



GIREP-EPEC

Transforming physics learning via Research & Practice
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Exploring Teaching Strategies and Pedagogical Content Knowledge for Teaching the Band Gap Concept in Secondary Education

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Abstract. This study explores how Dutch secondary school physics teachers introduce the band gap concept in pre-university education. Quantum physics is challenging to teach due to its abstract nature, but the band gap provides a practical link between quantum principles and real-world materials like semiconductors. Seven teachers will be observed teaching the concept and interviewed about their strategies and challenges. This qualitative research examines their pedagogical content knowledge (PCK) and teaching practices, offering insights into effective methods for addressing abstract quantum topics. The findings aim to identify effective instructional strategies and enhance students' understanding of quantum physics in secondary education.

Education level

Pre-service and in-service teacher education

Physics topic

Quantum mechanics

Research focus

Other

Research method

Other

Organizing preference criteria

Physics topic

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