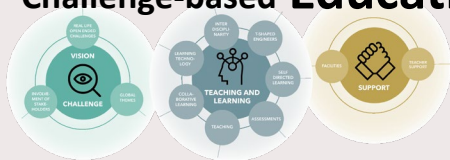


Student learning experiences in mathematics-oriented challenge-based courses

Zeger-jan Kock, Ulises Salinas-Hernández and Birgit Pepin

Challenge-based Education (CBE)



3 CBE courses:

- “Physics of Social Systems”
- “Data Challenge 3”
- “Modelling week”

Approach:

- Qualitative data collection
- 3 Cases
- Cross-case comparison

Framework:

Pedagogy of CBE

IA / Lens of resources

Research questions:

- 1: Perceived student learning in mathematics related CBE courses?
- 2: Perceived use of resources and its relation to student work in CBE environments?

Results & conclusions

Disciplinary learning

1. Real-world → mathematics
2. Programming skills.
3. Particular concepts and techniques.
4. Modelling techniques

Professional competences

1. Problem solving
2. Communication
3. Collaboration
4. Development of identity

Resources

- Depending on project phase
- **Social:** tutors, stakeholders, peers
- **Curriculum,** e.g. feedback tool, initial model& data, documents, scrum tools
- General: websites, papers, software
- Own models as resources
- **Time**

Conclusions

- **Student see benefits of CBE**
- **Different ways to enact CBE, modelling as a common theme**
- **Requires design decisions**
- **Learning focus differs among students**



CERME 13

13TH CONGRESS OF THE EUROPEAN SOCIETY
FOR RESEARCH IN MATHEMATICS EDUCATION

10-14 July 2023
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