

Using PBL to Achieve Lifelong Learning

c:\PBL\HongKong

1. What is lifelong learning?
2. Improving learning
3. What is PBL?
4. Challenges and opportunities
5. Does it work? Evaluation of program effectiveness
6. Students and teachers
7. Summary

1. What is lifelong learning?

This is how I view it:

"Lifelong learning is assuming responsibility for identifying what one needs to know, creating learning goals and criteria, identifying pertinent and accessible resources, engaging in learning the knowledge especially the difficult parts, integrating the new knowledge with past knowledge and experience, using the knowledge to solve the need and assessing the degree of comprehension. One will use people and peers as resources."

dependent -> independent ->interdependent
learner

1. What is lifelong learning?

	Teacher	share	student
1. pick problem			
2. know what know			
3. need to know?			
4. prioritize & contract to learn: goals/ criteria			
5. select resources			
6. learn			
7. share			
8. solve problem			
9. assess			
10. elaborate			

2. Improving learning

1. Chickering & Gamson +

Improve learning:

1. active
2. cooperative
3. quality of teach-learn interaction
4. prompt feedback
5. time on task
6. environment expects success
7. personal learn style
- +
8. assessment by students
9. published goals/criteria
10. attention span = 20 min
11. wait time before answering 20 s
12. knowledge/skills/attitude

2. Ramsden & Entwistle

Deep learning:

1. good teaching
2. openness to students
3. freedom to choose
4. clear goals & standards
5. vocational relevance
6. social climate
7. (-workload)
8. (-use of formal lectures)

3. What is PBL?

PBL: pose problem 1st. Motivates, knowledge structure: Many options. *challenge*: problem solving skill, cues.

Self-directed: students own. LL skills. Many options. *challenge*: accountable.

Self assessed: students create & do assessment. Many options. *challenge*: you monitor process.

Small group: active, prompt, coop, learning styles. Many options. *challenge*: make it do this.

SG,SD,SA interdependent PBL:

Videotape: Goals meet, teach meet, assess meet

4. Challenges and opportunities

PBL can be an extremely effective learning environment. Nine issues related to the fundamental underpinnings of PBL make it effective.

1. Teacher attitude.
2. Student attitude.
3. Select form of PBL to match resources available.
4. Know the reason why you select PBL.
5. Include keys to improve student learning: active, coop, prompt feedback, expect success, ownership
6. Empowerment with accountability.
7. Develop Lifetime learning skills.
8. Problems mirror future professional practice.
9. Develop effectively process skills problem solving, team work, self assessment, and change management.
10. Assessment is done astutely.

5. Evaluation of program:

Our approach has been: MPS program

<http://www.chemeng.mcmaster.ca/innov1.htm> &

MPS and PBL

goal

2nd year: 48 tutorial hrs. required

PS homewk.

3rd year: 45 tutorial hrs. required

teams; PBL

4th year: 30 h. required

PS, team, PBL

Outcomes: problem solving, team, self assessment, lifelong learning.

Constraint: can't continually add new courses & still have 4 year program

give more fish -> teach to fish

MPS (four courses) 20% of total curriculum

PBL component: "safety" engineering economics"

"process operability" 2% of total curriculum.

Develop process skills **before** PBL. 6 - 10 groups &

1 teacher: tutorless groups

5. Evaluation:

M Marks improve in other courses compared with control

M CPQ 28 to 35 compared with 15 to 20

M Confidence in PS skills: 90 -> 70
control 90 -> 85

M Skill in PS: Billings-Moos

M Attitude toward lifelong learning: Perry; Deep learning

M self assessment skill

M alumni & recruiters

6. Students & teachers

Students: 80% one year said: "This is so good you shouldn't wait till 4th to give it to us."

10% each year say:

"This subject knowledge is too important to be left to students to teach each other! But I love PBL."

Teachers: "I would be loathe to return to traditional ways of teaching."

" I was terrified the first time I tried it. I couldn't see that the students could learn as much with PBL as they could when I lectured. What a surprise! They learned as much, if not more, and enjoyed it more."

7. Summary