

Abstract Submitted
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Theory, Relationship, and Experiment (TReE): A methodology to enhance knowledge connection in the Introductory Physics Lab. YURI PIEDRAHITA, Department of Curriculum Instruction, Purdue University, RAUL PORTUONDO, Department of Physics Astronomy, University of Puerto Rico at Mayaguez — One concept that has been poorly explored in the context of the laboratory is the enhancement of the students' ability to connect information from different areas. The lack of ability to link these information matches into what is referred as “dead knowledge” i.e. information that is received but never utilized, challenged or further combined. In this work the methodology: Theory, Relationship and Experiment (TReE), is proposed and evaluated for teaching a Physics lab for non-physicists. Its objective is to support the students' development of relationships between concepts of mathematics, physics, and physics lab experiments. TReE was tested through a quasi-experiment with undergrad students of engineering and pre-med majors in one semester in a US University. The gains were evaluated through a microanalysis of tests to extract conceptual understanding. The performance of the treatment group was significantly higher that of the control group independently of the major. Also, the performance was not statistically different within the whole treatment group, showing the potential use of TReE to support the uniformity of training across all non-physics majors.

Yuri Piedrahita
Purdue University

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