



Problem-Based Learning Workshop

June 1st and 2nd, 2016

Facilitator: Mark A. Serva, Associate Professor of MIS

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PBL@UD



June 1st: Wednesday (New Fellows)

12:00pm. Lunch.

1:00pm. Welcome and Formation of Working Groups.

1:15pm. Experience It Yourself (EIY): *Participants will work through a PBL problem to understand method.*

2:45pm. Introduction to PBL. *An introduction to the process and models of PBL. Participants will also have an opportunity to ask questions.*

3:15pm. Review Example Problems & Share Problem Ideas. *Participants talk in teams to start developing ideas for problems to use in their classes. Use the provided example problems (John Henry, The Problem of Cups, Brewing Up Some Chemistry) as examples.*

4:00pm. Report Back. *Handout: Problem-writing worksheet. Volunteers may be asked to present their problem ideas to the group.*

4:30pm. End of the Day Q&A. *This is an opportunity to ask questions before we adjourn for the evening.*

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June 2nd: Thursday

9:00am. What Makes a Good PBL Problem? *Participants will discuss the process for writing a PBL problem, as well as the elements of an effective PBL problem.*

9:15am. Staging PBL Problems. *Participants will understand how a multi-stage problem can unfold. Participants should explore the PBL Clearinghouse for additional problem ideas.*

9:30am. Write Your First PBL Problem. *Participants will use the provided worksheet as a guide in crafting an outline for their own PBL problem.*

10:30am. Group Dynamics 101. *Participants will learn effective strategies for integrating formative assessment, forming groups, and helping student teams work productively.*

12:00-1:00pm. Working Lunch. *Participants will review some videos on emerging trends in education.*

1:00pm. Thinking through Assessment. *What are some approaches to formative and summative assessment when using PBL?*

1:30pm. PBL, Team-based Learning, and “Flipping the Classroom.” *Adding Team-based Learning (TBL) and flipping the classroom to PBL can greatly enhance your students’ learning and improve PBL.*

2:00pm. Work on your Problem. *If appropriate, consider how a flipping or TBL strategy could improve your problem, or even your class. Finalize your problem for presentation.*

3:30pm. Final Problem Presentations and Gallery Walk.

4:15pm. Closing Questions and Discussion.

Was the US Founded as a Christian Nation?

Stage 1

Video Prompt:

- Our Judeo-Christian Nation: <https://www.youtube.com/watch?v=dpQOCvthw-o> (up to 2:33)

In a contrasting point of view, in 1796, the US signed the Treaty of Tripoli to stop piracy off the coast of Libya. Article 11 of the treaty (which was unanimously passed by Congress and signed by founding father and President John Adams), began:

As the Government of the United States of America is not, in any sense, founded on the Christian religion...

And of course, the First Amendment to the US Constitution states:

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.

Prompting Questions

1. Within your group, discuss how the central question could be *interpreted*. **Important: at this time, the purpose of the discussion is NOT to determine or to discuss whether or not the question is correct or whether or not you agree with it.** It is important that you keep a scientific mindset—that is, keep an open mind that will allow you to follow the *evidence*—not your personal beliefs. In your team, focus your discussion on:
 - a. How you *interpret* the question.
 - b. What *evidence* (for and against) you would seek in evaluating the question.
2. When prompted by your instructor, come up with a list of learning issues—questions that would expand your understanding of the central question (i.e., target possible sources of evidence). These questions must be:
 - a. researchable and answerable (i.e., are not based on opinion or belief, but are answerable by uncovering evidence)
 - b. relevant to the central question

Is the US a Christian Nation?

Stage 2

In recent weeks, a candidate for the Presidency of the United States commented that we needed to get back to the “Judeo-Christian values that built this great nation.” Other candidates have interjected their personal Christian beliefs into the debate, one stating “The Bible is the greatest book of all time.” A third candidate stated “if you don’t believe Judeo-Christian values influenced America, you don’t know history.”

Hence, the question of whether or not we were founded as a Christian nation continues to have repercussions even today.

Prompting Questions

In understanding the intent of our founding fathers, one approach would be to examine the evidence available from the founding and development of the country. Your team will be assigned to ONE of the following questions for exploration:

- ❖ Examine the beliefs and practices of **key people** who founded and built our country. What evidence do the following individuals' beliefs, practices, and writings provide—for or against the central question? As you explore, feel free to add individuals if you feel they would provide insight into the central question. **Be sure to document the source of your findings.**

- Thomas Paine
- Thomas Jefferson
- Benjamin Franklin
- George Washington
- James Madison
- John Adams

Reminder: your purpose here is not to advocate for or against the central question! Instead, your goal is to collect *evidence*—whether it be for or against the central question.

- ❖ Examine the role that **documents and rituals** had in the building of this country. What evidence (for or against) do the following items provide, relevant to the central question? As you explore, feel free to add items if you feel they would provide insight into the central question. **Be sure to document the source of your findings.**

- The Declaration of Independence
- The US Constitution & The Bill of Rights
- The Official Motto of the United States / The Pledge of Allegiance
- The Treaty of Paris
- The Ten Commandments (role in US history)
- The Mayflower Compact

Reminder: your purpose here is not to advocate for or against the central question! Instead, your goal is to collect evidence—whether it be for or against the central question.

Is the US a Christian Nation?

Stage 3

<Jigsaw Group>

Your newly formed team will participate in a debate on the central question: "Was the US Founded as a Christian Nation?". Your team will be assigned at random a position for or against the central question. In debating the issue, your team is encouraged to use the evidence presented in the earlier stages of this problem, although you are welcome to introduce new evidence to make your case.

Please note that this debate is not on the veracity of religious beliefs, nor should a person's personal religious convictions be introduced as evidence. In making your case, you must instead rely on:

- The beliefs, writings, and practices of the founding fathers, or key players in the development of this country.
- The documents and rituals from the founding or development of this country.



Your closing argument must include a statement of why your team feels this question is relevant to today. If your team is on the pro side of the debate, discuss why being a Christian nation promotes the future of this country. If your team is on the con side, discuss why being a Christian nation impedes the development of this country.

Introduction to Problem-based Learning

Slide 1

Intro to Problem-Based Learning

Mark A. Serva
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Slide 2

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.




Slide 3

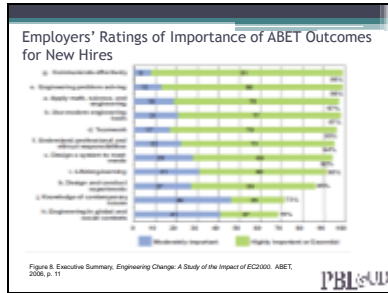
21st Century Literacies

- Develop proficiency with the tools of technology
- Build relationships with others to pose and solve problems collaboratively and cross-culturally
- Design and share information for global communities to meet a variety of purposes
- Manage, analyze and synthesize multiple streams of simultaneous information
- Create, critique, analyze, and evaluate multi-media texts
- Attend to the ethical responsibilities required by these complex environments

National Council of Teachers of English, Feb. 15, 2008



Slide 4



Slide 5

How Do We Spend Our Class Time?

The following are considerations when designing a class. For your class, how Important is each of them, relative to the others?

Content Knowledge	Hands-on Skills
Design & Creativity	Critical Thinking
Real-World Context	Disciplinary Integration
Communication Skills	Teamwork/Collaboration
Student Intrinsic Motivation	Self-Directed Learning

The above were developed by Jonathan Stolk and Robert Martello of Otis College.

Slide 6

I already assign problems...

Two uniform spheres, whose masses are 1.00 kg and 8.00 kg, are placed at the corners of a right-angled triangle having sides 0.100 m. The distance from the 8.00 kg sphere to the 1.00 kg sphere is 0.100 m. Determine the resultant gravitational force (both magnitude and direction) acting on the 1.00 kg sphere.

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Typical Medical School PBL Problem:
High Degree of Authenticity

Patient arrives at hospital, ER, physician's office presenting with symptoms X, Y, Z
What questions should you ask?
What tests should you order?

Physician interviews patient, receives results of tests
Differential diagnosis
Preferred therapy

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Slide 8

PBL *begins* with a different kind of problem

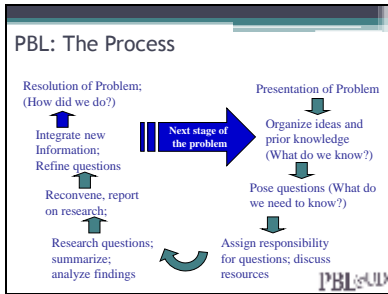
Major League Baseball (MLB) is looking to sell the Montreal Expos, which it currently owns. Competitive bids have been submitted by two Mexican cities, Mexico City and Monterrey. Prior to making a decision, MLB has asked your consulting firm to evaluate the effect that altitude would have on a fly ball in these two baseball stadiums . . .

- What variables are relevant?
- What is the problem?
- If you were hired as a consultant, how would you proceed?

PBL Clearinghouse "What a Drag," by Ed Nowak

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Slide 10

But I have to cover content...

- Good problems meet content and process learning objectives.
- Good problems require learning and applying content.
- Problems provide a meaningful context, making concepts more memorable.
- Deep understanding is preferable to wide exposure.

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The Rule of 72

Bill is working at a financial services firm as a summer intern. Stan, the area director, calls him into his office.

Stan: One of our analysts is using the Rule of 72 to give predictions to our customers on how fast their money would grow. I'm concerned that this could get us in trouble. I'd like your recommendation on whether or not we should continue to use the rule to give estimates to our clients. Have your recommendations on my desk tomorrow.

Bill: Um, sure....

Mark A. Servis, University of Delaware

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"Hybrid" PBL

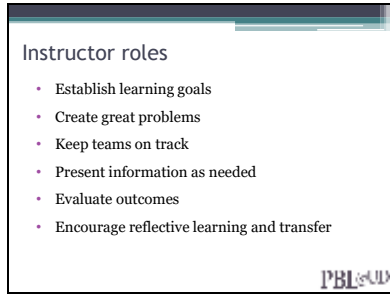
- Non-exclusive use of problem-driven learning in a class
- May include separate lecture segments or other active-learning components
- Floating or peer facilitator models common

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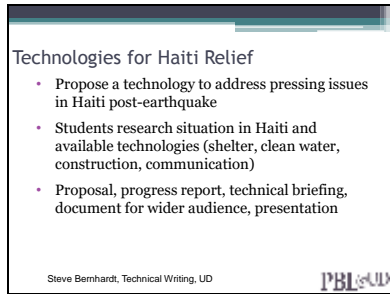
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Slide 14



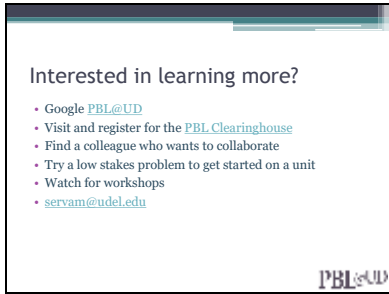
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Slide 17



Problem Writing Worksheet¹

Overview: The purpose of this worksheet is to walk you through the construction of a PBL problem.

Target class and student population: (Course number? Majors or non-majors? Beginning or advanced? Large- or small- enrollment? Subject? Other?)

Instructor’s Learning Objectives. Objectives should be specific, measurable, achievable within the relevant timeframe, relevant to the class’ purpose, and targeted to the class’ level of understanding. Be sure to include objectives that focus on what you want students to be able to *do*, as well as *know*. Don’t forget to include both content objectives as well as process objectives. Process objectives focus on skills such as oral/written communication, problem-solving/analytical ability, teamwork, etc.

Describe the scenario. Ideally, the problem should have a “hook” that will engage the students—e.g., a graffiti issue, being challenged on an internship....

¹© Deborah Allen. Worksheet has since been modified by Richard Donham and Mark Serva.

Information Dissemination. What information must you disclose to the students before moving forward? What might you want them to research on their own? One approach is to supply materials that they can use, including use of the textbook. Another requires more from the students, in that they are expected to find sources on their own. Of course, you can mix the two as well!

Length of time. How many class periods can you dedicate to the problem?

Problem Title:

Niche in course (When in the semester? What comes before it? What comes after? Will it be a single event, or will other problems be used?)

Write your draft! Considerations:

- Usually, *shorter is better*. Although case studies include all information, PBL problems (by design) withhold critical information from the students to encourage them to research on their own.
- What information must you include to pique their interest and how will you present it?
- What characters can you include (real or fictional)?
- What events (local or national) will intrigue them (the prevalence of cancer is highly relevant to Delaware residents).
- Don't forget to include the prompting questions at the end! The traditional approach is to ask the student: "What do you know? What do you need to know?"

A Day in the Life of John Henry, Traffic Cop (Stage 1)

At 13:20 on the last Friday in September, 2012 a frantic call was received at the local police station. There had been a serious automobile accident at the intersection of Main Street and State Street, with injuries involved. Lt. John Henry arrived at the scene 10 minutes after the phone call and found that two cars had collided at the intersection. In one car, the driver was unconscious and in the other car both driver and one passenger were injured.

After the emergency vehicles transported the injured to the hospital, Lt. Henry's responsibility is to investigate the accident in order to determine whether one of the drivers (or both) are responsible. With the severity of injury in this accident, the investigation is critical because there may be a fatality involved.

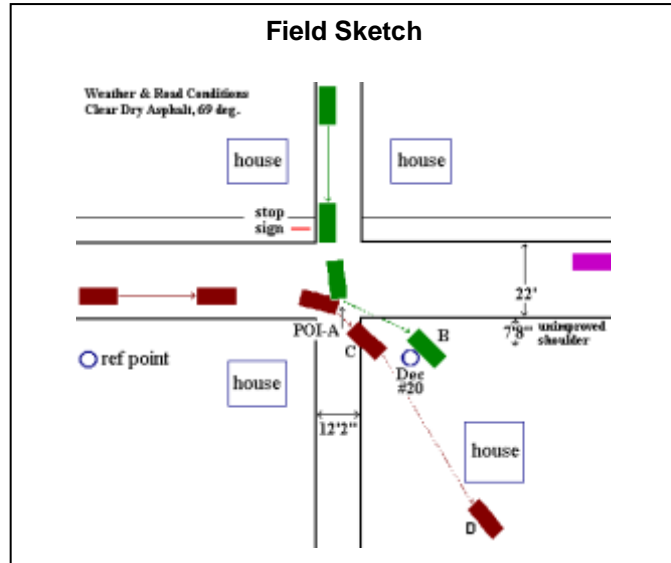
Questions:

1. What physics principles will John Henry need to use in order to help analyze the data and answer his questions?
2. Upon arrival at the scene, what information does John Henry know?
3. What questions does John Henry have to answer in this investigation? What measurements does he need to take? What data should he collect? What other information does he need to record in order to aid the investigation?
4. If two cars moving at right angles to each other collide, in what direction do you expect the cars to be moving after the collision?
5. What factors will influence the direction and distance traveled after impact?

© Barbara Duch, Univ. of Delaware, 2001. PBL Clearinghouse

A Day in the Life of John Henry, Traffic Cop (Stage 2)

Refer to the sketch at the right. Main Street, a thoroughfare, has a 45 mile per hour speed limit. State Street also has a 45 mile per hour limit, but has a stop sign on either side of the road. Vehicle 2, which weighs 5800 lbs, skidded for 24 feet before coming to a stop next to the utility pole, marked Dec #20. Vehicle 1, which weighs 2060 lbs, showed no skid marks after the impact and came to a rest next to the house on the corner. Looking at the impact areas of the cars, it was clear to Lt. Henry that the cars impacted at right angles, hitting the front right bumper of vehicle 2 and the front left bumper of vehicle 1. After impact, they initially were traveling in the same direction. Lt. Henry noted that the weather was clear and sunny, 69° and the roadway was dry.



Before John Henry got any further in his analysis, he was informed that driver who was unconscious at the scene of the accident died at the hospital.

Questions:

1. Can you make an educated guess about which driver died based on the evidence so far? Justify your answer.
2. Why would John Henry note the weather and the condition of the road?
3. Why did vehicle 1 travel further than vehicle 2?

Part 2. (contd.)

John Henry has to determine whether the driver of vehicle 2 ran the stop sign and/or if the driver of vehicle 1 was speeding. Outline a procedure that Lt. Henry can use to answer these important questions. Be sure that your reasoning is sound, since he will have to testify in court on the evidence.

Question:

Does John Henry have all the information he needs to determine the velocities?

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The Problem of Cups

You are in charge of providing refreshments for this year's college Environmental Day Festival. Besides buying drinks, you must buy cups. Because Environmental Day Festival is sponsored by your college, your choice of cups should reflect the environmental consciousness of the college. You must decide to buy paper cups or Styrofoam cups.

1. Why do people tend to perceive foam cups to be more wasteful than paper cups? How would your peers, the public, and professors react to drinking out of foam cups at Environmental Day Festival?

2a. If you had to make a choice this instant, would you buy foam or paper cups? Why?

2b. Now, consider the market price data in Table A. Considering only the cash price of cups, which would you buy? Why?

3. Table 1 on the right is taken from an article in [Science](#). According to these data, which type of cup is less environmentally damaging? What criteria (criterion) drive(s) your decision?

4. Considering all that you now know, what type of cup would you buy? Why?

5. Do you believe it possible that the low cost of foam cups will encourage higher levels of consumption and that these quantity effects will overwhelm any relative benefits (per cup) of foam over paper?

6. What additional scientific data/factual information that would help you make a more informed choice?

7. How would you explain to Environmental Day Festival visitors your choice of cup? (This is an exercise in environmental education. What would you do and why?)

Table 1. Raw material, utility, and environmental summary for hot drink containers. Full details of sources of data and the calculations involved in the entries are to be published separately (21).

Item	Paper cup*	Polyfoam cup†
<i>Per cup</i>		
Raw materials:		
Wood and bark (g)	33 (28 to 37)	0
Petroleum fractions (g)	4.1 (2.8 to 5.5)	3.2
Other chemicals	1.8	0.05
Finished weight (g)	10.1	1.5
Wholesale cost	2.5x	x
<i>Per metric ton of material‡</i>		
Utilities		
Steam (kg)	9,000 to 12,000	~5000
Power (kWh)	980	120 to 180
Cooling water (m ³)	50	154
Water effluent		
Volume (m ³)	50 to 190	0.5 to 2
Suspended solids (kg)	35 to 60	Trace
BOD (kg)	30 to 50	0.07
Organochlorines (kg)	5 to 7	0
Metal salts (kg)	1 to 20	20
Air emissions		
Chlorine (kg)	0.5	0
Chlorine dioxide (kg)	0.2	0
Reduced sulfides (kg)	2.0	0
Particulates (kg)	5 to 15	0.1
Chlorofluorocarbons (CFCs)	0	0.05
Pentane (kg)	0	35 to 50†
Sulfur dioxide (kg)	~10	~10
<i>Recycle potential</i>		
To primary user	Possible, though washing can destroy	Easy, negligible water uptake
<i>After use</i>		
	Low, hot melt adhesive or coating difficulties	High, resin reuse in other applications†
<i>Ultimate disposal</i>		
Proper incineration (¢)	Clean	Clean
Heat recovery, (MJ/kg)	20	40
Mass to landfill (g)	10.1	1.5
Biodegradable	Yes. BOD to leachate, methane to air	No, essentially inert

Source: Hocking, Martin B. "Paper Versus Polystyrene: A Complex Choice." *Science*, 504-505 vol 251, February 1, 1991

Table A: Market prices for cups

	Paper (60) 9oz	Foam (51) 8.5oz	Plastic (80) 9oz
Price of Package	\$1.88	\$0.69	\$1.99
Price per Cup	\$0.031	\$0.014	\$0.025

Data collected at Pathmark Supermarket, March 2, 2005.

© Joshua Duke, Univ. of Delaware, 2005.PBL Clearinghouse

Brewing Up Some Chemistry

By Mark A. Serva, University of Delaware

(based on a class workshop by Nicole Donofrio)

Stage 1

You have been hired as an assistant brewer for a local craft brewer. On the first day of the job, your new boss Stefan shakes your hand and welcomes you to the company. At the end, he shakes your hand again and tells you to get started scrubbing the mash tuns, high liquor tanks, and the sparge arms.

1. What do you know about brewing beer?
2. What do you need to know?
3. Stefan mentioned a number of beer terms. What do all these mean?

Stage 2

Now that you have cleaned the equipment, Stefan gives you your first assignment:

"A lot of assistants come here and act like they know everything. You know what brewing is? "

You aren't sure if you should answer.... You open your mouth and Stefan interjects:

"It's chemistry, damn it! You need to know your chemistry if you expect to be a great brewer!"

(You think it best not to mention to your boss that you hated chemistry in college...)

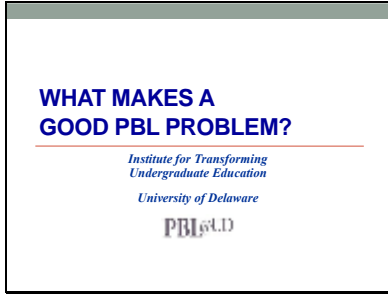
"I want you to design a stout, a Dunkelweizen, and a Pilsner. I want detailed information on FG, OG, SG, Lovibond, and IBUs for those recipes. Just taking it off the website isn't enough: I want to see your calculations. Also, we have highly alkaline water here, and have ongoing concerns about pH. I want the recipe, along with the steps you plan to take to correct for pH issues.

Stage 3

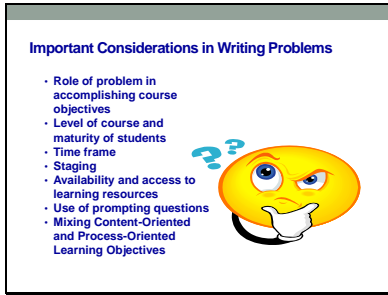
Given the great work you did on the recipes, Stefan agrees to let you brew a 5-gallon test batch of your stout. Assume you have completed the mash and sparge, and are preparing to boil. You have collected 7 gallons of wort. To your dismay, your final gravity is 1.050, but you expected 1.060. Create a detailed plan listing two options so that you can achieve your original gravity. Your plan must include numbers and detailed steps for moving forward. List the pros and cons of each approach.

What Makes a Good PBL Problem?

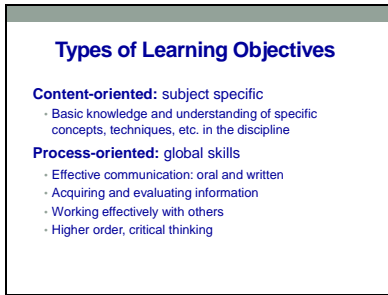
Slide 1



Slide 2



Slide 3



Slide 4

**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?

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**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

Slide 6

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
 - What information would students REALLY know in the real world? What would they have to estimate?
 - Instead of providing all information, what could students research on their own?
- Require them to make a decision and defend it: what would YOU do?
- Reinforce that decision-making is not easy by making the situation ambiguous

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Drafting the Problem (cont.)

- Good PBL problem often 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

Slide 8

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

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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
- TV
 - MacGyver
 - MythBusters

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Bloom's Cognitive Levels

↑

- 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

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Rubric to Evaluate PBL Problems

Criteria	Descriptors		
	3	2	1
Realism	Based on an actual or fictionalized real-world situation linking topic to learner.	Contrived or contains unrealistic elements that decrease credibility.	Unrealistic, lacking relevant context.

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Rubric to Evaluate PBL Problems

Criteria	Descriptors		
	3	2	1
Realism	Based on an actual or fictionalized real-world situation linking topic to learner.	Contrived or contains unrealistic elements that decrease credibility.	Unrealistic, lacking relevant context.
Content	Addresses significant conceptual issues; directly related to major content goals.	Encourages superficial rather than in-depth understanding concepts.	Relevance of topic peripheral or not apparent.

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Rubric to Evaluate PBL Problems			
Criteria	Descriptors		
	3	2	1
Realism	Based on an actual or fictionalized real-world situation linking topic to learner.	Contrived or contains unrealistic elements that decrease credibility.	Unrealistic, lacking relevant context.
Content	Addresses significant conceptual issues; directly related to major content goals.	Encourages superficial rather than in-depth understanding concepts.	Relevance of topic peripheral or not apparent.
Engagement	Stimulates discussion and inquiry through its relevance and presentation.	Generates limited or superficial discussion; provokes little curiosity.	Lacks a "hook"; obscure or pedantic presentation.

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Rubric to Evaluate PBL Problems			
Criteria	Descriptors		
	3	2	1
Complexity	Appropriately challenging; group effort and cooperation required; some ambiguity appropriate; integrates multiple concepts.	Difficult but may encourage a "divide and conquer" approach. Concepts not well integrated.	Solution accessible to most students working alone; focused on single concept.

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Rubric to Evaluate PBL Problems			
Criteria	Descriptors		
	3	2	1
Complexity	Appropriately challenging; group effort and cooperation required; some ambiguity appropriate; integrates multiple concepts.	Difficult but may encourage a "divide and conquer" approach. Concepts not well integrated.	Solution accessible to most students working alone; focused on single concept.
Resolution	Open to multiple resolutions or multiple pathways to solution, depending on student assumptions and reasoned arguments.	Resolution is more obvious but allows reasonable opportunity for judgment and discussion.	One right answer is expected; limited opportunity for analysis and decision making.

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Rubric to Evaluate PBL Problems			
Criteria	Descriptors		
	3	2	1
Structure	Progressive disclosure via multiple stages, builds on existing student knowledge.	Staging does not flow well; transition could be improved.	Too much or too little information provided at once; short cuts thinking/research.

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Rubric to Evaluate PBL Problems			
Criteria	Descriptors		
	3	2	1
Structure	Progressive disclosure via multiple stages, builds on existing student knowledge.	Staging does not flow well; transition could be improved.	Too much or too little information provided at once; short cuts thinking/research.
Questions	Limited in number, short, and open-ended; encourage deeper understanding.	Most are directive; preempt student-generated learning issues.	Lead to "yes-no" answers rather than thoughtful discussion.

Slide 21

Rubric to Evaluate PBL Problems			
Criteria	Descriptors		
	3	2	1
Structure	Progressive disclosure via multiple stages, builds on existing student knowledge.	Staging does not flow well; transition could be improved.	Too much or too little information provided at once; short cuts thinking/research.
Questions	Limited in number, short, and open-ended; encourage deeper understanding.	Most are directive; preempt student-generated learning issues.	Lead to "yes-no" answers rather than thoughtful discussion.
Research	Promotes substantive research using multiple resources.	Research limited to textbook material.	Limited necessity for research.

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Effective PBL Problems include...

- Title
- Relevant Learning Objectives
 - Content
 - Process
- A "hook"
- Prompting Questions
 - What do we know?
 - What do we need to know?
- A complex problem that requires a decision or recommendation
- Well-thought out Assessment
 - Formative
 - Summative
- Research Component
 - What do students need to know?
 - How can they find the information?
- Thoughtful Staging
- Oral or written communication requirement

Readiness Assessment Test b010

For each question, many answers may be relevant (or even partially correct), but you will need to select the answer that you feel is the BEST (that is, most complete) answer.

1. When designing a PBL problem:
 - a. Instructors should provide as little information as possible, so that students are encouraged to research on their own.
 - b. Instructors should provide more information than case studies, since a PBL problem should encourage research and the provided information gives them a starting point.
 - c. The problem should encourage students to actively consider what they know and what they need to know to solve the problem.
 - d. PBL problems should encourage students to read the textbook
2. When staging PBL problems....
 - a. Selective and incremental disclosure of information can help pace students' progress as well as sustain interest in the problem.
 - b. Giving students all stages of the problem at the beginning will tend to increase students' anxiety.
 - c. Delivering all stages of the problem at the beginning provides the instructor increased flexibility.
 - d. Instructors should use an unstructured problem, which exposes first time students to true PBL.
3. Which of the following is TRUE regarding team-based learning (TBL):
 - a. TBL is using teams in class.
 - b. TBL uses teams primarily outside of class, but focuses on individual effort inside class.
 - c. TBL encourages the use of interactive lecture to stimulate team discussion.
 - d. TBL provides an accountability procedure for encouraging individual students to come to class prepared.
4. A weakness of PBL problems is:
 - a. Unlike textbook exercises, PBL problems tend to be structured and directed.
 - b. PBL problems provide less context for uncovering solutions than textbook problems.
 - c. PBL problems focus on understanding process objectives instead of content objectives.
 - d. PBL problems will take more time to complete than a comparable textbook problem.
5. Flipping the classroom...:
 - a. Results in the students teaching the instructors
 - b. Is more a way to structure your class than a pedagogy.
 - c. Is a pedagogy that provides frameworks for designing exercises in class.
 - d. Requires the use of instructor-constructed videos that students watch before coming to class.

(1) Name & Contact Information	(2) Previous Courses Taken or Relevant Background	(3) Why I am Taking This Class	(4) Recent Personal or Professional Achievement	(5) Things I Love to Talk About	(6) On Teams, I tend to be a...