Problem-Based Learning:
PBL: Real World Problems As Blueprints for Learning

Deborah E. Allen,  
Associate Professor of Biological Sciences
George H. Watson,  
Sr. Associate Dean of Arts and Sciences
Hal White,  
Professor of Chemistry and Biochemistry
University of Delaware

Blueprints for Learning  
Lilly East Conference on College and University Teaching  
April 12-14, 2007 Newark, DE

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)  
Wingpread 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.

Deflating Grady – Part 1

Read over the e-mail exchange and discuss the ideas it raises about grade inflation

As a group, compose a definition of grade inflation and be prepared to present it on the poster paper provided.

Be prepared to “report out” in 10 minutes

Deflating Grady – Part II

Read over the information presented, and be prepared to report out on your responses to questions 1 & 2:

Be prepared to “report out” in 10 minutes
PBL Contrasted with Subject-Based Learning

Given problem to illustrate how to use it
Learn it
Told what we need to know

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

Next stage of the problem

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

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

UD PBL Online

PBL at UD - www.udel.edu/pbl
Sample PBL materials, including syllabuses; links to other sites

PBL Clearinghouse - www.udel.edu/pblc
Database of peer-reviewed PBL problems

ITUE – www.udel.edu/inst
Workshops on PBL and integration of technology, communication skills