Q: How does a basic circuit function?
Characteristics of PBL

1. Students develop and practice problem solving skills
2. Students actively seek knowledge which fosters student independence, intrinsic motivation and critical thinking
3. Students work with real-world problems
4. Problems/projects can range from simple to complex
5. Learning is student-centered (because students take responsibility for their own learning) and experiential
6. Content is introduced through problem solving
7. Problems/projects build on and challenge prior learning
8. Problems/projects provide a forum for scaffolding complex concepts
9. Students collaborate with other students and with instructor
10. Students reflect on the learning experience
What does PBL look like in my classroom?

NSM 2500: Integrated Math and Science for Elementary Educators

**Problem:** Elementary aged children often do not see how science, technology, engineering and math are integrated.

**Question:** Can you design and build an arcade game out of cardboard?
The Cardboard Arcade
What does PBL look like in my classroom?

MTH 6030: Mathematical Applications in Science and Engineering

Problem: Middle/High school aged children are often not challenged with current real world problems.

Question: How does shape affect strength?

Question: How can we design more efficient landfills?

Question: How can we understand and improve medical device design? [angioplasty devices]
What does PBL look like in my classroom?

IDS 2030: Science and Society

Problem: Many of us do not stop to think about the global impact of an immediate convenience.

Questions: How conscious should a consumer be about “stuff” that is consumed? What science drives some of these conveniences?

What does PBL look like in my classroom?

ART2500: Art History: Prehistoric to Medieval

Problem: You have been hired by a city to promote one of the historical monuments located there. City officials are interested in attracting more tourists by providing them with a detailed guide to the site, one that will make them excited to visit and teach about the site and its historical and architectural importance.
What does PBL look like in my classroom?

ART/REL3450: Icons and Idols: Critical Approaches to World Religions and Art

**Problem**: You work for a non-profit organization that aims to foster understanding among the different religious traditions in the community. The monks at the local Buddhist temple have asked you to develop a program that would introduce people to traditional Buddhist mandalas. They would like you to organize an event in which people work together to create a large-scale outdoor mandala out of impermanent materials and they would like to ground the learning experience with a ten-minute lecture and an informational brochure.
What does PBL look like in my classroom?

ART/HIS3360: Renaissance, Renovatio, and Revival

Problem: Did England have a Renaissance?
Continuous PBL

- PBL lessons can be articulated to provide integration between complex concepts

You are trustee of a special needs trust. Analyze, recommend, and assess an appropriate portfolio.
What does PBL look like in my classroom?

You are trustee of a special needs trust. Analyze, recommend, and assess an appropriate portfolio.

Financial Analysis
- Vertical Analysis
- Horizontal Analysis
- Ratio Analysis

Investment Recommendations
- Investor Goals
- Risk Orientation
- Time Horizons
- Tax Implications

Portfolio Analysis
- Performance Computation
- Personal Communication
- Feedback Loop
What does PBL look like in my classroom?

- **Service Learning (VITA)** can be an ultimate application for PBL

- Faculty can provide the “big question” for context
  - Students often must discern the specific question
  - Students must then use their skills to solve the specific problem
  - Students learn to call on one another as colleagues and faculty as consultants
Problem: You teach at a student-centered university that wants to promote the use of problem-based learning across the curriculum. How can you incorporate PBL into a course you teach?