Problem-Based Learning (PBL)
STEP: Psychology of Learning and Development
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Programme

1. Introduction to Problem-Based Learning
2. Seven steps of PBL simulation
3. Designing PBL or ”PBL-like” teaching
How to bridge the gap between studying and real life?
History of PBL

• 1st version in Canada McMaster University (1969)

• To Europe through Maastricht University (1974)

• Maastricht introduced the “7 steps” of PBL

• Used in many countries today, especially in medicine, dentistry, law, business and engineering

• Growing interest in basic education and general upper secondary education (phenomenon-based learning, integrative approach)
information
Principles of PBL in practice

Actively process and construct knowledge

Facilitates the learning process. *Does not lecture*

Trigger case, which includes a problem from the "real world"

Define their learning goal within the context set by the teacher

Aim: to **understand** phenomena and the connections between phenomena
7 steps of PBL

Why these phases are important in the learning process?

Opening session
1. Clarifying terms
2. Defining the problem
3. Brainstorming
4. Analyzing and categorizing
5. Learning goals

Independent study
6. Books, articles and lectures

Closing session
7. Reporting and synthesizing
Crucial initial steps

Problem definition

Activating prior knowledge

Analyzing and applying prior knowledge
The role of a teacher (tutor) in PBL

Sage on the stage

Guide on the side
Collaborative knowledge construction in the context of problem-based learning: Exploring learning from conflicting ideas and knowledge

ethesis.helsinki.fi
Does PBL work?

Yes.
Strengths

• Motivates students

• Promotes:
  • Understanding of knowledge
  • Application of knowledge
  • Remembering knowledge
  • ”Connecting the dots”
Strengths

• In addition to learning subject knowledge, PBL develops:
  – Communication skills
  – Teamwork skills
  – Problem-solving
  – Self-directed learning
  – Critical thinking
  – Knowledge acquisition skills
Weaknesses

• Poorly functioning:
  – trigger cases
  – small groups
  – facilitation

• Limited topic coverage

• Cognitive load
Okay, PBL works for university students, but what about young pupils?

What needs to be taken into account with younger learners?
Good PBL trigger case should be:

- Realistic - based on a real phenomenon
- Challenging - but adjusted to learners’ prior knowledge
- Engaging - set in a context representing learners’ interests
- Based on pre-set learning objectives
- Open-ended - stimulating students’ discussion at a higher cognitive level
Case examples
Puzzled polar bear
Autumn comes
Oliver was having a hard time with his presentation on planets the next day. He thought he will choke in front of his teacher and peers. He told his friend Jesse that he will be “sick” tomorrow and skip his presentation. However, when the time of Oliver’s presentation came, he was there and gave a brilliant presentation and everyone liked it.
Water crisis
Oliver was having hard time with his presentation on planets the next day. He thought he will choke in front of his teacher and peers. He told his friend Jesse that he will be "sick" tomorrow and skip his presentation. However, when the time of Oliver’s presentation came, he was there and gave a brilliant presentation that everyone liked.

Try one yourself!

Pick 1. or 2. in groups

Opening session

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4. Analyzing and categorizing
5. Learning goals
PBL
Phenomenon-based learning
Project-based learning
Problem-based learning
CURRERE (TO RUN)
CURRICULUM

ENGLISH
MATH
GEOGRAPHY
PHENOMENON

CLIMATE CHANGE

ENGLISH  MATH  GEOGRAPHY
Generic features in all "PBL’s"

Phenomenon

Studying and applying to the problem

Summarizing and reporting
How can digital devices help in PBL?

1. Tools for team teaching (e.g. planning)
2. Blending learning inside and outside school
3. Searching for and working on knowledge
4. Interaction and collaboration
5. Documenting and reporting
How to assess learning in PBL?
Designing PBL or "PBL-like" teaching
Degrees of freedom...

1. A trigger case involving a problem
2. A phenomenon triggering students’ questions
3. Students get to choose the phenomenon
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Guidelines for designing a PBL scenario

1. How complex and sophisticated should it be?
2. Will it stand alone or in a sequence with others?
3. How to link problems in a sequence?
4. How much time should be allowed?
5. What topic is the problem to encourage study?
6. Which questions/triggers would lead to essential learning?
7. What information should be presented to the students?
8. What information should be held in reserve?
9. What study materials should/must be made available?
10. What other learning experiences are/could be involved?
Group work

1. Phenomenon
2. Subjects/lessons
3. Case
4. Methods
5. Schedule
6. Reporting
7. Assessment