PROBLEM-BASED LEARNING (PBL)

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Traditional Teaching and Learning (T&L) Model

- Told what to learn
- Learn
- Give exercises for illustration

Deductive T&L

Service/Problem-Based Learning Model

- Identify what to learn
- Learn
- Apply

Inductive T&L
Critical Elements in Problem-Based Learning (PBL)

Realistic Problem

Instructors as Designer & Coach / Facilitator

Student as Problem Solver

O. S. Tan (2003)
Why PBL?
Effective outcomes based on research

- Knowledge retention
- Skills
- Positive attitude
- Deep learning
- Meta-cognitive skills

Strobel & Barneveld, 2009
Prince & Felder, 2006
Woods et al, 2000
Why PBL?
- a sample research finding

Downing 2007, 2010

p < 0.01 for all components
The PBL Process

Phase 1
- Meet the problem
- Problem identification & analysis

Phase 2
- Self-directed learning
- Synthesis & application
- Presentation & reflection

Phase 3
- Closure
PBL in a Typical Engineering Course...
Coping with change – need to explain and rationalize => MOTIVATE!!

Woods, 1994
Gradual move towards PBL...

If unfamiliar with active learning techniques, start gradually

- Informal CL
- AL warm-up
- Team-working
- Getting a taste
- Challenge of PBL

Go for training & read – embrace lifelong learning!