

What Is PBL? Why PBL?



Institute for Transforming
Undergraduate Education
University of Delaware



George Watson
ghw@udel.edu

Problem-Based Learning Workshop for
Department of Biological Sciences at Youngstown State University

www.udel.edu/pbl/ysu



Characteristics Needed in College Graduates

Excellent
communication skills

Ability to define problems,
gather and evaluate
information, develop solutions

Address problems
in a complex real-world setting

Team skills –
ability to work with others

Formatted by Beth Moring

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



In Knowledge Work ...

The task is not given; it has to be
determined.

There is usually no right answer; there
are choices instead.

Peter Drucker
Post-Capitalist Society



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.*



Characteristics of Good Learning Issues

Presented in the form of a **question** or **series of questions**.

Focused so that it seeks specific information.

Constructed so that it asks an **answerable** question.

Pursues information that is **relevant** to the problem.

Goes beyond superficial knowledge to probe **conceptual**
issues.

Often set in a **context** that provides direction. **Why** is the
question important?



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.

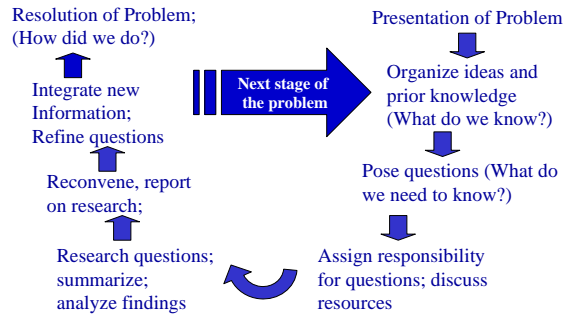
Students identify, find, and use appropriate
resources.

Students work in permanent groups.

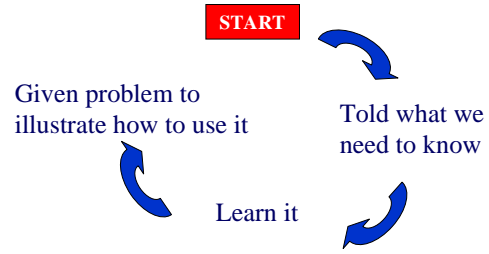
Learning is active, integrated, cumulative, and
connected.



PBL: The Process



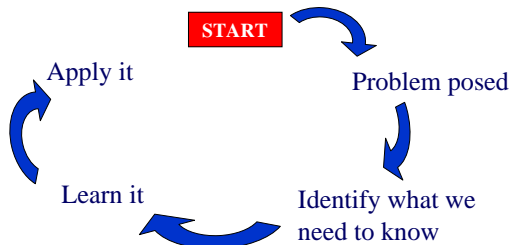
PBL Contrasted with Subject-Based Learning



From Smith et al, 2005. *Pedagogies of engagement: Classroom-based practices. J. Engineering Education, January 2005. 87-101.*



PBL Contrasted with Subject-Based Learning



From Smith et al, 2005. *Pedagogies of engagement: Classroom-based practices. J. Engineering Education, January 2005. 87-101.*



Other Reasons for Using PBL?

Students learning to communicate in a common language.

International Islamic University of Malaya

Innovation and thinking ‘outside of the box’.

Republic Polytechnic, Singapore

Student engagement; learning ‘how to learn’.

Inquiry-based approach, bringing research-like approach to thousands of students.



UD PBL online

PBL at UD

www.udel.edu/pbl

PBL Clearinghouse

www.udel.edu/pblc

Watson homepage

www.physics.udel.edu/~watson

This presentation

www.udel.edu/pbl/ysu



Factors in Choosing a Model

Class size

Intellectual maturity of students

Student motivation

Course learning objectives

Instructor’s preferences

Availability of peer facilitators



Common Classroom Models

- Medical school
- Floating Facilitator
- Peer Facilitator
- “Hybrid”



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: 4-6
- 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



“Hybrid” PBL

- Non-exclusive use of problem-driven learning in a class
- May include separate lecture segments or other active-learning components
- Floating or peer facilitator models common

Often used as entry point into PBL in course transformation process