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Examining Thinking Order Levels in Non-Traditional vs. Standard Physics Problems Through Revised Bloom's Taxonomy

Friday 4 July 2025 14:00 (20 minutes)

This study investigates the cognitive demand of standard versus non-traditional Physics problems developed in the ISLE (Investigative Science Learning Environment) approach. Referencing Revised Bloom's Taxonomy, we analyze tasks identified by action verbs in problem statements from Italian high school textbooks, comparing them to a reference sample of non-traditional problems. Our comparison shows that traditional problems mainly involve lower-order thinking, focusing on the activation of procedural and conceptual knowledge, while non-traditional problems involve higher-order cognitive processes, encouraging complex thinking. This research emphasizes the role of integrating non-traditional problems into high school curricula to better prepare students for university and real-world problem-solving.

Education level

Age 15-18 (Secondary education)

Physics topic

Full curriculum

Research focus

Competence-based education

Research method

Mixed method (qualitative & quantitative)

Organizing preference criteria

Research focus

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Session Classification: Parallel oral presentations

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