

Innovations in Teaching

Problem-based Learning

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Teacher
Regulated

Supportive Joint Practice

Student
Regulated



I do, you
watch

I do, you
help

You do, I
help

You do, I
watch

Zone of Proximal Development

Zone of Actual
Development

Zone of Proximal Development

What the
student can
do on her
own,
unassisted

Assistance
provided by
more
capable
others

Transition
from other
assistance to
self-assistance

Assistance
provided
by self

Internalization,
automatisation

Vygotsky

What is PBL

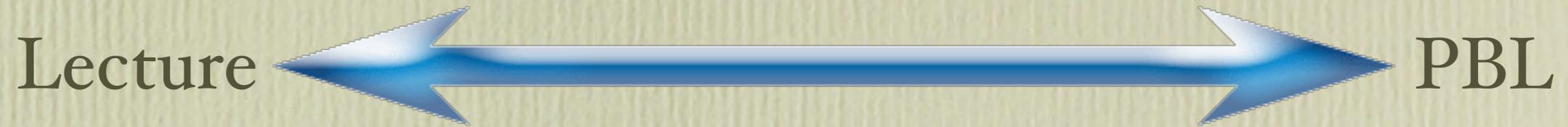
- PBL is a learner-centered educational method. In PBL learners are progressively given more and more responsibility for their own education and become increasingly independent of the teacher for their education.
- PBL produces independent learners who can continue to learn on their own in life and in their chosen careers.
- The responsibility of the teacher in PBL is to provide the educational materials and guidance that facilitate learning.
- PBL is based on real world problems.
- The problems in PBL are designed to challenge learners to develop effective problem-solving and critical thinking skills.

Characteristics of PBL

Problem based learning has several distinct characteristics which may be identified and utilized in designing such curriculum. These are:

- Reliance on problems to drive the curriculum - the problems do not test skills; they assist in development of the skills themselves.
- The problems are truly ill-structured - there is not meant to be one solution, and as new information is gathered in a reiterative process, perception of the problem, and thus the solution, changes.
- Students solve the problems - teachers are coaches and facilitators.
- Students are only given guidelines for how to approach problems - there is no one formula for student approaches to the problem.
- Authentic, performance based assessment - is a seamless part and end of the instruction.

Comparing Lectures to PBL



From the perspective of the teacher/expert	From the perspective of the student/learner
Linear and rational	Coherent and relevant
Part to whole organization	Whole to part organization
Teaching as transmission	Teaching as facilitation
Learning as receiving	Learning as constructing
Structured environment	Flexible environment

Student's Responsibilities

Take responsibility for their own learning, including:

- Actively seeking out new information
- Working at improving their problem-solving and critical thinking skills

Contribute to group learning, including:

- Raising questions and challenging others (including the tutor) about their opinions and information sources
- Proposing hypotheses about the problems being studied
- Presenting and critiquing knowledge obtained during independent research of learning issues
- Summarizing the information provided by group members in the content of the problem
- Evaluating the learning and participation of self and peers

Facilitator's Responsibilities

Facilitate students' learning, by:

- working to create trust and a safe learning environment
- ensuring that everyone participates; following up with individuals and the group if someone is not participating on a regular basis
- providing positive reinforcement
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Provide input in the Process Forum at the start of each case to:

- ask the group to review its ground rules
- ask the group to clarify the timeframe for the case
- provide information about the structure of the Evaluation for the case

Facilitator's Responsibilities

Monitor the Discussion Forum and, as appropriate:

- ask questions that are open-ended
- probe the source and limits of student's knowledge
- ask students to relate what they have learned back to the problem/hypotheses at hand
- Provide specific, constructive feedback to the group and individual members via the Evaluation Forums
- Marking group members' assignments and providing timely, specific feedback

Ensure that students are researching the areas that they are expected to research

- Challenge students to identify the source and evidence for their ideas, thus leading students to reject incorrect information

Problem-based Learning Process



Teaching is more than just content

Group Process
Skills

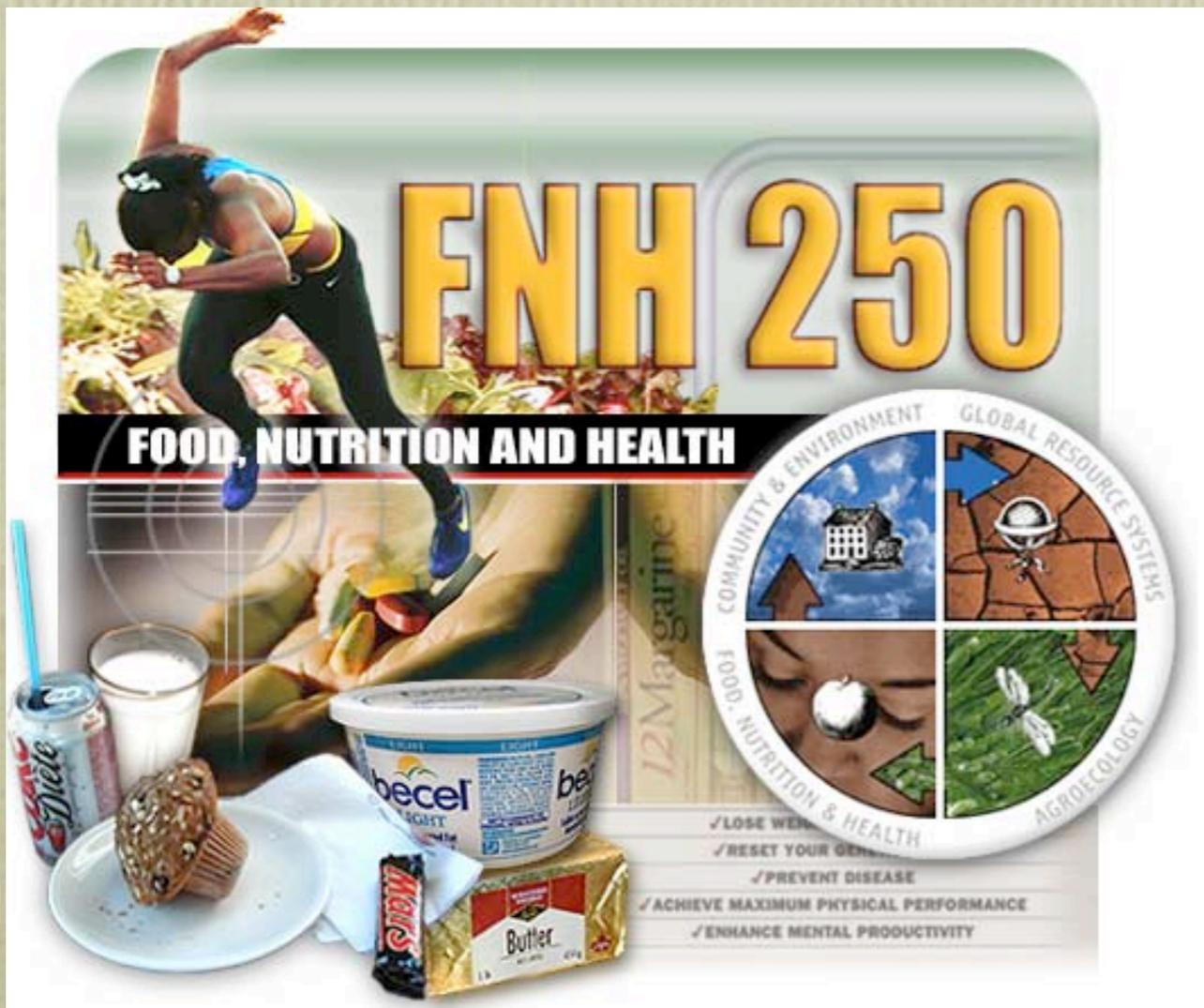
Feedback and
Evaluation
Skills

Critical Thinking
Skills

Lifelong Learning
Skills

FNH250

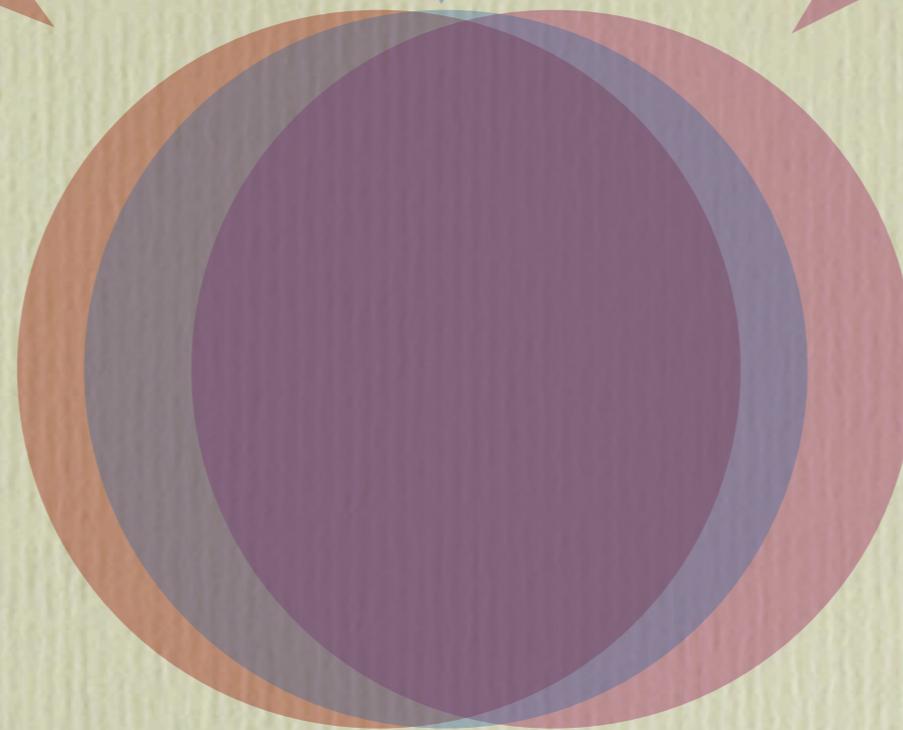
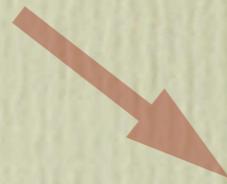
- Cohort-based, PBL course with up to 28 students, and a 7:1 student/facilitator ratio
- Students from around British Columbia
- Extensive PBL group process activities with individual assignments and an invigilated final examination
- Students must participate in their PBL group discussions - pass/fail basis
- Case structure, with careful organization and scheduling of course content
- Formative and Summative evaluation, within cases and for group process skills



Lecture-based Course

Face-to-face PBL

Online PBL



Nutrition Knowledge

- name and describe the characteristics, physiological functions, and food sources of essential nutrients;
- discuss the adverse effects of both inadequate and excessive intakes of nutrients;
- understand the concept of nutrient requirements

On-line Skills

- group process
- communication
- evaluation & feedback
- lifelong learning

PBL Skills

- problem solving
- group process
- critical thinking
- communication
- evaluation & feedback
- lifelong learning

Synthesis Questions

- What might be the advantages of using PBL in your courses?
- What challenges might you and your students encounter using PBL?
- What would need to change in your practice if you were to employ PBL in your courses?