



GIREP-EPEC

Transforming physics learning via Research & Practice
LEIDEN, 2025

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Type: **Oral presentation**

Empowering future physics teachers to cultivate critical thinking

Thursday 3 July 2025 16:10 (20 minutes)

Critical thinking (CT) is essential in physics education, yet teacher training often lacks effective preparation. This exploratory study, based on Halpern's CT framework and behavioral theories, examines the challenges and attitudes of 23 German prospective physics teachers in a seminar on designing CT-integrated physics lessons. Inductive content analysis of discussions and pre-post questionnaire responses reveal that participants valued CT but struggled with topic selection and precise task formulation. The seminar enhanced their understanding of CT teaching's feasibility, especially among skeptics. Findings give insights to the key design principles for effective teacher training programs.

Education level

Pre-service and in-service teacher education

Physics topic

Full curriculum

Research focus

Competence-based education

Research method

Educational design research (Qualitative research)

Organizing preference criteria

Research focus

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Session Classification: Parallel oral presentations

Track Classification: Physics teacher education & Professional learning (TEACH)