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Transforming physics learning via Research & Practice
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A STEAM Education Proposal from the Perspective of the Conceptual Fields Theory

Friday 4 July 2025 09:00 (20 minutes)

This study explores the integration of the Theory of Conceptual Fields and STEAM education to enhance interdisciplinary learning. Centered on carbohydrates, the project engaged students in an inquiry-based challenge to develop an energy solution for triathlon athletes. Through problem-solving across science, technology, engineering, arts, and mathematics, students strengthened conceptual understanding, critical thinking, and collaboration skills. Findings suggest that applying Vergnaud's theory within a STEAM framework enhances knowledge retention and transfer. This approach fosters cognitive flexibility and real-world problem-solving abilities, highlighting the need for further research on its long-term impact on student learning and adaptability.

Education level

Pre-service and in-service teacher 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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Track Classification: Educational research methodology (METHOD)