



GIREP-EPEC

Transforming physics learning via Research & Practice
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Type: **Oral presentation**

Using the Item Response Theory to Validate the Heat and Temperature Conceptual Evaluation test

Thursday 3 July 2025 16:10 (20 minutes)

Thermodynamics poses numerous conceptual challenges for pupils. Students frequently possess insufficient knowledge structures for advanced contemplation of thermodynamic processes. Aim of physics education research is often to examine students' comprehension or conceptualisation in physics through standardised assessments. This study examines the 28-item questionnaire titled Heat and Temperature Conceptual Evaluation. Our objective is to validate it through the application of Item Response Theory methodology. The research participants consist of approximately 300 undergraduate students. The IRT model assesses the efficacy of the questionnaire and establishes the difficulty levels of heat and temperature concepts measured by this evaluation tool

Education level

Age over 18 (excluding teacher education)

Physics topic

Thermodynamics and Energy

Research focus

Evaluation & Assessment

Research method

Analytic Physics Education Research (Quantitative research)

Organizing preference criteria

Author: Prof. BATTAGLIA, Onofrio Rosario (Dipartimento di Fisica e Chimica - Emilio Segrè, University of Palermo, Palermo, Italy)

Presenter: Prof. BATTAGLIA, Onofrio Rosario (Dipartimento di Fisica e Chimica - Emilio Segrè, University of Palermo, Palermo, Italy)

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Track Classification: Evaluation & Assessment (EVAL)