Student learning experiences in mathematics-oriented challenge-based courses

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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
Budapest
Hungary

Eindhoven School of Education TU/e ESOE