Study finds a mouse that roars

WEB-BASED SOFTWARE HOLDS PROMISE FOR THE TEACHING OF WRITING
TO THOSE WITH LEARNING DISABILITIES

By Carla Thomas McClure

Results of a quasi-experimental study published in *Learning Disability Quarterly* demonstrate the potential benefits of using appropriate technology to help students with learning disabilities develop their writing. Study participants who received classroom instruction supported by a web-based software program increased the length and quality of their writing and outperformed students who received similar instruction supported by print products.

Why was the study conducted?

Writing happens at a high cognitive level and requires students to use various skills and processes to create a unique product. When Bloom's Taxonomy was revised in 2001, scholars reversed the order of the two hghest levels of cognition, placing "create" higher than "evaluate" (Anderson & Krathwohl, 2001). Results of the 2002 NAEP writing assessment show that many students are not performing well in writing — among those tested in Grades 4, 8, and 12, fewer than a third scored at or above the proficient level.

For students with learning disabilities, the cognitive demand associated with writing can have a negative effect on performance. Organizing and developing ideas in a structured and coherent manner can be especially challenging. Past research has established that effective instructional strategies include direct instruction on expository text structures, provision of organizational frameworks, such as graphic organizers, and the use of procedural facilitators, such as

prompts or simple outlines to scaffold the writing experience. Researchers at Michigan State University decided to investigate "the potential of web-based programs to support and scaffold the writing performance of students with disabilities."

How was the study done?

Participating in the study were 35 students who received writing assistance in six special education classrooms in five urban elementary schools. In the experimental group, 20 students produced expository papers after instruction supported by TELE-Web software. In the control group, 15 students wrote papers after receiving similar instruction supported by traditional scaffolding that paralleled that offered by the software. Before the experiment, researchers had confirmed that there were no significant differences between the two groups on measures of reading levels and prewriting performance.

Teachers in both groups followed identical instructions and processes. The main difference between the two groups was that the TELE-Web teachers "guided and modeled the process using the TELE-Web software." This software included interactive mapping tools, as opposed to paper-and-pencil concept maps. It allowed students to click and drag details from their maps to an organizer. Also, pop-up prompts, as opposed to oral directions and written reminders in the form of posters, were used to structure the writing process. The TELE-Web group also had access to

a spelling checker and a text-to-speech function that enabled the computer to "read aloud" what the student had written.

Students' final products were typed, and each product was scored by two trained raters on six primary writing traits related to organization and development. On each trait, the writing was rated as underdeveloped, emerging, developing, or proficient. Students' use of writing conventions, such as spelling and punctuation, were also rated.

What were the results?

Students who used the web-based software to plan and organize their ideas produced longer, more coherent pieces than students who used paper-and-pencil tools, and their writing received significantly higher ratings on the primary traits associated with writing quality.

Why did the software make such a difference?

Students with learning disabilities often have difficulty recognizing text structures, remembering instructions, and applying strategies. The software used in this study "seemed to allow students to offload some of the strategic requirements of the writing process onto the machine"

and acted as "a cognitive anchor or training wheels" that helped students follow the pattern of expository writing.

Can good software replace good teaching?

No. "It is important to realize that TELE-Web did not teach," say the researchers. Rather, it supplemented effective instruction. The research team also cautions that such aids must match the developmental needs of individual students. For example, instructional scaffolds or technologies may constrain rather than help students who are already familiar with text structures.

References

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