

All men by nature desire to know. –*Aristotle*

# Problem Based Learning & Distance Learning

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*Where was the use, originally, in rushing this whole globe through in six days? It is likely that if more time had been taken in the first place, the world would have been made right, and this ceaseless improving and repairing would not be necessary now.*

*-Mark Twain, Life on the Mississippi*

# Learning, Methods & Platforms

- **Learning** means acquiring knowledge and skills, and developing understanding.
- Remembering is important for learning, but **memorising** descriptions, methods and formulae is not learning, by itself, is not learning.
- **e-Learning** is not a form of learning – it is merely a platform, just like the stage and the blackboard.
- **Internet** provides opportunities for diverse ways of learning and facilitating others to learn.

# About PBL

- **Learning** that happens due to actions triggered by a scenario, happening, issue, problem etc., is called Problem-Based-Learning.
- **PBL is learner-centred**, whereas instruction methods (e.g. lectures) are teacher-centred.
- Giving a problem/project prior to delivering a series of lectures followed by term-end examinations containing predictable patterns of questions, normally would not lead to PBL.

# About PBL

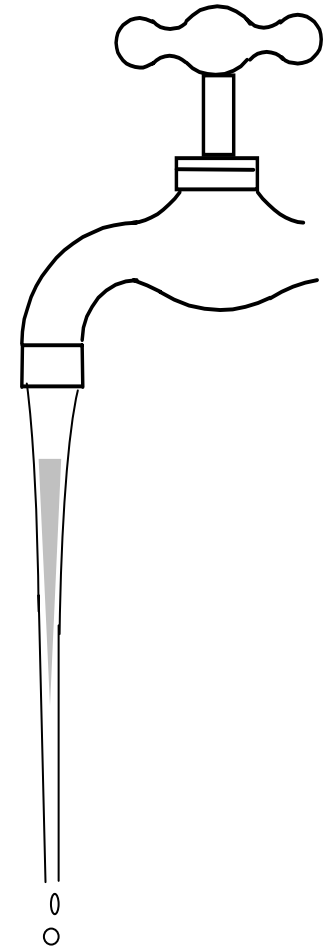
- PBL is a concept. Implementations may differ widely
- Many practices widely believed to be beneficial, such as collaborative learning, and small-group learning are compatible with PBL.

David was brushing his teeth. He opened the tap a little and water started flowing down in a neat slow stream.

This he has seen many times, but today he noticed that the stream of water became progressively thinner as it went down.

???

It is the same amount of water that moves down.



Why not



?

A 

B 

C 

D 

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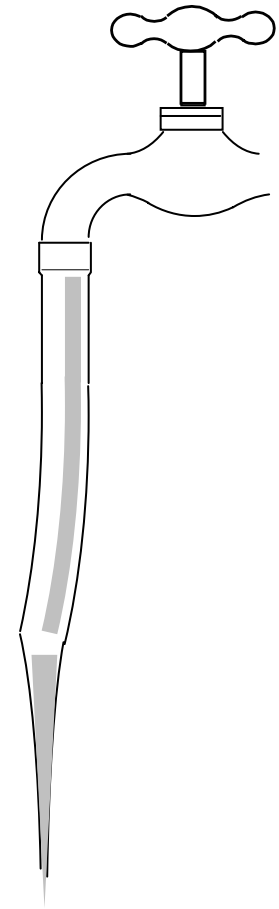
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David fixed a transparent tube to a tap. He wanted to see if the thinning out of water column would happen when flowing inside the tube as well. Once he managed to get rid of all air from the tube he noticed that water did not thin out when inside the tube, but after leaving the tube water column thinned as before.

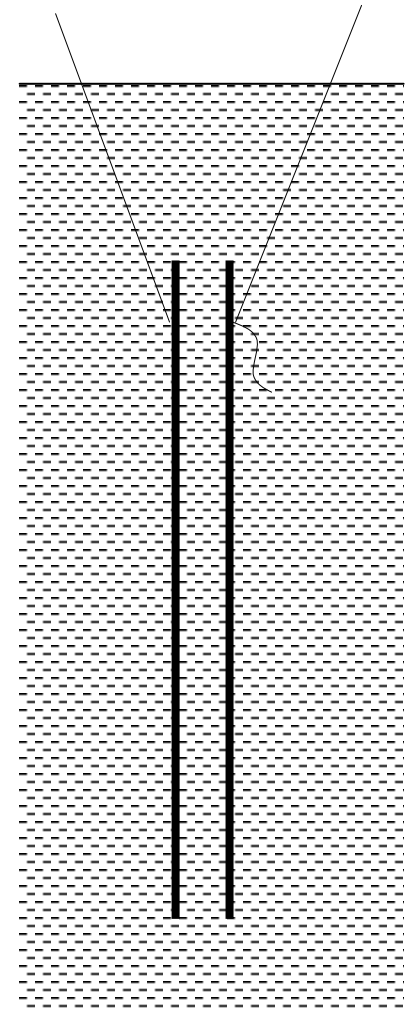
What goes on inside the tube? Does the water inside the tube freely fall under gravity?

What will happen if this rigid tube is replaced by a tube made of a very thin sheet?

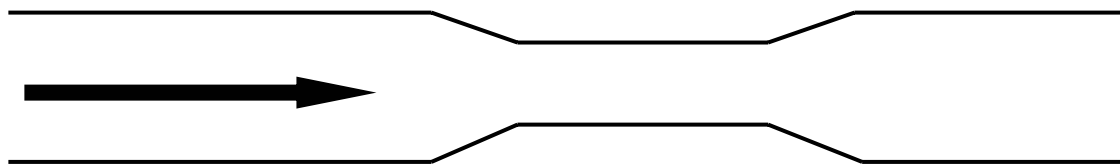


Having figured out that that pressure is a major factor in fluid flow in a tube David formulated a hypothesis: "pressure difference causes liquids to flow through tubes." He then thought of an experiment to establish the acceptability of his hypothesis. He has heard that as one goes deeper in water the pressure increases. So he decided to place a tube vertically submerged in water. The pressure at the lower end opening of the tube must be higher than that at the upper end. He felt that if his hypothesis is correct then water must flow upward.

Is it true that the pressure increases as one goes deeper in water? Do you think that water will flow upward in a submerged vertical tube? Can you rationally justify your prediction?



Intrigued by the nature of flow inside a tube, David felt the need to have a simple analogy for liquid flow. It dawned upon him that flow of traffic in an expressway could be a good way to imagine what goes on inside a tube. "One can fill the space in between vehicles by an imaginary material. Then the collection of vehicles can be thought of as the flowing mass of liquid. Traffic congestion is a high-pressure situation. An instance where the space between vehicles keeps increasing is a case of low pressure." David felt that he could test the applicability of his analogy by testing a tube with a short narrow passage. This narrow passage would definitely be a place of traffic congestion on an expressway. If the pressure inside the narrow passage inside the tube is also high then his analogy would be justified, he felt.



# Everyone has ideas about what educators could/should do...

- One can hope for identification of the nature of goals of formal education, not any broad agreement on any of the details.
- “This person is generally good for ...” kind of a declaration (certification) is perceived when an institution awards a diploma/degree.
- Academics/educators function as agents of a community entrusted to nurture and admit newcomers to that community.

# My thinking is that ...

- Individuals learn what they need to do well at the workplace from the workplace itself.
- Trying to impart that knowledge needed in the now-unknown future through preparatory formal education is largely fruitless.

# My thinking is that ...

- Formal education is meaningful if it helps in organizing the mind of the student to accelerate the later learning at workplace.
- Such an education is a one that focuses on one hand, on understanding of ideas, recognition of patterns, and ways of doing and on the other, process skills of learning.

**Learning**

is by

**resonance**

with what one already knows

Learning is quicker when students possess **self-monitoring** skills.

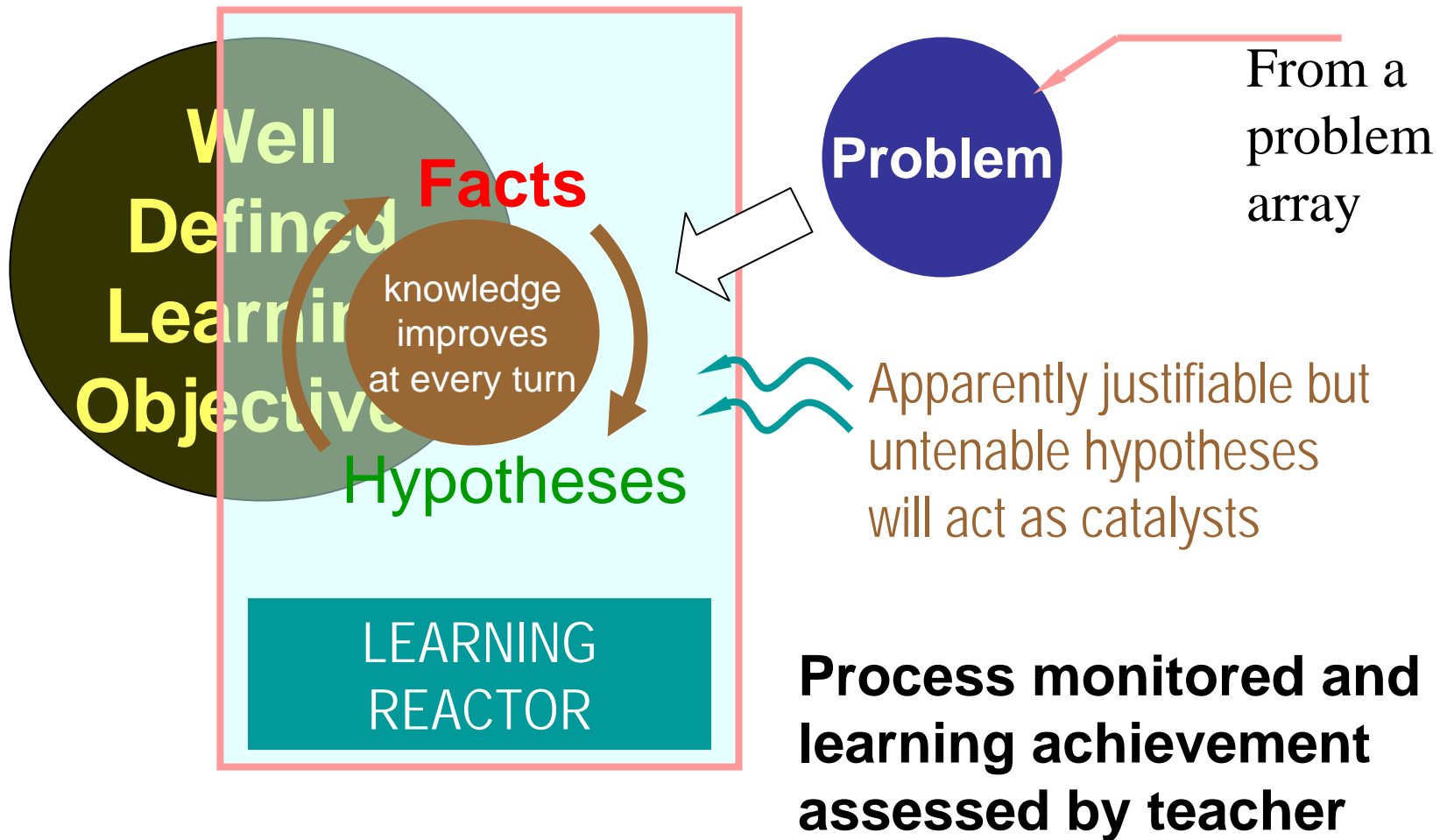
**GOAL**

**STRATEGY**

- What am I going to do?
- How am I going to do it?
- Did it work?

**EVALUATION**

# Pedagogical Strategy of PBL



# Distance Learning & PBL

- Delivery of problem statement
- Discussion with fellow learners
- Facilitation by “an adult”
- Information gathering
- Formulating a solution as a team
- Preparing a presentation as a team
- Defending the solution as a team

# Distance Learning & PBL

Delivery of problem statement	✓
Discussion with fellow learners	✓
Facilitation by “an adult”	?
Information gathering	✓
Formulating a solution as a team	✓
Preparing a presentation as a team	✓
Defending the solution as a team	✓
Individual Assessment	x

Tell me and I will forget  
Show me and I will remember  
Involve me and I will understand  
Step back and I will act

*(Chinese proverb)*