The Research Behind WriteToLearn: Building Student Summarization, Writing and Reading Comprehension Skills With Guided Practice and Automated Feedback

Overview

WriteToLearn™ is a Web-based teaching tool that combines summary and essay writing activities. Used for both instruction and assessment, WriteToLearn is the only writing development product that gives students the immediate, targeted feedback necessary to develop the reading comprehension and writing skills that are critical for academic success.

With WriteToLearn, students practice essay and summary writing skills, and their efforts are measured by the state-of-the-art Knowledge Analysis Technologies™ (KAT) engine. The KAT engine is a unique automated assessment technology that evaluates the meaning of text, not just grammatical correctness or spelling.

The summarization feature of WriteToLearn was first introduced to students in 2001 as "Summary Street." Summary Street was developed to help students build summarization skills and, ultimately, strengthen overall reading comprehension abilities. Using this component of WriteToLearn, students use their own words to write summaries of text they have read and receive immediate feedback. Student writing is measured by comparing it with the actual text, evaluating it based on content knowledge as well as writing mechanics, redundancy and relevancy. Teachers can select texts from content areas such as science, social studies and history. They can retrieve automated reports showing individual student progress as well as class results and have access to all revisions of student writing.

Researchers from the University of Colorado Institute of Cognitive Science evaluated the summarization tool over the course of a five-year study funded by the Interagency Education Research Initiative, a collaborative effort sponsored by the National Science Foundation, The U.S. Department of Education and the National Institutes of Health.

Research Results

In one study (Franzke, E. Kintsch, Caccamise, Johnson & Dooley, 2005), exposing students to only four weeks of practice, the students improved their content summary scores by an overall effect size of d = 0.9. This means that for a class of mixed-ability students, students scoring at the fiftieth percentile can improve their writing performance with difficult materials to the eighty-second percentile. When the performance of low- and medium-ability students (the lower 75 percent of the distribution) is considered, the effect size rises to d = 1.5 for the most difficult materials. (An effect size of 1.0 corresponds to approximately a one-grade difference in elementary school. An effect size of 1.5 is extremely rare in educational research.)
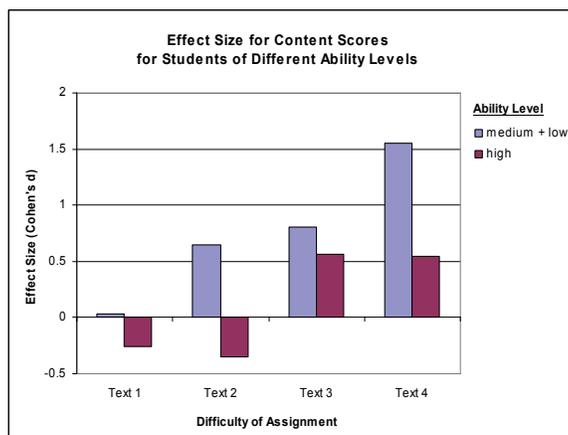
Effect sizes for summary content scores for low- and medium- (bottom 75 percent) vs. high-ability (top 25 percent) students. Based on 120 eighth-grade students randomly assigned to a control group with no feedback and an experimental group.

As corroborating evidence, independent scorers found increases not only in the student's ability to condense and abstract, but also in measures of organization and style. Repeated, guided practice led to improvement in writing ability across a broad range of measures. In an analysis of the long-term data (Caccamise, Franzke, Eckhoff, Kintsch & Kintsch, in press), the before and after summary performance of matched classes showed that the increase in performance endured even when students wrote without the support of the online tool. Students included 50 percent more relevant content in their test summaries after having used the tool in their school work. Finally, students who used the summarization tool increased their performance on gist-level comprehension items of a standardized comprehension test by an effect size of d = 0.42, compared with students who practiced summary writing without getting feedback.

The results of this work have been reported in refereed professional journals and conferences, and edited volumes (see Caccamise, Franzke, Eckhoff, Kintsch & Kintsch, in press; and Franzke, Kintsch, Caccamise, Johnson & Dooley, 2005).

Why WriteToLearn Builds Reading Comprehension Skills

As related research shows (e.g., Graham and Harris, 2005; or Patthey-Chavez, Matsumura, and Valdes, 2004), students benefit most from specific, immediate and individualized feedback on their writing performance, especially when it addresses the content as well as surface-level features, such as spelling and grammar. Individualized content feedback allows students to hone in on missing or misstated information and improve on their composition until they can meet pre-defined criteria. However, providing an environment with frequent, rich feedback opportunities is beyond the limits of typical classroom instruction and often beyond the limits of supportive parents or tutors. Both the summary and essay writing features of WriteToLearn provide this type of environment. Research on the use of the summarization tool in WriteToLearn demonstrates that this type of guided practice with immediate feedback helps students improve reading comprehension and writing skills.

For more information visit www.WriteToLearn.net.