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Combining Online Homework and In-Class Writing Prompts for Increased Conceptual

Understanding and Critical Thinking in Introductory Statistics.

Statisticians have noted the importance of teaching conceptual understanding rather than procedural knowledge in introductory statistics. Students should be able to evaluate differing statistical claims, demonstrating critical thinking skills. This particular combination of skills can be developed and assessed through a combination of 1) automatically graded, custom online homework, and 2) comparative free response writing prompts. In online homework, students are given immediate feedback, questions can be randomized so that each student receives a unique assignment, and multiple attempts create a learning experience that moves beyond summative assessment. Banks of conceptual questions, developed by the instructor over time, remove the ability to use search engines to find answers. In the same course, comparative free response questions are given in class. The grading load is minimal, but professors provide immediate feedback while assisting students in-class and then providing a model that would receive full-credit. Questions of the same format are given on exams and graded for accuracy. These questions are specifically aimed at increasing critical thinking skills, and require students to follow a clear four-sentence structure requiring them to support their conclusions. (Received September 21, 2016)