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.”

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

Overview/Assessment
Mini-lecture (only if needed!)
Whole Class Discussion
Preparation of Group “Product”

Problem, Project, or Assignment
Group Discussion
Research

Group Discussion

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

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)
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

Next stage of the problem

Research questions; summarize; analyze findings

Reconvene, report on research;

Refine questions

Integrate new Information;

Resolution of Problem; (How did we do?)