Effectiveness of Various Components of Student Evaluation
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In this study, the effectiveness of various components for evaluating students in a course has been studied. The components include assignment, quiz, lab study, project, midterm exam and final exam. This study was carried out on about three thousand engineering undergraduate students who took circuit courses in the Department of Electrical and Computer Engineering. The following three different evaluation models have been applied: a) assignment, quiz, lab study, midterm and final; b) project, quiz, lab study, midterm and final; and c) assignment, lab study, midterm and final. A careful analysis of this huge amount of data reveals that not all these components are correlated. In general, quizzes, midterms, and final exams are nicely correlated, but not the assignments and lab studies. This study is primarily focused on the effectiveness of assignments. For students with relatively higher GPA (B+ and above) the assignment marks are consistent with other components. But, it becomes highly inconsistent for the students with a relatively lower GPA. A mathematical model has been developed to find the impact of this inconsistency. Lab study is another component where most of the students usually get full marks. For some students it is even without really learning the materials. There are certainly clear learning objectives to giving assignments and lab studies in a course. Importantly, there are significant investments for these two components, which includes laboratory equipment, lab technicians, teaching assistants, instructor's time, students' time, and utility. This study reveals that such expensive investments in assignment and lab studies unfortunately do not return an effective output for all students, making the system overall inefficient. However, eliminating these two components does not appear to be a solution to this problem. Through this study, various models of assignment and lab study have been tested and proposed to improve the overall efficiency.