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Type: **Oral presentation**

Designing and Implementing TLSs for Digitally Enhanced Physics Labs: insights from the ADELANTE Project

Thursday 3 July 2025 15:50 (20 minutes)

The ADELANTE project addresses challenges in integrating physics labs into secondary education by incorporating smartphones and Arduino microcontrollers into teaching-learning sequences (TLSs) with educational intentionality. Following the Design-Based Research framework, several TLSs were developed, targeting foundational physics topics: motion, energy, forces and fields, waves and particles. These TLSs include inquiry-based lab activities designed to foster scientific practices and student agency. The process of TLSs development leverages teacher communities at two levels: a group of “teacher leaders” had co-developed the TLSs with the researchers, while larger communities of practices are testing the TLSs nationwide to ensure applicability and effectiveness.

Education level

Pre-service and in-service teacher education

Physics topic

Full curriculum

Research focus

Innovative instructional strategies and pathways

Research method

Practitioner's Inquiry / Action Research (Qualitative research)

Organizing preference criteria

Track

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Session Classification: Parallel oral presentations

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