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Using Reasoning and Writing to Teach Writing Skills to Students With Learning Disabilities and Behavioral Disorders

Abstract: Ten students with Learning Disabilities (LD) or Behavioral Disorders (BD) were taught in a special education resource room using *Reasoning and Writing* (*Level C*) for a period of 6 weeks. Students were given a pretest and posttest using the Spontaneous Writing component of the Test of Written Language-2 (TOWL-2). Results were analyzed for each individual and for the group as a whole. Six of the 10 students made substantial gains in excess of one half standard deviation on the Spontaneous Writing Quotient. As a group, students made large and statistically significant gains on this overall measure and three of its five components. These results suggest that a relatively brief intervention with *Reasoning and Writing, Level C*, had a substantial positive impact on these students' writing skills.

Writing is a critical skill for success in school. Students are commonly required to demonstrate content mastery and academic competence through essays and other forms of expository and narrative prose. In addition, many states require competence in written expression as a condition for graduation from high school. Students with mild disabilities often exhibit severe deficits in written language when compared to their nondisabled peers. They typically spend less time planning (Englert & Thomas, 1987); are unable to generate multiple statements about a topic, even when the topic choice is their own and quite familiar to them (Englert & Thomas, 1987; Thomas, Englert, & Gregg, 1987); make only surface revisions to their writing (Graham & MacArthur, 1988); produce fewer words and sentences (Gajar, 1989; Houck & Billingsley, 1989; Nodine, Barenbaum, & Newcomer, 1985); use less complex syntactic structures and make more syntactical errors (Anderson, 1982; Morris & Crump, 1982); make more errors in spelling, capitalization, and punctuation (Houck & Billingsley, 1989; Shinn, Ysseldyke, Deno, & Tindal, 1986); use less sophisticated and original vocabulary (Houck & Billingsley, 1989; Morris & Crump, 1982); and exhibit less sensitivity to text structures of narrative and expository compositions (Englert & Thomas, 1987; Nodine, et al., 1988).

Kameenui and Simmons (1990) discuss the importance of written expression: "From the low performer to the university graduate student, written expression is the most complex of language skills. In the hierarchy of language skills, it is the last to develop in the sequence of listening, speaking, reading, and writing. As a fundamental means of communicating information in the academic areas, it cannot be ignored" (p. 420). According to Graham and Harris (1988), it is not enough to add extra knowledge and skills to existing oral language abilities. The developing writer must master the process of generating language in the absence of a conversational partner.

Journal of Direct Instruction, Vol. 2, No. 1, pp. 49–55.

Additionally, they must learn to activate relevant memories without prompting, develop larger units of text than generally included in one conversational turn, and cultivate the ability to view what is produced from the perspective of both the sender and the receiver.

Because of its importance and complexity, "teachers are responsible for helping learners to acquire and master writing skills, enabling them to satisfy academic and social uses of written language. For students to learn to write, they will need explicit instruction" (Kameenui & Simmons, 1990, p. 421). Unfortunately, many teachers are unprepared to teach writing. Most teacher education programs do not offer courses in writing instruction (Shanahan, 1980), and basal programs for teaching writing provide little guidance regarding appropriate instructional procedures (Isaacson, 1987). In addition to the lack of teacher expertise in this area, many students with mild disabilities have little opportunity to practice their writing skills. Leinhardt, Zigmond, and Cooley (1981) found that many students with learning disabilities spend less than 10 min per day engaged in writing.

The complexity of written language also makes it difficult to determine exactly what to teach. Should we limit instruction to merely answering questions or writing a grammatically correct sentence? Or should students' writing be viewed as a form of communication, self-expression, and a means by which the students can apply inductive and deductive reasoning to the development of a personal set of values (Moran, 1987)? Written expression not only encompasses grammar, punctuation, syntax, and semantic skills, but also communication, reasoning, planning, and organizational skills. These skills must be taught to students, especially students with disabilities. Writing will play an important role in the student's life whether college or the workplace follows the completion of high school. Written communication is a valuable, lifelong skill.

Direct Instruction (DI) is one model for providing systematic instruction to students with and without disabilities (Engelmann & Carnine, 1982). DI provides instruction that is highly structured and organized so students learn sequentially. The DI Model has five major components: (a) a consistent focus on academic objectives; (b) small group instruction; (c) a carefully sequenced instructional program that focuses on big ideas and uses instructional design principles that accommodate diverse learners (Kameenui & Carnine, 1998); (d) on-going inservice and preservice training that offers concrete, hands-on solutions to problems that arise in the classroom; and (e) a comprehensive system for monitoring both the rate students progress through the curriculum and their mastery of the material covered (Adams & Engelmann, 1996; Meyer, 1984; Meyer, Gersten, & Gutkin, 1983).

All DI materials provide a scripted teacher presentation for each lesson. Student materials are coordinated with the teacher presentation books. As one level of material is completed, a subsequent level is introduced. The materials are sequenced by current levels of achievement rather than by grade. A natural and consistent flow of student progress and learning is easily attained from one lesson to another, from a teacher to substitute teacher, and from one grade to the next by the careful sequencing and exact scripting of the lessons. The DI Model also provides the teacher with specific ways to correct errors made by students (Meyer, et al., 1983).

Recently, Engelmann and his associates developed a DI program in written expression: the *Reasoning and Writing* program (Engelmann & Silbert, 1991). The purpose of the present study was to determine whether students with LD and BD would make significant gains in written language after using the *Reasoning and Writing* program for a 6-week period. A second question was whether students with LD and BD would perform at a level comparable to nondisabled peers in the general education classroom on the posttest of the norm-referenced measure.

Method

Participants and Setting

The participants in this project included six students with LD, four students with BD, and one student with both LD and BD. All students were enrolled in a special education resource room for students with mild disabilities and also in a general education fourth- or fifth-grade class. All participants received special education services in the area of written expression. The students with LD were diagnosed as having specific learning disabilities in the area of written expression based on Georgia's criteria: the scores of two achievement tests were 20 or more standard score points below the student's intelligence quotient. The students with BD were functioning on approximately the same level in the area of written expression as the students with LD. All testing and instruction was performed in the special education resource room in a public elementary school. The teacher was certified to teach students with learning disabilities, behavior disorders, and mild intellectual disabilities, and had 8 years of teaching experience. She completed this project as part of an Educational Specialist Degree program in Special Education.

Materials

Materials for the *Reasoning and Writing, Level C* (Engelmann & Silbert, 1991) program include (a) Teacher's Presentation Book, (b) Teacher's Guide, (c) Answer Key, (d) Student Textbooks, and (e) Student Workbooks.

Measures

The Spontaneous Writing Scale of the TOWL-2 (Hammill & Larsen, 1988) was used for both pre and posttests. This scale consists of five sets of criteria (subtests) that are applied to a writing sample. The writing sample is prompted by a picture and instructions to plan and write a story about the picture. The test has two different pictures so that students can be pre and posttested without excessive testing effects. The five subtests of the Spontaneous Writing Scale are: (a) Thematic Maturity, (b) Contextual Vocabulary, (c) Syntactic Maturity, (d) Contextual Spelling, and (e) Contextual Style. This measure was selected because (a) it required students to write an entire story rather than completing editing exercises, and (b) there was not enough time to administer both the Spontaneous and Contrived sections of the TOWL-2. For two students, the TOWL-3 (Hammill & Larsen, 1996) Spontaneous Writing Scale was administered again at the beginning of the next school year as a maintenance measure. Both the TOWL-2 and TOWL-3 Spontaneous Writing scores are quotients with a mean of 100 and a standard deviation of 15. The TOWL-2 provides annual norms. That is, it compares individuals' scores to students in the norm group who were 9, 10, 11, 12, and so on. Since the study was relatively short, both their pretests and posttests were compared to the same norm group. Therefore, we would expect to see gain in test scores over time. To ensure reliability in the scoring of the TOWL-2 and TOWL-3, all tests were scored by both the resource room teacher and by a university faculty member.

Procedures

All students were administered group pre and posttests using the Spontaneous Writing Scale of the TOWL-2. The posttest also was administered to a group of fourth- and fifth-grade general education students as a comparison group at the end of the study. Holistic writing scores also were collected from Georgia Curriculum-Based Assessment in Writing for the five 5th-grade students who participated in the program.

Reasoning and Writing lessons were presented each school day, using Lessons 1 through 25 of the *Level C* program. Each lesson lasted approximately 35 to 50 min. The teacher continued to present additional lessons of the *Reasoning and Writing* program after the completion of this study.

Treatment fidelity was maintained during instruction by following the script as written in the Teacher's Guide. To ensure treatment fidelity, a university faculty member observed 2 days during the presentation of lessons. Several teacher behaviors were observed: (a) deviations from the program script, (b) signaling, (c) unison responding, and (d) appropriate correction procedures.

Experimental Design

A pretest/posttest design was used to assess whether students made meaningful gains on the TOWL-2 Spontaneous Writing Scale. Comparisons also were made between TOWL-2 posttests of students participating in the *Reasoning and Writing* program and the TOWL-2 scores of students from general education fourth- and fifth-grade classes.

Results

The purpose of this study was two-fold. First, we wanted to determine if students with LD and BD would make significant gains on a norm-referenced written language test after using the *Reasoning and Writing* Direct Instruction writing program for a 6-week period. A second question was whether students with LD and BD would compare to age-level peers in the general education classroom on the posttest norm-referenced measure.

Program Effectiveness

TOWL-2 Spontaneous Writing Scale quotient scores for pre and posttests are shown in Table 1. One student was absent during the posttesting; results for the 10 students with complete scores are reported. Students began the study with very poor writing skills. Only 1 student (C) achieved a score above the 20th percentile on the pretest, and 6 of the 10 students scored below the 10th percentile on the pretest. The average pretest quotient of 75.7 corresponds with the 5th percentile.

In general, there was substantial improvement from the pretest to the posttest. Of the 10 students with complete scores, 7 showed gains and 3 showed losses (one of the losses was only one point.) Six of the 7 students who

Table 1

TOWL-2 Pre and Posttest Scores

		Pre		Post		Change
	Grade	Quotient	P.R.	Quotient	P.R.	Quotient
A	4	73	4	85	16	12
B	4	63	1	85	16	22
C	4	103	58	93	32	-10
D	4	82	12	81	10	-1
E	4	64	1	75	5	11
F	5	67	1	75	5	8
G	5	70	2	85	16	15
H	5	86	18	78	7	-8
I	5	67	1	100	50	33
J	5	82	12	88	21	6
Mean		75.7	84.5	8.8		

made gains showed improvements of more than one half of a standard deviation (i.e., gains of more than 7.5 quotient points). Three of the students made gains of one entire standard deviation or more. On the posttest, the students achieved an average quotient score of 84.5 (16th percentile), an average gain of 8.8 quotient points.

On average, students made improvements in each of the subtests that contribute to the overall Spontaneous Writing Quotient. Table 2 shows average changes on the overall scale and the subtests. Effect size, shown in the second column is the difference between means (post–pre) divided by the pooled standard deviation. The overall Spontaneous Writing Quotient and the Syntactic Maturity, Contextual Spelling, and Contextual Style subtests all showed large changes of more than 0.40. On the Thematic Maturity subtest, students made an average gain of small to moderate size; and on the Contextual Vocabulary subtest, they made near zero change. Dependent *t* tests were computed on each of these scales to determine whether the gains were larger than those that would be anticipated due to chance. Statistically significant gains ($p < .05$) were obtained for the overall Spontaneous Writing Quotient and for three of the five subtests. The third and fourth columns of Table 2 show *t*-values and probability levels for each of these comparisons.

Discussion

There are many examples in the research literature of using DI to facilitate instruction and achievement for students (Adams & Engelmann, 1996; Gersten, Becker, Hiery, & White, 1984; Lloyd, Cullinan, Heins, & Epstein, 1980; Meyer, et al., 1983; Meyer, 1984; Polloway, Epstein, Patton, & Ball, 1986; Watkins, 1988). The purpose of this study was to determine whether students with LD and BD taught using *Reasoning and Writing, Level C* could make substantial gains on a norm-referenced standardized test of writing.

Given only 6 weeks of instruction, the students with LD and BD involved in the project made statistically significant and educationally important gains on the Spontaneous Writing Quotient, Syntactic Maturity subtest, Contextual Style subtest, and Contextual

Table 2

Effect Sizes and t tests for Difference Between Pretest and Posttest on TOWL-2 Spontaneous Writing Quotient and Subtest Standard Scores

Scale	*Effect Size*†	*t*-value	*p*-value
Spontaneous Writing Quotient	0.47	2.12	0.03*
Thematic Maturity Subtest	0.23	1.04	0.16
Contextual Vocabulary Subtest	0.08	0.34	0.37
Syntactic Maturity Subtest	0.48	2.18	0.03*
Contextual Spelling Subtest	0.45	2.02	0.04*
Contextual Style Subtest	0.44	1.99	0.04*

†Hedges G (Rosenthal, 1994)
* $p < .05$

Spelling subtest of the TOWL-2. One of the two subtests for which significant gains were not made was the Thematic Maturity subtest which involves naming characters, setting, plot, themes, and descriptions. These are all higher level or abstract items, which were not explicitly taught in the first 25 lessons of *Reasoning and Writing, Level C*. The other subtest in which a significant gain was not made was the Contextual Vocabulary, in which words with seven or more letters were counted. Again, vocabulary was not explicitly taught in *Reasoning and Writing*. After using the *Reasoning and Writing* program every day, the students appeared to become more accustomed to, and comfortable with, writing. Students frequently commented to the teacher that they enjoyed the lessons in the program and felt that their writing had improved.

Two 4th-grade students were administered the TOWL-3 at the beginning of the next school year and continued to make gains on this norm-referenced measure. It was administered approximately 1 year after the initial pretest was given, and each of these students made gains of more than 30 quotient points. Given that these scores are norm-referenced, they are not likely to change unless significant progress is made.

From these results, it is evident that using the *Reasoning and Writing* program was successful in teaching students written expression skills. However, several difficulties arose early in the implementation. These difficulties were easily resolved, but could have been important barriers to teachers who were not initially committed to making the program work. First, the program requires homogeneous groups and initial lessons took 35 to 50 min. Because of the nature of the resource class, it was very difficult to schedule an hour when all of the students who needed the program could attend. However, as the teacher and students became more accustomed to the program, the time required to complete each lesson diminished slightly. Second, following the script was initially difficult for the instructor; however, she soon found that students were more attentive to the lessons because of the scripted lessons. She believed that the program improved not only their written expression, but also their listening skills.

Because of the success of this study, future studies of this type are recommended. It would be interesting to examine the degree to which students with LD and BD generalize written expression skills to written work in general education classrooms. General educators could sample reports, projects, or any other written work done in their classrooms by these students. The samples could be subjected to a curriculum-based analysis of skills learned, as well as a holistic evaluation. *Reasoning and Writing* was designed as a general education curriculum; it would be interesting to implement the program in a general education classroom including students with disabilities to determine if both general and special education students would make similar gains to those seen in this study.

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