



### Computer-based Assessment Led by Dr. Tess Miller

Dr. Tess Miller completed her dissertation at Queen's University in January 2009. Her research focuses on assessment (classroom and large-scale) and mathematics education. She has specialized in quantitative methods (test theory and multivariate analysis). For her dissertation, Dr. Miller looked at the effectiveness of computer-based assessment--both the potentials and the pitfalls.

#### What is Computer-based Assessment (CBA)?

Computer-based assessment (CBA) is a method of administering tests in which responses are electronically recorded and/or assessed. There are many advantages of CBA systems over traditional pen and paper testing. CBA systems allow for increased delivery, more efficient administration and scoring, a higher level of consistency and reliability, and a faster and more controlled test revision process with shorter response time. A CBA system would also involve faster decision-making as the result of immediate scoring and reporting, unbiased test administration and scoring, fewer response errors, new advanced and flexible item types, and increased candidate acceptance and satisfaction. Many experts agree that CBA will play an increasingly important role in learning.

#### Purpose

Dr. Miller's work analyzed (a) how feedback was provided to students, (b) the effectiveness of differing types of feedback, and (c) the characteristics of items used for assessment. Two

formative CBAs were used in a School of Medicine and a Faculty of Education at a Canadian university. These assessments consisted of multiple choice, scenario-based questions, which were used to support student learning.

#### Conclusions

The case studies showed that feedback given to students immediately following an item was more effective, as the timing captured students' construction of knowledge. This confirmed what is known about channeling feedback on traditional pencil and paper assessments where immediate feedback was shown to be more effective than delayed feedback. What is important in this finding is that time lapse or delay in feedback in WebCT, for example, was short (i.e. at the end of the assessment) when compared to the delay in feedback provided by a classroom teacher on a pencil and paper assessment. Delay in feedback had an impact on students' perception of learning, rendering the feedback ineffective.



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