

CCT 611: Investigating Authentic Problems Through PBL (Seminar in Critical Thinking)

Spring 09 Wed. 7-9:30 PM (Wheatley-1-12)

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"A problem is an opportunity in work clothes."

"Tell me I forget; show me I remember, involve me I *understand*."

Description:

The best way to get better at problem solving is to *experience* the thought, habits of mind and actions needed to tackle real world problems!

Problem-based learning (PBL) is a powerful process that simultaneously develops problem solving strategies and disciplinary knowledge bases and skills by placing individuals in the active role of problem solvers confronted with an ill-structured real world problem. This robust CCT process is shaped and directed by students with the instructor as metacognitive coach. Students, not the instructor, take primary responsibility for what is learned and how, using a PBL model developed by the instructor to investigate authentic problems. The instructor "guides on the side", raising questions that challenge students' thinking and help shape self-directed learning so that the search for meaning and understanding becomes a personal construction of the learner.

Because students take ownership of what gets learned, how and when, there is often no syllabus for a PBL course of study. That said, the order and pacing of PBL steps and stages and whole group weekly discussions outlined in this syllabus should be considered tentative.

Readings:

Greenwald, Nina L. Science in Progress, Pennsylvania Society for Biomedical Research, 1999.

Woods, Donald R. Problem-Based Learning, McMaster University, 1994.

Processes:

1) application of a 10 step model to an authentic problem

small group investigation of the problem and communication of results to a relevant audience; accompanying team written report to include group assessment of problem solving and team skills

2) PBL personal encounters portfolio (individual): ongoing reflections on thinking challenges and personal experiences with PBL to include exit self-assessment

Week 1- Jan. 28 Authentic Learning**Self-directed learning: some essential questions**

What is learning?

What is authentic learning?

Self-directed learning?

What is understanding?

Constructivist teaching and learning (teacher/student role shifts)

Activities

best learning experiences

solving problems with different intelligences

Readings (Week 2)

Woods, Chapter 1: Are You Ready for Change?

Greenwald 1-10

Selected articles (given in class)

HW: learning styles (Woods inventories)

Week 2- Feb. 4 Authentic Learning cont'd.**Big ideas from the readings: ill-defined problems****Activities:**

big ideas listing

sharing learning styles insights

what is PBL? (it starts with a "mess")

examples of messy problems

Reading: (Week 3)

Greenwald: What is PBL? (pp. 11-22)

Woods: What is PBL? Problem Solving Skills (2.1-3.26)

Greenwald: A Model for Guiding Students in PBL (p. 22-36)
selected articles (given in class)

Week 3- Feb. 11 A PBL Model**PBL process: ill-defined problems****Activities:**

A model for engaging PBL
identifying/sharing problems, dilemmas

Reading: (Week 4)

Bradford: Effective Teamwork

Woods: What is small group PBL? (4.1-4.6)

Woods: Group Skills (5.1-5.10)

Week 4- Feb. 18 Drafting Ill-Defined Problems**Activities:**

ill-defined scenarios (free writing)
ill-defined problem: (**PBL: Step 1**)
teams vs. groups
team skills: listening

Reading: (Week 5)

selected reading (self-directed learning; problem finding)

Week 5- Feb. 25 Questioning and Team Skills cont'd.**Unpacking information to identify problems****Activities:**

IPF questioning: **PBL Step 2**
teambuilding behaviors/strategies
application of PF strategies to messy problem scenario:

strategies for recording PF results: **PBL Step 3**

Reading: (Week 6)

Woods: What is self-directed, interdependent, small group PBL? (6.1-6.5)
selected reading: pattern finding; concept mapping

Week 6- Mar. 4 Mapping Problem Finding Results

pattern finding; problem representation

Activities:

synthesizing information to discern patterns, relationships

problem prioritization: **PBL Step 4**

strategizing: who does what, when, where, how?

Readings: Week 7

Woods: Self-directed interdependent learning skills (7.1-7.17)

Greenwald: Stages of Inquiry (31)

Week 7- Mar. 11 Problem Investigation

What is your goal(s)? (What do you want to learn?) How?

Activities:

KNF

Stages of Inquiry

strategizing: who does what, when, where, how?

Readings: Week 8

selected reading: research design and methods

SPRING BREAK: March 14-March 22

Week 8- Mar. 25 Problem Investigation cont'd.

Readings: Week 9

selected reading: independent study; data analysis

personal encounters journal due (first half of semester)

Week 9- April 1 Problem Investigation cont'd

What did you find out? From whom, what sources? Need to know?

Activities: PBL Step 5

data assessment (source credibility? gaps? paradoxes?)

intergroup sharing: "pits, berries" of the process

Week 10- April 8 Problem Investigation cont'd.

How will you organize/analyze your data? Activities: PBL Step 6
tools for making sense out of your data?
ways to present your data?

Readings: Week 11

selected reading: making inferences; drawing conclusions

Week 11- April 15 Problem Investigation cont'd.

What did you learned about your problem? Conclusions?
Activities: PBL Steps 6 and 7

Readings: Week 12

selected reading: metacognitive dialogue

Week 12- April 22 Solutions/ Recommendations?

Who is your relevant audience?

Activities: PBL Steps 8/9

Readings: Week 13

Woods: Self-assessed, self-directed, small group PBL (8.1-8.5)

Woods: Self-assessment skills (9.1-9.16)

Week 13- April 29 Hone Solutions, Communicate Results

designing team self-assessment measures

Activities: PBL Steps 8/9

Readings: Week 14

Woods: Putting It All Together (10.1-10.6)

Week 14- May 6 Presentations to Relevant Audiences

- finalizing the team presentation: PBL Steps 9/10 • team written reports due

Week 15- May 13 What have you learned?

- personal encounters portfolios due
- self-assessment due

