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Comparison of Competence-Based Assessment and Traditional Assessment for Lab Activities in Physics for Engineers.

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The Physics and Engineering Physics department offers Electromagnetism and Waves as part of the "Re-Engineered"First year program. The First-year Engineering Team has introduced Competency-Based Assessment (CBA) to create a more constructive and supportive learning environment. An exploration into the application of CBA to the Physics labs was conducted to compare learning and grading outcomes for First-year Engineering Students. The CBA approach aims to make learning outcomes clear, provide feedback and the opportunity for correction and growth in the learning process. The teaching assistants were trained to provide coaching and feedback during lab activities, to provide feedback in real-time. Following the activity, students submitted their work online for assessment. The grading was categorized to target specific lab-based skill: record keeping, experiment procedure, data collection, analysis, conclusions and sources of error. Grading was completed using a traditional points reduction scheme, and student growth was evaluated using an algorithm: if the student grade improved in a category, the new grade was retained; if the grade went down, the new grade was calculated as a 60/40 weighted average of the first and second activities. The data collected allows for a direct comparison of the traditional grading scheme with the CBA approach.

Keyword-1

Comptency-based assessment

Keyword-2

Lab

Keyword-3

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