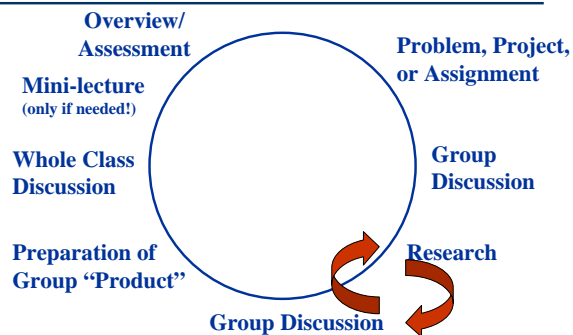


What are the Common Features of PBL?

Learning is initiated by a problem.
 Problems are based on complex, real-world situations.
 All information needed to solve problem is not given initially.
 Students identify, find, and use appropriate resources.
 Students work in permanent groups.
 Learning is active, integrated, cumulative, and connected.



Problem-Based Learning Cycle



Factors in Choosing a Model

Class size
 Intellectual maturity of students
 Student motivation
 Course learning objectives
 Instructor's preferences
 Availability of peer facilitators



Medical School Model

- Dedicated faculty tutor
- Groups of 8-10
- Very student-centered environment
- Group discussion is primary class activity

A good choice for

- Highly motivated, experienced learners
- Small, upper-level seminar classes



Floating Facilitator Model

- More structured format: greater degree of instructor input into learning issues and resources
- Group size: 4
- Instructor rotates through groups: Asks questions, directs discussions, checks understanding
- Other class activities:
 - Groups report out
 - Whole class discussions
 - (Mini-)lectures

A good choice for

- Less experienced learners
- Classes of all sizes



Peer Facilitator Model

Advanced undergraduates serve as facilitators

- Help monitor group progress and dynamics
- Serve as role models for novice learners
- Capstone experience for student facilitators

A good choice for

- Classes of all sizes



Dealing with Large Classes

Floating facilitator or peer facilitator models are the most appropriate.

Requires a more teacher-centered, structured format: instructor directs group activities

Group size: 4

Reduce grading burden through group (vs. individual) papers, projects



Effectiveness of PBL: Research

- Ample evidence for the value of active and cooperative learning (Johnson, Johnson and Smith, 1991)
- Strict comparisons of PBL and traditional approaches difficult to design (Prideaux, 2000):
 - Randomization, blinding difficult
 - Many uncontrollable variables: variants in PBL, resources, motivation
 - Appropriate outcome measures: content knowledge vs. process skills
- Most research studies from medical education



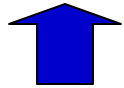
General Trends from Research

- Content knowledge comparable to that found in traditional courses (Newman, 2003)
- PBL leads to
 - improvement in student attitude and clinical performance (Vernon and Blake, 1993)
 - deeper approach to learning (Newble and Clarke, 1986)
 - better interpersonal skills and attitudes towards patients (Nandi et al., 2000)



PBL: The Process

Resolution of Problem;
(How did we do?)



Integrate new
Information;
Refine questions



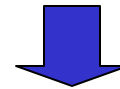
Reconvene, report
on research;



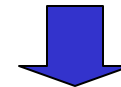
Research questions;
summarize;
analyze findings



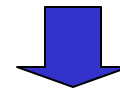
Presentation of Problem



Organize ideas and
prior knowledge
(What do we know?)



Pose questions (What do
we need to know?)



Assign responsibility
for questions; discuss
resources

