Research: The Error Monitoring Strategy

Study 1 - Overview
The purpose of this study was to evaluate the effects of instruction in the Error Monitoring Strategy on the ability of students with LD to detect and correct errors in their own and others' written work. Four types of errors were the focus: capitalization, overall appearance, punctuation, and spelling. Nine students in grades 8 through 12 participated. Before instruction, their standardized writing scores ranged from the second- through eighth-grade levels. They were instructed in a small-group setting by a researcher who was a certified special education teacher. A multiple-baseline across-students design was used. Repeated measures were gathered from two types of tests. For the first type, students were given a teacher-generated written passage containing 20 errors (5 of each of the four error types). They were asked to detect and correct the errors in the passage. Passages were written at either the student's reading ability level or grade level. For the second type of test, students were required to write a paragraph, review it for errors, and correct any errors they found.

Results
The results of the study showed that during baseline, students were able to detect an average of 29% of the errors and correct an average of 26% of the errors in ability-level teacher-generated passages, and they could detect an average of 31% and correct an average of 29% of the errors in grade-level teacher-generated passages. After training, they were able to detect and correct an average of 92% of the errors in ability-level passages, and they could detect and correct an average of 97% of the errors in grade-level passages.

During baseline, in their own writing, the students were making about one error for every 4 words; after training, they made a mean of one error for every 33 words. Students showed improvement only after instruction was implemented.

Students reached mastery in about 7 1/2 hours of instructional time. No student required practice in teacher-generated passages written at their grade level; in all cases, they met mastery on the grade-level passages on the first attempt. The number of practice attempts on teacher-generated ability-level passages ranged from 2 to 6 (M = 3); the number of practice attempts on student-generated passages ranged from 1 to 2 (M = 1.5).

Conclusions
This study showed that students with LD can learn to detect and correct four types of errors in their own writing and in the writing of others in a relatively short amount of Instructional time, given small-group instruction. It also showed that they could immediately generalize the use of the strategy from passages written at their reading ability level to passages written at their grade level and within one or two trials to their own writing.

Reference
Schumaker, J. B., Deshler, D. D., Alley, G. R., Warner, M. M., Clark, F. L., & Nolan, S. (1982). Error Monitoring: A learning strategy for improving adolescent academic performance (pp. 170-183). In W. M. Cruickshank and J. W. Lerner (Eds.), Best of ACLD, Vol. 3. Syracuse: Syracuse University Press.

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Study 2 - Overview

This study focused on the instruction of four writing strategies within a resource room program by the regularly assigned special education teacher. The writing strategies were taught across the course of a full school year. General education English and social studies teachers were recruited to give writing assignments in their classes to provide measures of generalization. Seven participating high school students with LD who had not been enrolled in general education courses in the past were enrolled in these English and social studies classes at the beginning of the school year. The students were first taught the Sentence Writing Strategy (Schumaker & Sheldon, 1985) by their special education teacher in the resource room. Next, the students learned the Paragraph Writing Strategy (Schumaker & Lyerla, 1991). Subsequently, they learned how to detect and correct errors in their writing by learning the Error Monitoring Strategy (Schumaker, Nolan, & Deshler, 1985). Finally, they learned the Theme Writing Strategy (Schumaker, 2003). Throughout the instruction, the students' writing performance in both the resource room and in the targeted general education classes was monitored. That is, every time they wrote a paragraph or an essay in any of the targeted settings, the product was scored for the types of sentences used, the organization of the paragraph, the number of errors, and the organization of the essay. A multiple-probe across-strategies design was employed.

Results

The seven students made an average of .27 errors per word (i.e., about one error every 3 words) in their written assignments during baseline and an average of .04 errors per word (i.e., about one error every 20 words) after instruction on products written in the resource room and in general education classes. The multiple-baseline across-strategies design demonstrated that each student made gains on pertinent measures only after instruction began for each strategy.

Five of the students made the same kinds of gains on their writing assignments in general education classes as they did in the resource room, even though they had not been taught to use the writing strategies in those settings. The two students who did not generalize their use of the strategies to other classes did so quickly after they had been taught to do so.

Before the study, the students' GPA was 2.1 in special English and social studies courses designed for low-achieving students and students with disabilities; after the study, their GPA was 2.7 in regular-track general education English and social studies courses.

On a standardized test of writing instruction, the Woodcock Johnson Psychoeducational Battery, the students' mean grade-equivalent score increased by two grade levels from 6.2 to 8.2. On the district's minimal competency writing exam, the students earned a mean overall score of 3.5 (out of 5.0), which compared favorably to the mean overall district average of 2.5. With regard to maintenance of strategy usage, the four students who returned to the school the following school year and who had learned all the strategies demonstrated that they could write organized paragraphs in their general education classes at mastery levels.

Conclusions

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Conclusions

Thus, this study demonstrated that high school students with LD could learn the Error Monitoring Strategy in a resource room program when instructed by their regularly assigned special education teacher. It also showed that they could generalize their use of the Error Monitoring Strategy to assignments given in their required general education courses and that they could maintain their use of the strategy across several months. It also showed that strategy instruction was associated with growth in standardized writing test scores and produced favorable writing competency test scores.

Reference

Schmidt, J. L. (1983). The effects of four generalization conditions on learning disabled adolescents' written language performance in the regular classroom. Unpublished doctoral dissertation. University of Kansas, Lawrence.

Schmidt, J. L., Deshler, D. D., Schumaker, J. B., & Alley, G. R. (1989). Effects of generalization instruction on the written language performance of adolescents with learning disabilities in the mainstream classroom. Reading, Writing, and Learning Disabilities, 4(4), 291-309.

Study 3 - Overview

In this study, two writing strategies were taught in a 10th-grade English class containing 31 students. A comparison class contained 25 students. Three students with disabilities, three high-achieving students, and three low-achieving students within each class served as targeted subjects for the multiple-probe across-strategies design. The students in the experimental class received instruction in the Sentence Writing Strategy and then the Error Monitoring Strategy through the use of the eight-stage strategic instructional methodology combined with cooperative-group structures. Students in the comparison class received traditional writing instruction. Each time the students wrote a paragraph, an error-monitoring score was calculated (the total number of errors divided by the total number of words in the paragraph multiplied by 100 and then subtracted from 100). The maximum score was 100.

Results

At the beginning of the study, the targeted students with LD in the experimental class earned an average error-monitoring score of 78, and those in the comparison class earned an average score of 62. Low-achieving students in the experimental class earned an average score of 72, and those in the comparison class earned an average score of 70. All students in the experimental class earned an average score of 86 and all students in the comparison class earned an average score of 85.

All the targeted students in the experimental class mastered the Error Monitoring Strategy after the instruction as shown by the multiple-probe design. After the instruction, the experimental students with LD earned an average score of 92, and the comparison students with LD earned an average score of 65. The experimental low-achieving students earned an average score of 80, and the comparison low-achieving students earned an average score of 66. Also, after instruction, all the experimental students earned an average score of 95.

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Conclusions

This study showed that writing strategies can be taught in an inclusive general education high school class in such a way that students with LD and low-achieving students can master the strategy and make substantial gains in their writing skills. However, a caution is in order here: these results were achieved when the eight- stage instructional methodology for teaching learning strategies was used, and students had multiple opportunities to practice using the strategy. Peers within the cooperative groups provided help and feedback to those students who needed it, and the cooperative-group structure was tailored to ensure that all students mastered the strategy (i.e., points were awarded to individual students according to how well all members of the group performed).

Reference

Beals, V. L. (1983). The effects of large group instruction on the acquisition of specific learning strategies by learning disabled adolescents. Unpublished doctoral dissertation, University of Kansas, Lawrence.

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