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Analyze different student competencies using a computational and experimental task

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Abstract. This article analyzes the key physics competencies and problem-solving approaches of students aged 14–15. The research compares two groups: one consisting of talented students participating in the zDolny Ślązak provincial physics competition, and another comprising typical public school students. The study uses two distinct tasks: one focused on classical computational problem-solving and the other on experimental design. It explores the effectiveness of independent versus group work in planning experiments and solving these tasks, as well as the different problem-solving strategies employed by both motivated and unmotivated students.

Education level

Age 12-15 (Secondary education)

Physics topic

Full curriculum

Research focus

Evaluation & Assessment

Research method

Mixed method (qualitative & quantitative)

Organizing preference criteria

Education level

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