Welcome

Problem Based Learning: An Integrated Curriculum

Medical Education Round
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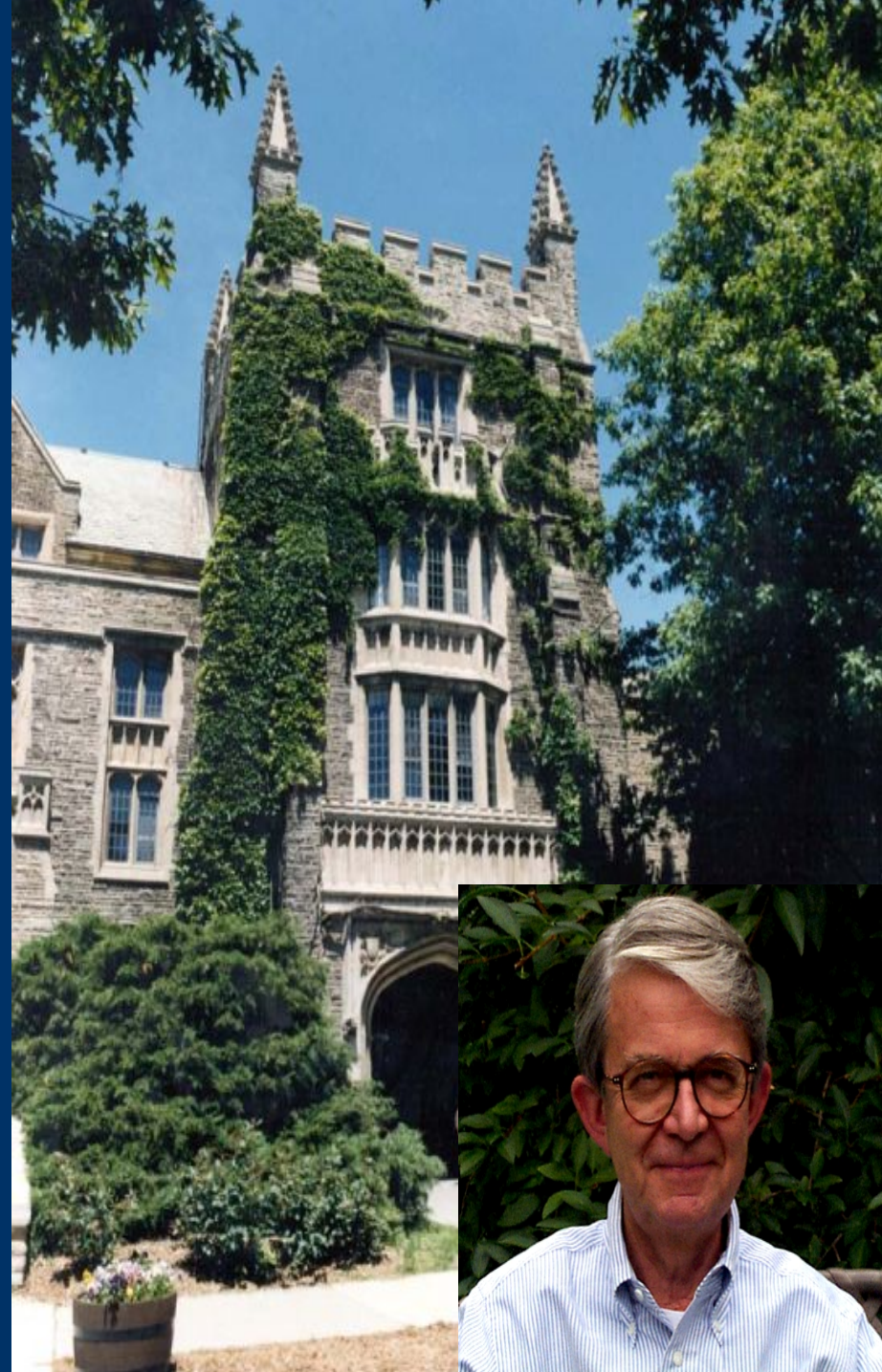
Overview of Session

- The need for pedagogy change
- PBL and the Integrated Curriculum
- PBL and the Integrated Curriculum Objectives
- The PBL process
- Challenges associated with the PBL process

Background

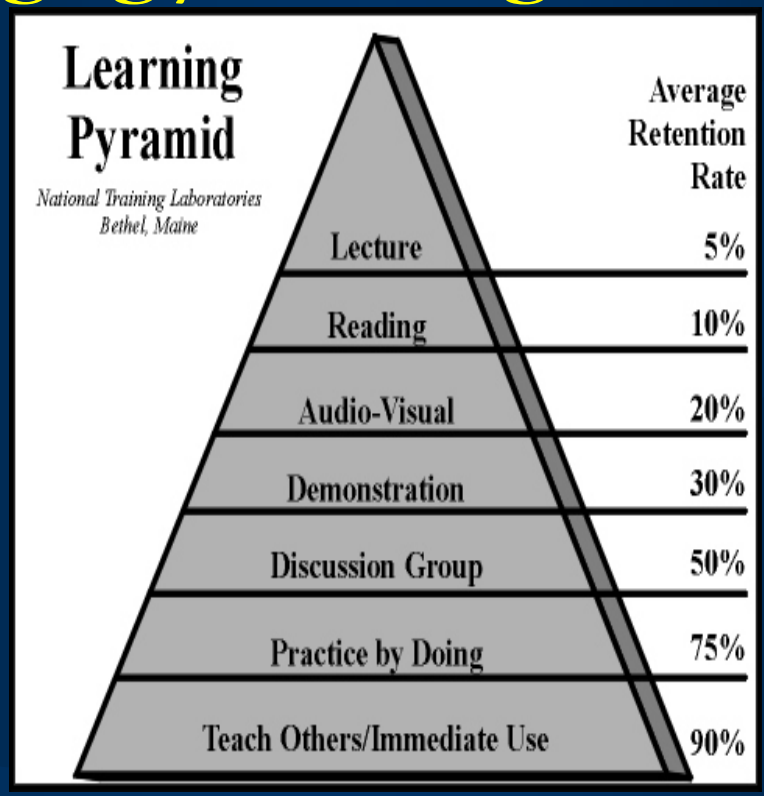
- Pioneered by Howard S. Barrows in 1969
- At McMaster University's School of Medicine
- Almost 40 years on, due to its efficacy, PBL is being adopted and used not only in the teaching of healthcare curriculum but also other disciplines all over the world



Pedagogy Change – Why?

- Fragmented
- Passive
- Superficial Learning

Traditional Model



- Integrated
- Active
- Deep Learning

PBL Model

- **Fragmented teaching** leads to **fragmented learning**
- It is taken for granted that students will see for themselves how knowledge is integrated

Humphreys (1981)

Problem Based Learning

- PBL is a total approach to education. It is both a curriculum design and a cognitive process.
- The curriculum design consists of carefully selected and designed problems that demand from the learner acquisition of integrated knowledge.
- The cognitive process uses a systematic approach to resolving problems.

Barrows and Kelson (1997)

Integrated Curriculum

Education that is organized in such a way that it cuts across subject-matter lines, integrating various aspects of the curriculum into meaningful association

Shoemaker (1989)

An integration curriculum encompasses integration of experience, social activities and knowledge and skills

Hill (2005)

Objectives of the PBL Process

- The objectives of the PBL process includes:
  - **Knowledge**
  - **Skills**
  - **Attitudes**
  - **Integration**

University of Central Lancashire (2005)

Objectives of an Integrated Curriculum

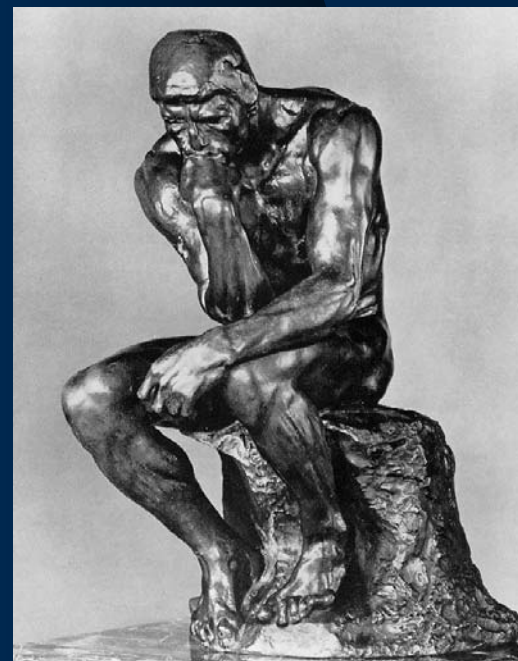
- The objectives of an integrated curriculum includes:
  - Effective communication skills
  - Capable of team work
  - Broad grounded approach to problem solving
  - A broad repertoire of theoretical knowledge and skills
  - Independent responsibility for learning
  - Critical evaluation of literature and evidences
  - Sharing information and knowledge with peers

Hill (2005)

Research

- No convincing evidence that the PBL process has the ability to improve the content knowledge of learners
- Huge body of research have identified the generic skills involved in the PBL process to be of great benefit to learners.
- These skills include:
  - scientific reasoning
  - lifelong learning interest
  - effective communication skills
  - effective problem solving skills
  - critical thinking & questioning mind
  - mutual trust & respect for team member

Newman (2003)



Research

- An integrated curriculum encourages students to see interconnectedness and interrelationships which is pertinent to any learning (Woods, 2003).
- Learning is best accomplished when information is presented in meaningful, connected patterns (Camp, 1996 & Oster, 1993).
- An integrated curriculum is an educational approach that prepares learner for lifelong learning (Humphreys, 1981 & Jacobs).

Research

- An integrated curriculum:
  - helps students apply generic skills.
  - is effective for learning as it leads to faster retrieval of information.
  - encourages depth and breadth in learning.
  - promotes positive attitudes in students.

Lipson (1993)

Research

- Cromwell (1989) reports that:
  - the brain recalls holistic experiences more quickly and easily than fragmented experiences
  - there is a connection between neuro-psychology and educational methods and that the human brain learns better when presented with meaningful patterns
- Caine and Caine (1991) went even further to state that the brain may even resist learning fragmented facts that are presented in isolation.

The PBL Process

Step	Activity
1	Identify the Problem
2	Brainstorm
3	Generate Hypotheses & Learning Questions
4	Identify Learning Issues
5	Carry out Evidence Based Research
6	Apply New knowledge to the Problem
7	Reflect and Evaluation

All 7 Steps of the PBL process involves collaboration, communication and cooperation among learners.

Walsh (2004)

The First Contact

- Get to know each other
  - Ice-breakers
- Discus the PBL process
  - 7 Step Process
- Discuss group processes
  - Forming, Storming, Norming, Performing & Adjourning - Tuckman
- Create group norms
  - Establish learning climate
- Assign student to role of facilitators and recorders and discuss their responsibilities
  - Create an agenda and plan & time manage the tutorial session
  - Summarize the tutorial session and upload it onto a website

Walsh and Neville (2005)

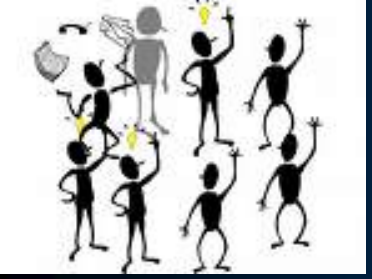
Step 1- Identifying the Problem

- Good PBL problems includes:
  - **Realism**
  - **Resolution**
  - **Engaging**
  - **Research**
  - **Complexity**
  - **Integrated Content**

Walsh (2004)

"When problems are engaging, difficult, and useful, higher levels of comprehension and skill development occurs."

Albanese & Mitchell (1993)



Step 2 - Brainstorming
Step 3 - L.Q. & Hypothesis

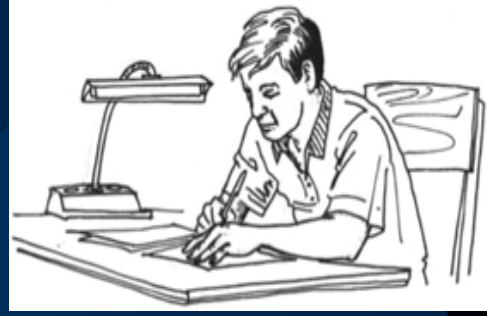
- Learners brainstorm and generate learning questions and hypothesis associated with the problem.
- There should be no worries about redundancy and no negative comments are allowed as they prevent free flow of thoughts.
- The objective here is to generate the largest possible list of learning questions and hypothesis.

To encourage participation and reduce fear, group norm such as "all ideas should be respected" can be very helpful

Step 4 – Identifying Learning Issues

- Learners organize and group the brainstormed ideas.
- The students than identify:
  - what they know &
  - what they need to know
- The need to know is identified as knowledge gaps and becomes learning issues
- The issues are than divided amongst group members to be researched.

Step 5 - Evidence Based Research



- This stage involves independent and self-directed activities
- Learners are required to:
  - locate evidence based resources for knowledge acquisition and hypothesis testing
  - critically appraise the available resources to authentic its validity and reliability
- The resources are than uploaded onto a website with a short summary for group members to read and analyze prior to attending the next tutorial session

Step 6 - Applying New knowledge to the Problem

- This stage involves students reviewing the problem and applying their newly gathered knowledge by communicating it.
- This stage also involve learners challenging each others understanding of the evidence based material that they have researched in a helpful way.

If you can't speak it clearly, you probably don't understand it

Lima (2006)

Step 7 - Reflection & Evaluation

Reflection is what allows us to learn next: it is an assessment of what we know and what we want to learn

Wolf (n.d.)

- **Post Tutorial Evaluation of Content & Learning**
  - Student self-evaluation
  - Peer feedback
  - Tutor feedback

- **The Mid-Semester & End of Semester Evaluation**
  - Written evaluation

Walsh and Neville (2005)

Challenges

- For a PBL integrated curriculum to be successful, it requires interdepartmental teams to work together.
- Poorly designed problems may not meet the learning objectives.
- Groups conflict, while normal, could take time to resolve.
- Poor adaptation of the PBL process may hinder its effectiveness

Summary

- There is no doubt that the PBL integrated curriculum is an effective way of learning as it offers several advantages over the traditional model of teaching.

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