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Promoting Active Learning: The Use of Computational Software Programs TOM DICKINSON, Washington State University — The increased emphasis on active learning in essentially all disciplines is proving beneficial in terms of a student's depth of learning, retention, and completion of challenging courses. Formats labeled flipped, hybrid and blended facilitate face-to-face active learning. To be effective, students need to absorb a significant fraction of the course material prior to class, e.g., using online lectures and reading assignments. Getting students to assimilate and at least partially understand this material prior to class can be extremely difficult. As an aid to achieving this preparation as well as enhancing depth of understanding, we find the use of software programs such as Mathematica®or MatLab®, very helpful. We have written several Mathematica®applications and student exercises for use in a blended format two semester E&M course. Formats include tutorials, simulations, graded and non-graded quizzes, walk-through problems, exploration and interpretation exercises, and numerical solutions of complex problems. A good portion of this activity involves student-written code. We will discuss the efficacy of these applications, their role in promoting active learning, and the range of possible uses of this basic scheme in other classes.

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