Implementation and Scalability Issues for Web-Based Assessment

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Abstract: This paper describes a web-based, test-authoring tool. Software features include a flexible environment for constructing on-line exams; scalability for both large and small groups of students; data collection capability (e.g., student response, response time, student confidence, and help requests); and printable test results. Questions are tied to one or more educational objectives; exams, based on these objectives, are then constructed using a specified subset of questions for all students or a random subset of questions for each student. The instructor, to enhance the usefulness of the final report as a study aid, can add detailed explanations for each question.

To date, the instrument has been used reliably in statistics courses (of ~20 students) as well as a freshman mathematics course (~1100 students). The tool has been used to create midterm pretests with study prescriptions, demographic surveys, and prerequisite-skill exams. Questions or output can include text, pictures, and/or interactive JAVA™ applets.