GIREP-EPEC
Transforming physics learning via Research & Practice
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Enhancing conceptual understanding and reasoning ability in challenging physics classes

Friday 4 July 2025 14:00 (20 minutes)

Many students in introductory physics courses struggle to form a conceptual understanding of physics, with additional challenges in short courses with no calculus. Tutorials by the University of Washington PEG are well-established tools to improve understanding and physics reasoning. To face these additional challenges, we introduced tutorials containing context-rich problems to a first-year class in a non-physics STEM degree at the University of Pisa taught with an inquiry-based learning approach. Notably, the course's syllabus contains elements of quantum physics. The results show a general improvement in engagement and comprehension of certain core topics, even if some difficulties remain.

Education level

Age over 18 (excluding teacher education)

Physics topic

Other

Research focus

Innovative instructional strategies and pathways

Research method

Mixed method (qualitative & quantitative)

Organizing preference criteria

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