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Type: **Oral presentation**

Investigating the impact of digitally-enhanced laboratories on students' scientific abilities and experimental attitudes

Thursday 3 July 2025 16:30 (20 minutes)

Research in physics education has underscored the importance of making school laboratory activities more engaging and student-centered. The ADELANTE (Adopting Digitally-Enhanced Laboratories in a Network of Teachers) Italian project seeks to promote an innovative approach in secondary school physics labs by integrating digital tools—specifically Arduino microcontrollers and smartphones—within carefully designed Teaching-Learning Sequences (TLSs). This paper outlines the project's rationale, describes the research design adopted to assess the impact of these TLSs on students' scientific abilities and experimental attitudes, and discusses the approach used for implementing them in a network of Italian secondary schools. The ongoing classroom implementation will provide data on the efficacy of these digitally-enhanced labs.

Education level

Age 15-18 (Secondary education)

Physics topic

Full curriculum

Research focus

Evaluation & Assessment

Research method

Mixed method (qualitative & quantitative)

Organizing preference criteria

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