The Power of Problem-Based Learning:
Putting Students at the Center

George Watson
The Way It Was...
1973

scientific calculators, graphing calculators, laptops and notebooks, PDAs, tablet PCs, gigabytes and gigahertz, ubiquitous computing

2008

Computation and Calculation
The Way It Was...
1973

Communication and Collaboration

2008

e-mail,
voice-mail,
chatrooms,
cell phones,
text messaging,
instant messaging,
blogging,
wireless connectivity

Communication and Collaboration
The Way It Was...

1973

2008

Online Information:
- web catalogs,
- networked databases,
- Britannica Online,
- online newspapers,
- course websites,
- CMS and LMS,
- podcasting,
- wikis

Collections and Connections
An important question:

Given the amazing advances in technology

and the dramatic change in the environment of our students,

Can we afford to continue teaching the way we were taught?
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.”

(mini) PBL:  
[a warm-up exercise]
What Is PBL?

PBL is a learning approach that challenges students to “learn to learn,” working cooperatively in groups, to seek solutions to real world problems.
What Is PBL?

PBL prepares students to think critically and analytically, to find and use appropriate learning resources, to communicate effectively, orally and in writing, to work well as members of a team.
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.
A Typical Day in a PBL Course
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
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.
...the individuals learning the most in the typical classrooms are the teachers there. They have reserved for themselves the very conditions that promote learning:

actively seeking new information, integrating it with what is known, organizing it in a meaningful way, and explaining it to others.

Page 35, Huba and Freed, Learner-Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning, 2000
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.
“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 (1985)*
“True learning is based on discovery guided by mentoring rather than the transmission of knowledge.”

“El verdadero aprendizaje se basa en el descubrimiento guiado por un tutor más que en la transmisión de conocimientos.”
UD PBL online

PBL at UD
    www.udel.edu/pbl

PBL Clearinghouse
    www.udel.edu/pblc

This presentation
    www.udel.edu/pbl/guam