CS7067 E-Learning: Principles & Practice II

Computer Supported Problem-Based Learning
What is Problem-Based Learning?

- Problem-based learning (PBL) is an instructional method in which students learn through facilitated problem solving.

- In PBL, student learning centres on a complex problem that does not have a single correct answer.
What is Problem-Based Learning?

- Students work in collaborative groups to identify what they need to learn in order to solve a problem.

- They engage in self-directed learning (SDL) and then apply their new knowledge to the problem and reflect on what they learned and the effectiveness of the strategies employed.

- The teacher acts to facilitate the learning process rather than to provide knowledge.
What is Problem-Based Learning?

- The goals of PBL include helping students develop
  1. flexible knowledge,
  2. effective problem-solving skills,
  3. SDL skills,
  4. effective collaboration skills, and
  5. intrinsic motivation.
Background

- Problem-based approaches to learning have a long history.

- They are one of many instructional approaches that situate learning in a meaningful task, such as case-based instruction and project-based learning.

- In the traditions of Kilpatrick (1918, 1921) and Dewey (1933), these approaches argue for the importance of practical experience in learning.

- Problem-based learning (PBL) is part of this tradition of meaningful, experiential learning.
Philosophy

- Cognitivism, social constructivism and postmodernism provide theoretical foundations for understanding PBL.

- Cognitivism means that PBL is an active mental process of accessing prior knowledge, making connections between old and new concepts and using the elaboration of relationships to engage in theory construction (Schmidt, 2004).
Philosophy

- In PBL the learners are constructing their knowledge together in PBL tutorials.

- PBL has a social constructivist view of learning. It sees learning as something that results from the learner’s actions.

- The role of the PBL facilitator is to enable and encourage learners to construct their knowledge together.
There is a fit between PBL and changing postmodern concepts of knowledge.

Specifically, postmodernists believe that knowledge is the product of social construction.

Problem-based learning is also connected to postmodernism by the similarity in curriculum. Where PBL allows students to solve real-world problems, the postmodern view of curriculum is one which the everyday and the particular are a basis for learning.
Philosophy

- The belief that there are universal truths that can be transmitted to willing students is no longer seen as valid.

- Students require more ownership of information and ideas developed through the personal construction of knowledge.
Benefits

- It has been defined as an educational strategy that involves the presentation of significant, complex and "realworld" problems to learners that are structured in such a way that there is not one specific correct answer or predetermined outcome (Barrows, 1987).

- Savin-Baden (2003) suggested that the often unarticulated aim of teachers who use PBL approaches is to develop in their students 'criticality' – emotional, intellectual and practical independence.
Benefits

- PBL, students learn by solving problems and reflecting on their experiences (Barrows and Tamblyn, 1980).

- PBL is well suited to helping students become active learners because it situates learning in real-world problems and makes students responsible for their learning.

- It has a dual emphasis on helping learners develop strategies and construct knowledge.
PBL and Technology…

- How can technology be used to support both project and Problem-based Learning?
  - Bringing exciting curricula based on real-world projects and problems into the classroom
  - Providing scaffolds, tools and resources to enhance learning
  - Giving both students and teachers more opportunities for feedback, and reflection
  - Expanding opportunities for student learning through collaboration and discussion
Bibliography


The Problem...