Design and test of a digital module for algebraic skills

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Our research focuses on the question in what way ICT can play a fruitful role in acquiring, practising and assessing algebraic skills. For this we first described desired characteristics of these tools (Bokhove & Drijvers, in press), and piloted the tool in one-to-one sessions. In line with our CADGME2009 presentation, we revised a digital module for algebraic skills with feedback and deployed it in two grade 12 groups. Student activity was recorded by means of log files. The module's characteristics are:

• It includes a paper-and-pencil pre- and post-test;
• Tasks were designed to acquire conceptual understanding in algebraic skills. We use the concept of symbol sense (Arcavi, 1994);
• Within sequences of tasks we used the concept of a crisis to force students into "deeper understanding";
• It is a web-based module that can be accessed anyplace, anytime;
• The module starts with tasks "with a lot of guidance" (e.g. feedback). During the module the amount of help diminishes so students are forced to perform on their own;
• Several feedback types, including movie clips and animations;
• The module uses randomization so students are presented with different tasks;

This presentation shows examples of the module's use and aforementioned characteristics. We will show how students used the module, what student behaviour they exhibited, as well as the role of feedback in the tool and module. We will provide insight into our analysis of the log files. Finally, we will sketch what we can learn from all of this for future revisions of the tool.

Arcavi, A. (1994). Symbol sense: informal sense-making in formal mathematics. For the Learning of Mathematics, 14(3), 24-35.
Bokhove, C., & Drijvers, P. (in press). Digital tools for algebra education: criteria and evaluation. International Journal of Computers for Mathematical Learning.