Problem-Based Learning (PBL)

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Outline

- Problem-Based Learning (PBL)

- Using PBL in F2F Class Activities

- Using PBL in Online Class Activities

- Think-Group-Share

- Update your personal plan with using PBL in your course

Problem-Based Learning

- *Problem-based learning (PBL)* is an approach to learning and instruction in which *students tackle problems in small groups under the supervision* of a tutor [1].

- The problems are presented as a set of events (significant or otherwise) that are *associated with reality*.

- These events are analyzed and discussed by the group in term of the *fundamental principles*, *mechanisms* and *processes*.

Problem-Based Learning

- PBL has the potential to significantly increase student performance in the classroom by [1]:

  a) activating prior knowledge;

  b) elaborating on prior knowledge through discussion;

  c) restructuring of knowledge;

  d) learning in context; and

  e) engaging in open-ended discussion thereby increasing the student's curiosity.

Using PBL in F2F Class Activities

PBL involves students working in their teams to solve problems as in-class activities, or working on the project in class which is complex enough to mimic the type of project they will encounter in industry (usually open-ended, e.g., when to stop testing the system).

E.g., Agile development exercises

Using PBL in Online Class Activities

PBL in an online environment may involve:

- Using a collaborative environment e.g., Google Doc, or share IDE (Eclipse Che) to solve a problem facilitated by the instructor (synchronous)

- Using a repository to host artifacts of a solution for a team periodically reviewed by the instructors, e.g., using GitHub to host the source code for software engineering project. (asynchronous)

Solving a problem Using PBL

Problem: After receiving the email advertising the LESSEP 19-1 workshop describe your decision process to attend identifying at least 3 constraints.

Based on your team domain present a solution.

Are there any other LESs involved in this exercise?

Think-Group-Share

How would you use PBL in your course?

1. Individually identify how you would use PBL in your course (F2F, Hybrid and Online)

2. Share your ideas with your team members, discuss and summarize

3. Present to the audience

4. Individually create the PL plan for your course

References

1. Schmidt H. G. (1993). Foundations of problem-based learning: some explanatory notes. Medical Education, 27(5):422–432.

Summary

- Introduced *Think-Group-Share* cooperative learning style

- Briefly introduced LESs: collaborative learning, gamification, problem-based learning, social interaction

- Introduced LES Integration Model