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Teaching Resistance through an interactive gaming lab JAMES G. O'BRIEN, GREG SIROKMAN, FRANZ RUECKERT, DEREK CASCIO, Wentworth Inst of Tech — The use of gaming as an educational tool has proven to be an effective paradigm in modern pedagogy. Following the success of their previous work "Sector Vector," the authors present a new interactive game-based laboratory to highlight the basic manipulation and calculation of resistors in circuits. "Resistance is Futile" delivers the lesson of basic resistor combinations in a game based exercise where teams build a continually evolving circuit. As the game progresses, students must develop long and short term plans to modify an ever-changing circuit and meet primary and secondary objectives. Each turn requires quick calculations of resistor combinations and the assessment of future options. Students are also exposed to the creation of a modular circuit, which may not conform to standard textbook examples. To determine a winner, the students work together to analyze and evaluate a potentially complex final circuit diagram. The dynamic atmosphere and competitive nature established by the gaming environment have been shown to increase student engagement and concept retention. In this presentation, we will discuss both the structure of the lab-based game and the pedagogical implications this implementation versus the traditional resistor combination laboratory exercise.

Franz Rueckert
Wentworth Inst of Tech

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