WHAT IS PROBLEM-BASED LEARNING?¹

Problem-based learning (PBL), at its most fundamental level is an instructional method characterized by the use of “real world” problems as a context for students to learn critical thinking and problem solving skills, and acquire knowledge of the essential concepts of the course. Using PBL, students acquire life long learning skills, which include the ability to find and use appropriate learning resources, to be versatile communicators about complex subjects, and to build teams that can work effectively towards common goals. The process used in PBL is the following:

- Students are presented with a problem (case, research paper, videotape, etc.). Working in groups, they organize their ideas and previous knowledge related to the problem, and attempt to define the broad nature of the problem.
- Throughout the first session’s discussion, students pose questions, called learning issues, on aspects of the problem that they don’t understand. They are continually encouraged to define what they know - and more importantly, what they don’t know.
- Students rank, in order of importance, the learning issues generated in the session. They decide which questions the whole group will be follow up on, and which issues can be assigned to individual students, who will later teach the rest of the group.
- The students and instructor also discuss what resources will be needed to research the learning issues, and where they can be found.
- When the students reconvene, they explore the previous learning issues, integrating their new knowledge into the context of the problem. They are also encouraged to summarize their knowledge and connect new concepts to old ones.
- The students continue to define new learning issues as they progress through the problem. Students soon see that learning is an ongoing process, and that there will always be (even for the teacher) learning issues to be explored.

What is the faculty role in PBL? The instructor must guide, probe, and support students’ initiatives, not lecture, direct, or provide easy solutions. The degree to which a PBL course is student-directed versus teacher-directed is a decision that the faculty member must make based on the size of the class, the intellectual maturity level of the students, and the instructional goals of the course. When faculty incorporate PBL in their courses, they empower their students to take a responsible role in their learning - and as a result, faculty must be ready to yield some of their own authority in the classroom to their students.

**Resources:**

http://www.udel.edu/pbl - course syllabi, sample problems, bibliography, links to other sites
https://www.mis4.udel.edu/Pbl/index.jsp - UD PBL Clearinghouse

¹Written by Barbara Duch, University of Delaware, 1996. Revised by D.E. Allen.
What Is a Good PBL Problem?

Institute for Transforming Undergraduate Education
University of Delaware

Good PBL Problems...

- relate to real world, motivate students
- require decision-making or judgments
- are multi-page, multi-stage
- are designed for group-solving
- pose open-ended initial questions that encourage discussion
- incorporate course content objectives, higher order thinking, other skills

Rubric to Evaluate PBL Problems

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realism</td>
<td>Based on an actual or fictionalized real-world situation linking topic to learner.</td>
</tr>
<tr>
<td></td>
<td>Contrived or contains unrealistic elements that decrease credibility.</td>
</tr>
<tr>
<td></td>
<td>Unrealistic, lacking relevant context.</td>
</tr>
<tr>
<td>Content</td>
<td>Addresses significant conceptual issues, directly related to major content goals.</td>
</tr>
<tr>
<td></td>
<td>Encourages superficial rather than in-depth understanding concepts.</td>
</tr>
<tr>
<td></td>
<td>Relevance of topic peripheral or not apparent.</td>
</tr>
<tr>
<td>Engagement</td>
<td>Stimulates discussion and inquiry through its relevance and presentation.</td>
</tr>
<tr>
<td></td>
<td>Generates limited or superficial discussion, provokes little curiosity.</td>
</tr>
<tr>
<td></td>
<td>Lacks a &quot;hook&quot;; obscure or pedantic presentation.</td>
</tr>
</tbody>
</table>

Rubric to Evaluate PBL Problems

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<tr>
<th>Criteria</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Complexity</td>
<td>Appropriately challenging; group effort and cooperation required; some ambiguity appropriate; integrates multiple concepts.</td>
</tr>
<tr>
<td></td>
<td>Difficult but may encourage a &quot;divide and conquer&quot; approach. Concepts not well integrated.</td>
</tr>
<tr>
<td></td>
<td>Solution accessible to most students working alone; focused on single concept.</td>
</tr>
<tr>
<td>Resolution</td>
<td>Open to multiple resolutions or multiple pathways to solution, depending on student assumptions and reasoned arguments.</td>
</tr>
<tr>
<td></td>
<td>Resolution is more obvious but allows reasonable opportunity for judgment and discussion.</td>
</tr>
<tr>
<td></td>
<td>One right answer is expected; limited opportunity for analysis and decision making.</td>
</tr>
</tbody>
</table>

Rubric to Evaluate PBL Problems

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<th>Criteria</th>
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<tbody>
<tr>
<td>Structure</td>
<td>Progressive disclosure via multiple stages, builds on existing student knowledge.</td>
</tr>
<tr>
<td></td>
<td>Staging does not flow well; transition could be improved.</td>
</tr>
<tr>
<td></td>
<td>Too much or too little information provided at once; short cuts thinking/research.</td>
</tr>
<tr>
<td>Questions</td>
<td>Limited in number, short, and open-ended; encourage deeper understanding.</td>
</tr>
<tr>
<td></td>
<td>Most are directive; preempt students-generated learning issues.</td>
</tr>
<tr>
<td></td>
<td>Lead to “yes-no” answers rather than thoughtful discussion.</td>
</tr>
<tr>
<td>Research</td>
<td>Promotes substantive research using multiple resources.</td>
</tr>
<tr>
<td></td>
<td>Research limited to textbook material.</td>
</tr>
<tr>
<td></td>
<td>Limited necessity for research.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Descriptors</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Realism</td>
<td>3 (ideal) Based on an actual or fictionalized real-world situation linking topic to learner.</td>
</tr>
<tr>
<td>Content</td>
<td>3 Addresses significant conceptual issues; directly related to major content goals.</td>
</tr>
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<td>Engagement</td>
<td>3 Stimulates discussion and inquiry through its relevance and presentation.</td>
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<td>3 Limited in number, short, and open-ended; stimulate probing for deeper understanding.</td>
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<td>Research</td>
<td>3 Promotes substantive research using multiple resources.</td>
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Other possible rubrics:
- Problem Delivery and Process
- Associated Assignments
- Student Products and Presentations
Writing Effective PBL Problems

Institute for Transforming Undergraduate Education

University of Delaware

Important Considerations in Writing Problems

• Role of problem in accomplishing course objectives
• Level of course and maturity of students
• Time frame
• Staging
• Availability and access to learning resources
• Use of prompting questions
• Mixing Content-Oriented and Process-Oriented Learning Objectives

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

What Factors Influence Decisions About Problems?

Your background
  – discipline
  – control issues
  – level of investment

What is the course?
  – students (number and level)
  – sequencing of course/problems
  – time/structure of class

Step One: Identify Learning Objectives

Think of a learning objective in your course:
  – CONTENT: “My students will understand the management issues that occur when you monitor your employees.”
  – PROCESS: “My students will improve their understanding of the process of management decision-making.”
  – PROCESS: “My students will improve their memo-writing abilities.”

How do you usually address this learning objective?
What kind of problem or activity do you usually assign?
  – Typical end-of-chapter problem?
  – A reading?
  – Other?

Step Two: Identify Real-World Context

Name a realistic application of the concept.
Outline a scenario.
  • Add context
  • Be a storyteller
  • Add motivation, require students to go beyond rote learning: do research.
  • Include decision-making: what would YOU do as a manager?
  • Recognize that decision-making is not easy. Make the situation ambiguous; DON’T include all the numbers.
Example: A Day in the Life of John Henry
Getting Ideas from the Real-World

- Newspaper articles, news events
- Real event that you experienced
- Popular press in the discipline
- Make up a story – based on content objectives
- Adapt a textbook problem
- Research papers
- Other?

Textbook Problem/Concept

"The secretarial pool is part of the group assigned to Doug. The pool has produced very low quality work for the past several months. Doug has access to the passwords for each of the pool members’ computer accounts. He instructs the supervisor to go into each hard drive after hours and obtain a sample document to check for quality control."

If you were the supervisor, what would you do? Is this ethical?


A Real Life Scenario: Ever-Ready

- Based on my wife’s experiences
- “You can’t make this stuff up”
- Information given gradually throughout problem

Step Three: Draft the problem

- Add context by creating a realistic application of the concept.
- Be a storyteller: Add motivation, realistic characters
- Require students to go beyond memorization by researching ambiguous situations
- Require them to make a decision and defend it: what would YOU do as a manager?
- Reinforce that decision-making is not easy by making the situation ambiguous

Drafting the Problem (cont.)

- Good PBL problem has multi-page, multi-stage construction - leave students guessing!
- Not all information should be given in chapter or text—have students do outside research.
- Challenge students to come to consensus, reach conclusions, and make judgments, deal with ambiguity
Take a few minutes to read through
Stage 2 of the Ever-Ready Security Case

Staging of the Ever-Ready Case

Stage 1: Judging if a problem exists. What information does Marsha need before she can take action?
Stage 2: More information given. “Surprise” (and open-ended) conclusion. Students need to make further judgment calls
Stage 3: ????

Activities Related to Ever-Ready

• Groups summarize each stage before moving to next.
• Final stage written up by group with complete analysis.

Mixing in Process Objectives with Content Objectives

Public-speaking: Groups present their approach before moving to the next stage.
Memo-writing: Final deliverable is the writing of a memo that presents their decision and logic behind it.
Research: Teams are required to find evidence to support their conclusions.
Teamwork: Students must learn to work together to solve the problem.

Get Started Writing Your Own Problem

• Think about a problem that you often use in a class
• Using the suggestions in this presentation, think about how that problem could be adopted as a PBL problem
• Bounce ideas off of colleagues!
• Feel free to reorganize into teams that reflect your general academic disciplines.

Reflections and Questions
Ever-Ready Security
Stage 1: An Awakening Problem?

“Marsha, we’ve got a problem here.”

The phone call had come from Dennis, the Operations Director at United Technologies’ parts storage facility. He continued, “this is the second time I’ve found graffiti on the back of the building—and not just one bad word, Marsha. I’m talking about a really detailed, multicolored portrait by some punk who thinks he’s an artist. Your man Steve must have been sleeping on the job.”

Marsha took a deep breath. She was the Director of On-Site Services for Ever-Ready, the security company that handled overnight services at United Technologies’ storage facilities. The guards were supposed to patrol the site, verify that the entrances were secured, and report any unusual activity to management and—if necessary—the local police or fire station. Steve was supposed to make one loop around the site each hour, from dusk until the first shift reported in the morning.

Marsha asked, “You’re sure the graffiti wasn’t there before Steve’s shift started that night?”

“I’m positive. A couple of nights ago, when I entered the building unannounced, I’m positive that Steve had just woken up from a little nap in his chair. Listen, I’m going to give you a few days to figure this out. But for your sake and mine, I’d better not see any more sleepy-eyed security guards.”

“Dennis, thank you for alerting me. I’m sorry to hear you’ve had a problem with security, and I promise to do whatever is necessary to ensure that it doesn’t happen again.” She hung up, feeling a little nervous: United Technologies was Ever-Ready’s biggest client.

Marsha called Steve at work that Thursday night. Steve acknowledged not catching the graffiti, and apologized for not reporting the incident. But he said, “The loading dock is in a really dark area in the back of the building. There is no lighting. So I doubt I would have seen it even if I were looking for it. Not to mention those bushes and pallets back there...whoever did it could have hidden behind them while I walked around. I told Dennis that I’m going to check out those areas from now on. Really—I’ve got a handle on it, Marsha. It’s definitely not going to happen again.”

Discussion Questions

1. (Work individually). Assume you are Marsha and you just talked to Steve. What information do you know? What information do you need to know? How can you get this information?

2. (Work as a team). How would you handle Dennis’ concerns? What actions—if any—would you take with Steve?
Ever-Ready Security:  
Stage 2: An Increasingly Candid Situation

The next Monday evening, Marsha drove out to the United Technologies storage facility thirty minutes before Steve's shift. She told Dennis, “I’m here to determine whether or not Steve is doing his job. I’ll be back tomorrow to follow up. Can you let me into the guard’s office?”

Dennis admitted Marsha to the office and left for the day. Marsha took out a small video camera from her purse and turned it on. She then hid the camera in the bookshelf next to Dennis’ chair and left the building.

Discussion Questions

1. (Work as a team). Discuss the issues around Marsha’s decision to hide the camera. Using the attached theories of ethics, decide whether or not Marsha’s actions are ethical.

2. (Work individually). Imagine you are Marsha’s supervisor. Write a memo to Marsha, evaluating her handling of the situation at United Technologies.

Theories of Ethics

**Stockholder theory.** Management's ethical duty is toward the stockholders. Management's responsibility is to use its resources in a manner that maximizes profits and returns to the owners of the corporation. This responsibility is qualified in two ways:

- Management is bound to use legal and non-fraudulent means
- Management must favor a long-term view of stockholder interest over a short term view

**Stakeholder theory.** Management is bound to the stockholders of the company, but also has a fiduciary responsibility to all who have a stake or claim to the firm. A stakeholder is "any group that vitally affects the survival and success of the corporation, or whose interests the corporation vitally affects" (p. 199).

Stakeholders might include:

- Customers
- Employees
- Suppliers
- Local community

Stakeholder theory states that corporations must balance the rights of all stakeholders when evaluating the ethics of a decision. They must also be careful not to impinge on the rights of any one stakeholder.

**Social Contract Theory.** Social contract theory states that a corporation must strive to create more value to society than it consumes. In short, corporations must create value for consumers and for its employees, and the decisions made must reflect a movement toward that value creation. Profits are of less a concern than improvement of society and basic tenets of fairness and justice.
Master list of learning objectives for the Ever-Ready Security problem

Participants in this problem will:

1. Be introduced to a difficult management situation based on a real world situation.
2. Learn to define what they know and don’t know in an ambiguous management situation involving an employee and an angry client.
3. Practice forms of business communication, including writing memos, talking to clients and addressing concerns with employees. In such communications, it will be important to describe specific actions that will be taken, and to justify decisions in writing.
4. Be introduced to three theories of business ethics, and have practice applying them to a situation.
5. Discuss a manager’s options, including when he or she is justified in pursuing a company’s best interests.
6. Be introduced to problem-based learning procedures, including writing learning issues, discussing difficult cases in small groups, and writing collaboratively.
7. Learn the importance of company policy in guiding managerial actions and decisions.
8. Practice discussing when an employee can or should be terminated.
9. Practice ways to sensitively question employees about their own job performance.
Orientation to the PBL Clearinghouse:
An Electronic Peer-Reviewed Publication

Institute for Transforming Undergraduate Education
University of Delaware

www.udel.edu/pblc

Characteristics of Good PBL Problems

- Relate to real-world, motivate students
- Require decision-making or judgements
- Multi-page, multi-stage
- Designed for group-solving
- Initial questions open-ended, encourages discussion
- Incorporates course content objectives
- Challenges to higher-order thinking

PBL Clearinghouse

An online database of PBL articles and problems.
All material is peer-reviewed by PBL practitioners for content and pedagogy.
All problems are supported by learning objectives and resources, teaching and assessment notes.
Holdings are searchable by author, discipline, keywords, or full text.
Fully electronic submission, review, and publication cycle.
Controlled access by free user subscription, students excluded.

A Brief Tour of the Clearinghouse

- Logging in to the Clearinghouse
- Applying to be a user
- Searching and Browsing the holdings
- Examining problem detail and supporting materials for a sample problem
- Managing Clearinghouse activities
- Submitting a problem for review

www.udel.edu/pblc

Phase II: New Features

- Request e-mail notification of new additions (alert list)
- Submit and review user feedback to problems
- See statistics on published material

PBL Clearinghouse

Currently there are ~15,000 registered users and >100 PBL problems.
Of the problems available, more than half are in physics, chemistry, and biology, but the number in other disciplines is growing steadily.
We are very interested in publishing adaptations of problems to other cultural/geographical contexts.

www.udel.edu/pblc
ORGANIZATIONAL DECISIONS IN USING PBL

“PHILOSOPHICAL”

- Clear idea and statement of course objectives
- Balance between problems and lecture (and other pedagogical strategies)
  - Problems and group work only? Equal mix of lecture and problems? Occasional problems?
- Balance between content and process skills
  - To what extent will nature of content change? How much content to retain? What to cut?
  - What process skills are desired? Degree of emphasis?
- Extent of student- vs. teacher-centered instruction
  - How much control/support?
  - Degree of comfort for both students, instructor? (New roles for both: independent learners and facilitator)
  - Getting students to “buy in”: address concerns
- Extent of emphasis on group work
  - Individual vs. group grading
  - Formal (permanent) vs. informal (temporary) groups
- Outside expectations with respect to content
  - Later course requirements, certification standards
- Adoptability
  - Do I want to write PBL materials that other instructors can use?
  - If so, what special instructions/information would they need in order to do so?

“PRACTICAL”

- Class Format
  - Scheduling: number, length of class periods (*What is the time frame into which this problem must fit? Does this time frame allow students enough time to digest and ponder the problem?*)
  - Room size and structure: fixed vs. moveable seating, space for resource materials
  - Structuring class time: group work vs. whole class; lecture vs. discussion; special events
- Groups
  - Organization: size, criteria for composition
  - Fostering desired group function/behavior
  - Guidance within groups: Independent? Instructor as “roving” facilitator? Peer facilitators or TAs (how will they know what to do? do they have buy-in?)
  - Extent of outside group work required
- Problems
  - Content to address through problems (*How will this problem help to accomplish goals of the course?*)
  - Number, length, degree of difficulty
  - Degree of structure within problem: guiding questions vs. completely free response
- Grading and Assessment
- Must reflect all course objectives - process as well as content; how to balance
- Exam, quiz format: should it change? How?
- Group vs. individual grading; policies and safeguards
- Evaluation of group work and projects (“mastery” vs. “normed” achievement standards)
- Peer evaluations
- Attendance and participation policies

• Learning Resources
  - Degree of reliance expected on non-text resources
  - Training/expertise level in using resources such as library, Internet and Web, e-mail, computing skills, multimedia
  - Coordination with lab or other special components of courses

(Developed by Susan Groh, Department of Chemistry & Biochemistry, University of Delaware, for use in Institute for Transforming Undergraduate Education)
Using Collaborative Technology to Support Student-Centered Teaching

Technology is a Funny Thing…

- My academic background:
  - Degrees
  - Teaching
- But…
  - I can’t figure out 90% of the functions on my cell phone
  - My 14-year old son figured out how to hook up my home theater system.

On the Other Hand…

- Our new Nintendo Wii offers opportunities for us as a family
- My iPod helped me pass the time on the flight
- My phone allows me to stay in touch with my family
- Frustrations, quality of life

Technology in the Classroom

- Those frustrations also occur when we teach.
- The only time you should use technology:
  - Enhances learning
  - Helps achieve learning objectives.
- What technologies have a high benefit yet low barrier to entry?

What is Collaboration Software?

- Very broad
- Enables people to work together better
- Software that facilitates the development or improvement of a common deliverable
- Examples:
  - Email
  - Wikis
  - Videoconferencing
  - SharePoint
  - Instant Messaging
  - Google Docs
  - Yahoo Groups

Take 5 minutes to discuss:
What technologies do you use to collaborate in your student teams?
What are their strengths and weaknesses?
Our Focus: Wikis

- Wiki versus Wikipedia
- Web-based authoring tool
- Emphasis on simplicity and productivity
- Easy to Use and Learn
- Doesn’t require a lot of server resources
- Dynamic content
- Community spirit of collaboration

“The Wiki Philosophy”

- All Wiki users have an inherent right to change anything on the page.
- Along with this right comes an expectation of mutual respect and trust—i.e., that participants will create an effective product that reflect multiple perspectives.
- One of the founders of Wikipedia once stated, “The only way you can write something that survives [in a Wiki] is that someone who’s your diametrical opposite can agree with it.” In other words, don’t dictate—collaborate!

Let’s See What a Wiki Can Do…

- Wikis in Plain English
- Wiki Demonstration

Can Wikis Encourage Student-Centered Learning?

- Evaluation - make a judgment based on criteria
- Synthesis - produce something new from component parts
- Analysis - break material into parts to see interrelationships
- Application - apply concept to a new situation
- Comprehension - explain, interpret
- Knowledge - remember facts, concepts, definitions

Wikis and the Journal Review Process

- Journal Reviews require analysis, synthesis, and evaluation.
- Can wikis provide that same level of intellectual stimulation?
Wikis: Pros and Cons

- Best used for quick development of simple, web-based content.
- Most wikis automatically track versions
- Great when you need to develop content quickly.
- Web-based approach means no software needed.
- Decentralized control: everyone can change everything!

Where can you get a wiki?

- PBWiki
- Wikidot
- SharePoint 3.0

How Can I Use a Wiki?

- Students:
  - Master’s or doctoral review notes for exams
  - Resource page for each class
  - Team resource site to develop project deliverables
- Business People:
  - Improved Knowledge Management
  - Documentation of individual job knowledge
  - Dynamic content development
  - Documentation of job responsibilities
  - Develops employee empowerment & mutual trust

Thoughts and Questions?
Comparison of Teacher-Centered and Learner-Centered Paradigms

From Figure 1-2 in Huba and Freed, Learner-Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning, 2000

Comparison of Paradigms

Teacher-Centered
Knowledge is transmitted from professor to student. Students passively receive information.

Learner-Centered
Students construct knowledge through gathering and synthesizing information and integrating it with the general skills of inquiry, communication, critical thinking, and problem solving.

What I know best I have taught...

...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

Comparison of Paradigms

Teacher-Centered
Emphasis is on acquisition of knowledge outside the context in which it will be used.

Learner-Centered
Emphasis is on using and communicating knowledge effectively to address enduring and emerging issues and problems in real-life contexts.

Comparison of Paradigms

Teacher-Centered
Instructor’s role is to be primary information giver and primary evaluator.

Learner-Centered
Instructor’s role is to coach and facilitate. Instructor and students evaluate learning together.

Comparison of Paradigms

Teacher-Centered
Assessment is used to monitor learning. Teaching and assessing are separate.

Learner-Centered
Assessment is used to promote and diagnose learning. Teaching and assessing are intertwined.
<table>
<thead>
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<tr>
<td><strong>Teacher-Centered</strong></td>
</tr>
<tr>
<td>Focus is on a single discipline.</td>
</tr>
<tr>
<td>Emphasis is on right answers.</td>
</tr>
<tr>
<td><strong>Learner-Centered</strong></td>
</tr>
<tr>
<td>Approach is compatible with interdisciplinary investigation.</td>
</tr>
<tr>
<td>Emphasis is on generating better questions and learning from errors.</td>
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</thead>
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<td><strong>Teacher-Centered</strong></td>
</tr>
<tr>
<td>Culture is competitive and individualistic.</td>
</tr>
<tr>
<td>Only students are viewed as learners.</td>
</tr>
<tr>
<td><strong>Learner-Centered</strong></td>
</tr>
<tr>
<td>Culture is cooperative, collaborative, and supportive.</td>
</tr>
<tr>
<td>Teachers and students learn together.</td>
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</tbody>
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<th><strong>Outcomes?</strong></th>
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<tbody>
<tr>
<td><strong>Moving away from:</strong></td>
</tr>
<tr>
<td>Are students getting the right answer?</td>
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<td><strong>Moving to:</strong></td>
</tr>
<tr>
<td>Can students demonstrate the qualities that we value in educated persons, the qualities we expect of graduates?</td>
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<tr>
<td>Can students gather and evaluate new information, think critically, reason effectively, and solve problems?</td>
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<td>Can students communicate clearly, drawing upon evidence to provide a basis for argumentation?</td>
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<td>Do students’ decisions and judgments reflect understanding of universal truths/concepts in the humanities, arts, etc.</td>
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<td><strong>Moving to:</strong></td>
</tr>
<tr>
<td>Can students work respectfully and productively with others?</td>
</tr>
<tr>
<td>Do students have self-regulating qualities like persistence and time management that will help them reach long-term goals?</td>
</tr>
</tbody>
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Introduction to Assessment in PBL

Courtesy of Sue Groh
Institute for Transforming Undergraduate Education
University of Delaware

Defining Assessment

“An assessment is an activity, assigned by the professor, that yields comprehensive information for analyzing, discussing, and judging a learner’s performance of valued abilities and skills.”
- Huba and Freed, Learner-Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning, 2000

Assessment is more than assigning grades: it implies ongoing interaction and communication between instructor and student.

Assessment Decisions

Faculty Perspective:
“Learning drives everything.”
- Barbara Walvoord

Student Perspective:
“Grading drives everything.”

Key Questions

• What do I want my students to learn?
  ⇒ Learning objectives
    – Content knowledge
    – Process skills

• How will I know if they have learned it?
  ⇒ Assessment strategies
    – Summative
    – Formative

• How much do I value that learning?
  ⇒ Look at what counts towards the grade

Types of Assessment

• Summative assessment
  – Traditional grading for accountability
  – Usually formal, comprehensive
  – Judgmental

• Formative assessment
  – Feedback for improvement/development
  – Usually informal, narrow/specialized
  – Suggestive

Assessment and Learning Objectives

Bringing content and process together

Content Knowledge

Process Skills

Assessment