GIREP-EPEC
Transforming physics learning via Research & Practice
LEIDEN, 2025

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Exploring the Photoelectric Effect and the Electromagnetic Spectrum through Art Analysis in Physics Education

Wednesday 2 July 2025 09:00 (20 minutes)

This study explores an interdisciplinary strategy integrating physics and art to enhance students' understanding of the electromagnetic spectrum and the photoelectric effect. Through project-based learning, high school students analyse artworks using non-invasive spectroscopic techniques, experiment with UV light on currency security features, and explore artistic representations of electromagnetic waves. Findings show improved conceptual understanding, increased engagement, and stronger critical thinking skills. This approach demonstrates the relevance of physics beyond the classroom, fostering interdisciplinary learning and scientific inquiry. Future research could expand applications in cultural heritage and science communication.

Education level

Age 15-18 (Secondary education)

Physics topic

Interdisciplinary topics

Research focus

Innovative instructional strategies and pathways

Research method

Educational design research (Qualitative research)

Organizing preference criteria

Education level

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Session Classification: Parallel oral presentations

Track Classification: Interdisciplinary topics (INTER)