American Educational Research Journal
Summer 1991, Vol. 28, No. 2, pp. 337–372

Making Strategies and Self-Talk Visible: Writing Instruction in Regular and Special Education Classrooms

Carol Sue Englert, Taffy E. Raphael, Linda M. Anderson
Helene M. Anthony, and Dannelle D. Stevens
Michigan State University

Expository writing is an important skill in the upper-elementary and secondary grades. Yet few studies have examined the effects of interventions designed to increase students' expository writing abilities and their ability to generalize their knowledge to write expository texts using novel text structures. The present study examined the effects of an intervention that attempted to improve students' expository writing abilities through an instructional emphasis on teacher and student dialogues about expository writing strategies, text structure processes, and self-regulated learning. The findings suggested that the dialogic instruction was effective (a) in promoting students' expository writing abilities on two text structures taught during the intervention (explanation and comparison/contrast) and (b) in leading to improved abilities on a near transfer activity, in which students wrote using a text structure not taught during the intervention. Although students in the control group exhibited some pretest-posttest gains on specific text structures, they were not successful in using their knowledge to write about student-selected topics and text structures. The results support the importance of instruction that makes the writing processes and strategies visible to students through teacher-student and student-student dialogues.

CAROL SUE ENGLERT is an associate professor in the College of Education, 334 Erickson Hall, Michigan State University (MSU), East Lansing, MI 48824–1034. She specializes in literacy instruction for at-risk and special education students.

TAFFY E. RAPHAEL, a professor in MSU's College of Education, specializes in classroom discourse during literacy instruction and instructional research.

LINDA M. ANDERSON, an associate professor in MSU's College of Education, specializes in research on teaching and teacher learning.

HELENE M. ANTHONY and DANNELLE D. STEVENS are doctoral candidates in MSU's College of Education.

To develop expository writing abilities, students need instruction in the processes of writing and in the structures that underlie well-formed texts. Previous research suggests that students benefit from instruction in both the writing process (Graves, 1983; Graves & Hansen, 1983) and text structures (Fitzgerald & Teasley, 1989; Gordon & Braun, 1985; Graham & Harris, 1989; Raphael & Englert, 1990; Taylor & Beach, 1984), especially when instruction focuses on the mental processes and strategies that guide writers (Englert & Raphael, 1989).

Among students who are less successful, students with learning disabilities experience some of the most serious deficits in written language, particularly in expository writing. These deficits include the metacognitive knowledge related to the processes by which writers plan, draft, monitor, and revise expository text (Englert, Raphael, Fear, & Anderson, 1988) and the ability to use text structures in written language to produce well-organized text (Englert, Raphael, Anderson, Gregg, & Anthony, 1989; Englert & Thomas, 1987). Without such knowledge and abilities, many mildly handicapped students have difficulty producing coherent text. Further, these students are likely to be dependent upon teachers to cue appropriate strategies and monitor their writing performance. At issue, thus, is how to best help these students to develop the requisite knowledge about written language and strategies for production.

Related literature suggests that instruction should emphasize several facets of written language. First, to encourage independence, the character of instruction itself must be such that it transfers control for self-regulation from teachers to students. Instructional research in reading comprehension (e.g., Palincsar & Brown, 1984) suggests this may best be accomplished through classroom dialogues that focus upon the writer's inner thinking and the writing process. Second, writing instruction needs to make the processes of writing and the strategies for performing the processes visible to students (Raphael & Englert, 1990). Third, instruction should emphasize text structures that underlie well-formed expository text (Gordon & Braun, 1985; Meyer, Brandt, & Bluth, 1980; Taylor & Beach, 1984).

Implicit, also, in the notion of effective instruction is the development of students' metacognitive awareness and self-regulation of writing strategies. Mature writers systematically activate and use strategies for engaging in the processes of writing as they create text; they consider their audience and purposes, and ways to structure text to facilitate both reader understanding and the accomplishment of their own goals. The ability to successfully self-activate and self-monitor strategies is related to the development of students' metacognition (Paris, Lipson, & Wixson, 1983).

Instructional Features

In this section, three features that characterize good strategy instruction and that formed the basis for the design of an instructional intervention to im-

prove expository writing abilities are considered: an emphasis on dialogue related to writing, the provision of scaffolded instruction, and the transformation of writing from a solitary to a collaborative activity.

Emphasizing the role of dialogue in writing development. Effective strategy instruction involves the development of language tools and an inner dialogue for talking to oneself about one's writing, talking to others, and "listening as one's writing talks back" (Daiute, 1985). Mature writers conduct an inner dialogue about the text and its content, the writing process, and the structure of text as they mutter to themselves when they encounter a complex problem, instruct themselves in how to solve the problem, and self-monitor to determine the outcome (Daiute, 1985; Dyson, 1987).

According to Vygotsky (1978), inner speech is as important as action in planning and regulating one's activity. Inner or egocentric speech emerges first in a social dialogue that takes place between an adult or more knowledgeable language user and a learner. Initially, the adult models much of the inner dialogue while completing most of the required actions in the cognitive process. However, as a social and collaborative exchange, learners soon participate by assuming responsibility for those aspects of the dialogue or actions for which they are capable. Once the learner engages in the ongoing social dialogue, it becomes internalized as private speech spoken aloud to direct one's cognitive activity. Finally, this private speech gives way to inner, self-guiding speech which is covert and automatized, requring little conscious thought.

This literature suggests that good strategy instruction in writing emphasizes social speech and conversation among teachers and students in the context of composing text. Teachers have responsibility to model writing strategies as they "think aloud" to make visible the normally invisible cognitive processes related to planning, drafting, and revising text. This ensures that students not only see the writing products produced by the more expert and knowledgeable writer, but see the actions and hear the inner dialogue that the skilled writer uses to direct and monitor writing behavior. Equally important, students need to be invited to participate in this collaborative social dialogue as they take increasing responsibility for the inner speech and actions in the writing process. Through such collaborative and dialogic exchanges with teachers, students begin to internalize processes central to Vygotsky's notion of cognitive development as the social collaboration gives way to internal collaboration with oneself (Wertsch, 1980).

Providing scaffolded instruction. Second, effective strategy instruction includes the temporary and adjustable support needed to scaffold the learners' development of new skills and abilities (Tharp & Gallimore, 1988). Good strategy instruction consists of assisted teaching in which teachers provide a temporary support that bridges the gap between the child's ac-

tual developmental level and that required for independent problem-solving, a gap that Vygotsky (1978) refers to as the zone of proximal development. The bridge can be considered a scaffold insofar as it provides "temporary support," and it is continually "adjusted" so that the students can accomplish their goals. Instructional scaffolding does not alter the task for students; rather, it holds the task constant while adjusting the nature of students' participation through graduated assistance (Greenfield, 1984).

Teachers scaffold learning in various ways. For example, teachers scaffold the performance of students who have difficulty activating background knowledge by asking a series of graduated questions that help them retrieve relevant information; teachers can scaffold performance during editing by coaching and leading the dialogue for a student who fails to monitor his paper for distortions of meaning. In this manner, teachers act as coaches who provide tips, strategies, dialogue, and cues that "rouse to life" the strategies and processes necessary for independent problem-solving (Tharp & Gallimore, 1988).

A second way teachers scaffold learning is through procedural facilitation, a more formal way to help students carry out sophisticated composing strategies (Scardamalia & Bereiter, 1986). For example, Scardamalia and Bereiter (1983) provided students with a series of written prompts on cue cards that helped them organize and sequence their thoughts and actions during editing and revising. Similarly, Englert and Raphael (1989) describe the use of "think-sheets" that consisted of prompts to activate writing strategies for planning, organizing, drafting, editing, and revising. Procedural facilitation can help students execute strategies even though students may not be completely aware of how they fit into a cognitive framework. Thus, procedural facilitation, as with other types of instructional scaffolding, can cue strategy use and help students emulate the performance of mature writers, in spite of their less advanced developmental levels (Scardamalia & Bereiter, 1986).

Transforming solitary writing into a collaborative activity. Finally, effective strategy instruction in writing is based upon an understanding that writing involves an interaction of readers and writers in a literacy community (Nystrand, 1989). A literacy community is created when writers and authors conference frequently, such as when they discuss their plans or drafts with peers. Through this dialogue, peers silently but effectively represent the needs of the audience and make the concept of audience visible. As readers of other students' drafts, students begin to adopt the perspective of readers, and learn to talk to themselves and others about the content, form, and creation of the text (Daiute, 1985).

Thus, participation in a writing community contributes to the overall success of the strategy instruction through two means. First, as students talk to others about their writing, they practice the inner dialogue of the writer, with opportunities for peers to monitor as well as provide feedback

and assistance. Second, peer collaboration provides opportunities for authors and peers to work together in meaningful problem-solving activities. Collaboration requires that students resolve problems that a single student might not have been able to solve alone. In the process, students benefit from hearing writing alternatives and strategies proposed by peers, internalize their audience's perspective, and problem-solve with other writers to generate alternative responses to writing problems (Rowe, 1989).

The Writing Curriculum

Thus far, we have focused upon three effective teaching principles for strategy instruction in writing. However, implicit in the notion of effective instruction and dialogue is the content of the instruction and dialogue itself. Research suggests that good writing instruction provides students with insight into the writing process, and helps students scaffold the organization of their ideas through instruction in text structures (Flower & Hayes, 1981; Hayes & Flower, 1987; Raphael, Englert, & Kirschner, 1986, 1989).

Writing is a complex process that must be regulated by writers themselves (Flower & Hayes, 1981; Hayes & Flower, 1987). The process of planning a paper, for example, involves several thinking and self-questioning strategies, such as identifying one's audience ("Whom am I writing for?"), determining one's purpose ("Why am I writing this?"), activating background knowledge ("What do I know about my topic?"), and organizing brainstormed ideas ("How can I group my ideas?"). During drafting, writers take the ideas gathered in planning and translate those ideas to conform to their audience and purpose; relevant ideas are included and expanded in the written draft, while irrelevant ideas are discarded. During editing, writers edit their draft to ensure that writing objectives are met, giving attention to their intended audience ("What questions do my readers have?" "Does everything make sense?") and to their purpose ("Did I accomplish my plan?). Finally, in revising, students implement their editing plans to add, delete, substitute, and modify their textual ideas. This literature suggests that writing instruction must further students' metacognitive knowledge of the strategies and self-talk for planning, organizing, drafting, editing, and revising their ideas. Accordingly, writing curricula must be designed to cue appropriate strategy use related to planning, drafting, editing, and revising expository texts.

In addition to knowledge of the writing process, good writers possess knowledge of how ideas can be subsumed into the organizational patterns that represent text structures, such as explanations and comparison/contrast texts (Meyer, 1975; Meyer & Freedle, 1984). Research suggests that knowledge of text structure is positively related to writing ability (Hillocks, 1986), and further suggests that teaching learning disabled students about the structures in narrative text can improve their story writing ability (Graham & Harris, 1989; Graham & Harris, in press; Harris & Graham, 1985).

Although similar research with expository text structures has yet to be conducted, such instruction would seem to have potentially powerful effects on LD (learning disabled) students, given their insensitivity to expository text structures in writing and reading (Thomas, Englert, & Gregg, 1988) and their difficulties in organizing ideas on text construction tasks (Englert & Thomas, 1987; Wong & Wilson, 1984). Thus, instruction in text structures would seem to be a viable instructional tool in the instruction of expository writing. Effective instruction and curricula, therefore, might guide students in the self-talk and thinking related to the use of text structures in organizing and ordering their brainstormed ideas, as well as in editing and revising compositions on the basis of their "goodness of fit" to the text structure genre.

Purpose of the Study

The purpose of this study was to evaluate the effectiveness of an instructional intervention that incorporated the instructional features described above and that developed students' knowledge of the writing process and the role of expository text structures. Few interventions have systematically taught combinations of strategies as a package to promote expository writing ability. This study examined the effects of one such program, Cognitive Strategy Instruction in Writing (CSIW), on students' abilities to produce well-organized expository texts.

CSIW was designed to incorporate many features of effective strategy instruction, including the development of students' metacognitive knowledge about writing strategies through an emphasis on teacher modeling of an inner dialogue for directing the writing process, scaffolded assistance during lessons and writing sessions, procedural facilitation for students through the use of think-sheets, and peer collaboration in writing conferences.

The effects of CSIW were examined in terms of experimental and control students' abilities to compose two types of trained texts (explanation and comparison/contrast) as well as to transfer their knowledge to a near transfer measure of writing, in which students generated their own text structures about self-selected expository topics ("expert" paper), and a far transfer measure of reading comprehension. In addition, a test of students' declarative knowledge about strategies for performing the writing process was administered to evaluate changes in metacognitive knowledge. It was hypothesized that experimental CSIW students would perform better on trained text structures than control students, and that these treatment differences would be evidenced on near and far transfer tasks of writing and reading as well as on the measure of metacognitive knowledge about writing.

Subjects

One hundred and eighty-three fourth- and fifth-grade subjects from 12 schools participated in the study. Students were from lower SES (socioeco-

nomic status) neighborhoods and represented a variety of ethnic groups. Students were selected on the basis of their teachers' participation in the study, which was determined by the language arts and special education coordinators in the district. They recommended teachers based upon a successful teaching experience of at least two years and an interest in improving writing and reading instruction. Once a sufficient pool of teachers was created, teachers within schools were randomly assigned to experimental and control conditions.

One hundred and twenty-eight students were from regular education classrooms. Two comparison groups of regular education students were formed within the experimental and control conditions: low achievers and high achievers. For the purposes of this study, low achievers were defined as students who scored at or below the 39th percentile rank on the total reading subtest of the *Stanford Achievement Test,* a standardized test of academic achievement; high achievers were defined as students who scored at or above the 56th percentile rank. In the experimental group, there were 67 students, with 31 of the students comprising the low-achieving (LA) students and 36 of the students comprising the high-achieving (HA) students. In the control group of students, there were 21 LA and 31 HA students. The approximate reading grade level of the LA students in the CSIW and control classrooms was 4.0 and 3.7, respectively; the approximate reading grade level of the HA students in the CSIW and control classrooms was 7.0 and 7.5, respectively.

LD students included 55 students who had met state and local guidelines for LD placement. These guidelines required that the students had been assessed on intellectual and achievement measures and had shown (a) intellectual ability in the average or above average range; (b) significant discrepancies between expectancies based on intellectual functioning and actual academic achievement; (c) no evidence of mental retardation, emotional disturbance, or cultural or economic disadvantage; and (d) receptive or expressive language abilities below mental age expectations.

Thirty-three of the LD students were in the CSIW intervention (23 students in grade 4; 10 students in grade 5), with an approximate reading grade level of 2.8; 22 of the students were in the control condition (10 students in grade 4; 12 in grade 5), with an approximate reading grade level of 2.5. These reading grade levels were not significantly different ($t(54) < .05$). Furthermore, comparison t-tests were performed on each of the dependent measures related to writing (aggregated across the three types of text structures) and reading to ensure the comparability of the experimental and control LD students. (These measures will be discussed in the assessment section.) The results, shown in Table 1, revealed only one significant difference at the .05 level, favoring the control students in the holistic scores assigned their compositions. However, when the significant criterion level was adjusted to .012 to take into account the calculation of multiple t-tests, there

were no significant differences between experimental and control students for any variable. When this analysis was expanded to include LA and HA students (see Table 1), there were no significant differences at the .012 level between experimental and control students for any dependent variable. However, it must be noted that differences between low achievers in the experimental and control groups were approaching statistical significance

Table 1
Results of *t*-test Analysis on Treatment and Control Students' Pretest Scores

Measure	*df*	CSIW mean	Control mean	*t*-value	*p*-value
			Learning Disabled Students		
Writing variables	(52)				
Holistic		1.48	2.29	−2.20	.132
Primary trait		8.73	11.43	−1.51	.137
Productivity		5.39	6.14	−0.57	.571
Reader sensitivity		1.85	2.86	−1.80	.077
Reading variables	(52)				
Holistic		0.51	0.52	−0.04	.97
Primary trait		3.54	3.48	0.08	.94
Recall		3.49	3.48	0.01	1.10
Main idea		0.43	0.56	−0.77	0.44
			Low-Achieving Students		
Writing variables	(48)				
Holistic		1.97	3.23	−2.62	.014
Primary trait		10.82	14.47	−1.82	.077
Productivity		6.06	9.12	−2.54	.016
Reader sensitivity		4.67	5.76	−1.37	.177
Reading variables	(48)				
Holistic		0.50	0.74	−0.93	.360
Primary trait		4.91	8.26	−1.96	.062
Recall		3.68	6.47	−2.21	.038
Main idea		1.03	0.68	1.70	.098
			High-Achieving Students		
Writing variables	(62)				
Holistic		3.22	3.74	−1.14	.259
Primary trait		16.69	18.52	−0.97	.335
Productivity		9.92	11.15	−1.31	.195
Reader sensitivity		5.47	6.81	−1.33	.191
Reading variables	(62)				
Holistic		1.14	1.35	−1.09	.281
Primary trait		9.25	10.68	−0.98	.333
Recall		7.67	7.32	−0.31	.754
Main idea		1.06	1.19	−0.61	.547

for several of the writing (holistic, productivity) and reading (recall) dependent variables. All of these differences favored the control students.

Materials

The materials included both training and assessment measures: (a) instructional materials for CSIW, (b) a test of students' metacognitive knowledge, (c) writing assessment measures, and (d) a far transfer measure of reading comprehension. These materials are described in the following sections.

Curriculum Materials: Cognitive Strategy Instruction in Writing

The CSIW curriculum materials included think-sheets that were designed to make the strategies, self-talk, and text structures for performing the writing process visible to students (for a complete description of the materials, see Englert, 1990; Englert & Raphael, 1989; Raphael & Englert, 1990). Each think-sheet contained a set of self-questions or self-instructional statements to promote students' development of an inner language important to the activation and control of writing strategies. The total set of strategies was referred to by the acronym "POWER," which stood for the following subprocesses in the writing process: *plan, organize, write, edit/editor,* and *revise.*

The plan think-sheet was designed to help students consider an array of strategies related to identifying their audience and purpose, retrieving relevant ideas from background knowledge, and developing a plan that subsumed groups of brainstormed ideas in categories (see Figure 1). The *organize* think-sheet was designed to help students organize their ideas into text structure categories and use text structure (explanation or comparison/contrast) as a map in planning their papers. A text structure map, such as that shown in Figure 2, was used to help students organize their explanations. The *organize* think-sheet was intended to guide students in the use of text structures to organize and order their ideas in a prewriting phase.

Students then wrote their first draft on the *write* think-sheet. During drafting, students were encouraged to reread their plans, translate their plans into text by fleshing out their ideas and adding key words, engage their reader through introductions and conclusions (e.g., use of questions, dialogue, personal examples), and consider strategies for introducing readers to text structure categories to provide "reader considerate" text (Armbruster & Anderson, 1982).

The fourth and fifth think-sheets, *edit* and *editor,* were parallel, guiding students through both self-editing (*edit*) and peer-editing (*editor*) activities. Both editing think-sheets prompted students to reflect on their own or their peers' papers in terms of content (e.g., placing stars next to the parts of the text they liked and question marks by the parts that might be confusing) and text organization (e.g., rating the extent to which criterion text structure features were present), and guided them to make revision plans.

PLAN

Name _____ Date _____

TOPIC: _____

WHO: Who am I writing for?

_____

_____

WHY: Why am I writing this?

_____

_____

WHAT: What do I know? (Brainstorm)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

HOW: How can I group my ideas?

[ ] [ ]

_____ _____

_____ _____

[ ] [ ]

_____ _____

_____ _____

How will I organize my ideas?

____ Comparison/Contrast ____ Problem/Solution

____ Explanation ____ Other

Source: C. S. Englert, T. E. Raphael, & L. M. Anderson (1989). Cognitive Strategy Instruction in Writing Project, East Lansing, MI: Institute for Research on Teaching. Reprinted with permission.

Figure 1. **Plan think-sheet**

The phase concluded with an author and peer editor meeting to discuss the paper and collaborate on how to improve it.

Finally, students considered how to revise their papers with the aid of the *revision* think-sheet. This think-sheet simply had students reflect on their editing plans by listing the suggestions generated and received, and

Explanation Organization Form

What is being explained?

Materials/things you need?

Setting?

What are the steps?

First,

Next,

Third,

Then,

Last,

Source: C. S. Englert, T. E. Raphael, & L. M. Anderson (1989). Cognitive Strategy Instruction in Writing Project, East Lansing, MI: Institute for Research on Teaching. Reprinted with permission.

Figure 2. **Organize think-sheet for explanations**

deciding on which revision to implement. At the conclusion of this process, students moved on to the final draft stage where they incorporated revisions into a final draft that was published in a class book.

Assessment

Four types of measures were developed to assess the effects of the writing intervention: (a) a test of metacognitive knowledge (e.g., declarative or stable knowledge about the writing process); (b) two direct measures of students' abilities to compose trained text structures, one each for the explanation and the comparison/contrast text structures; (c) a near transfer measure to evaluate students' abilities to compose and organize an expository text on a topic of their own choosing; and (d) a far transfer measure to evalute students' abilities to generalize their knowledge about writing to the reading and comprehension of expository text.

Metacognitive knowledge. To measure students' metacognitive knowledge about the writing process (e.g., for planning, monitoring, and revising text), 13 items from a longer, individually administered metacognitive interview (Englert et al., 1988) were used. Items were drawn from two vignettes, each representing a different student's writing problems. The items were adapted to a multiple-choice or fill-in-the-blank format. For example, the first vignette in the original interview (Englert et al., 1988) focused on students' knowledge of text organization in *planning* ideas for an expository paper, that is, knowing how to predict the types of information to include in papers on given topics, how to interrelate the pieces of information into a network or organizational plan, and how to categorize and label the various pieces of information in the organizational plan. The questions were transformed from open-ended questions into multiple-choice questions, with the incorrect answers, or distractors, to these questions selected from the incorrect responses of students in the earlier study of metacognitive knowledge (Englert et al., 1988). Some of the questions which did not lend themselves to multiple-choice format (e.g., "What ideas should she include?") were presented as open-ended questions to which the students responded in writing. Thus, planning questions generally tapped students' organizational and categorization skills relative to their ability to predict, generate, subsume, and order main ideas and minor ideas into organizational patterns and categories of related ideas.

Some of the questions were also drawn from the second vignette, which paralleled the *editing* activities of readers and writers in monitoring text for completeness and in revising portions of expository text that failed to meet text structure and meaning expectations. Questions from this vignette asked students to decide when a paper was finished, and asked students what they might do to improve the paper.

Writing assessment. Two direct measures of writing performance were developed to evaluate students' abilities to compose an explanation and comparison/contrast paper. Directions for the explanation paper focused students' attention on explaining *how to do* something they were familiar with or knew a lot about (e.g., how to play a game, make a particular object). They were directed to think about an audience who did not know as much

about their topic as they did, and to write a paper that would explain their topic as clearly as possible. Directions for the comparison/contrast paper asked students to consider two different people, places, or things that they knew a lot about (e.g., a brother and sister, two games) and to think about *how these two were alike and different.*

In addition, a near transfer measure was developed that asked students to generalize their knowledge to compose an "expert" paper on a topic of their own choosing. Specifically, students were asked to choose a topic about which they knew a great deal (e.g. a hobby, place, etc.) and to write about it for someone who did not know much about the topic. The directions emphasized that all students were experts about something and that they should select something they were expert in and provide as much information about that topic as possible. This task required that students generate their own topics and create an appropriate text structure.

Comprehension assessment. To assess students' abilities to generalize their knowledge to a far transfer task of comprehension, students were asked to produce a written free recall after reading a well-formed text. The use of this task was supported by previous research which suggested that successful comprehension performance is associated with free recall and summarization abilities (Meyer et al., 1980; Spivey, 1984). The recall passages were written at two readability levels based upon the Spache readability formula (Spache, 1953). Passages were written at a 1.8 reading grade level for the LD and LA students. For the HA students, passages were written at a 2.8 reading grade level. This helped to ensure that all students were able to independently read the selections.

Two versions of the passage were developed to control for passage effects. Both were well-structured passages containing an explanation and comparison/contrast text structure (i.e., a passage comparing and contrasting bats and owls and explaining the steps each animal used to catch its food, and a passage comparing and contrasting fish and dolphins and explaining the steps each animal used to get air for swimming under water). The two passages were counterbalanced across subjects and time of administration (pretest, posttest).

Procedures

The reading and writing measures were administered to students in four separate sessions in September and again in May. The reading measure was presented first to preclude the possibility that the writing measures might heighten subjects' awareness of the text structures, and thus bias later assessment of students' sensitivity to text structures in reading. The order of writing measures was counterbalanced across classrooms and treatment groups.

Regular education students were tested in their classrooms in a whole-class test administration, while special education students were tested in small groups in their special education classrooms. In administering the free

recall measure, the experimenters first gave the directions orally and read the passage titles aloud to students. In special education classrooms, the entire passage was read aloud to minimize differences between LD and non-LD groups attributable to differential word recognition abilities, reading fluency, or lack of experience reading expository passages. After the passage had been introduced, both regular and special education students were directed to reread the passage as many times as they wished until they felt it made sense. Students were informed that help could be provided if they came to a word in the passage that they didn't know. When students had finished reading the passage, it was collected and students wrote what they could remember. For all tasks, students were encouraged not to be concerned about writing mechanics, such as spelling or punctuation. Students were told that assistance could be provided if they needed help writing or reading texts.

In the administration of the writing measures, subjects were asked to write the comparison/contrast, explanation, and expert papers using topics generated from their background knowledge and experience. The order of administration of the three text structure papers (comparison/contrast, explanation, and expert) was counterbalanced across classrooms at the same grade level. Students were directed not to be concerned with spelling, punctuation, or grammar, emphasizing that this was only a first draft. To reduce the possibility that LD students would be unable to produce text merely because of problems with writing *mechanics* (rather than problems in organization or ideation), LD students were given the option of reading their completed texts aloud for transcription by one of the experimenters. To ensure that students' writing and written recalls were legible, experimenters examined all written products. If the writing was not legible enough to allow accurate scoring of the data, students were asked to "read what you have written so that we know what it says." Experimenters then provided a written transcription immediately below the students' written productions.

Finally, the metacognitive questionnaire was administered in another one-hour session by trained experimenters. Interviewers read each question and response stems aloud two times. Adequate time was given for each student in the room to complete the questionnaire. Test questions were repeated whenever students needed additional assistance.

Instruction in CSIW began in October and concluded in April. Instruction consisted of four phases for each text structure taught (Raphael & Englert, 1990): text analysis, modeling the writing process, guided practice, and independent use of strategies. The first phase, text analysis, introduced students to the types of questions that different text structures address, the text structure signals that authors use to help their readers locate information (see Armbruster, Anderson, & Ostertag, 1987), ways of formulating introductions that catch the reader's attention, and the types of questions that the audience has about the topic. The phase began with the

presentation of student writing examples and nonexamples of the target text structure on an overhead while the teacher led a think-aloud discussion on the text structure features and quality of the writing sample. For example, teachers thought aloud about the type of text structure that had been written (e.g., explanation), text aids to comprehension (e.g., key words like "first" and "second" that indicated the location of steps), and the kinds of questions that the text was designed to answer (e.g., did the author address, "What is being explained?" "Who or what materials ar involved?" "Where does it take place?" "What are the steps?"). Teachers also thought aloud about their own comprehension problems related to the text and solved problems with students about the type of information that would answer readers' questions. Finally, using four student passages of varying quality, students were invited to participate in the text analysis and assume an increasing role in analyzing each passage as they began to carry on the dialogue themselves about text structure questions, signal words, readers' questions, and so forth.

Second, teachers modeled the writing process for the particular text structure being taught as they modeled the *what* and *how* related to the writing process, discussed *when* the strategies could be used *and why they were important.* For example, tecahers modeled how to plan an explanation paper by modeling the self-talk, planning questions, and strategies related to a paper they were writing. Teachers also introduced the *plan* think-sheet (see Figure 1), not as a worksheet to be completed and evaluated by the teacher, but as an aid that can help writers record their plans and thinking so that they can refer to it later.

Next, students were invited to participate in a dialogue about the writing process as they constructed a class paper on a topic related to the text structure they were learning. Students assumed increasing responsibility for the self-questions and strategies related to planning, while teachers acted as scribes in recording students' ideas on a *plan* think-sheet, and monitored and guided both students' strategy use and assumption of the writing dialogue.

Each of the other think-sheets was introduced in a similar manner. First, teachers introduced the think-sheet by modeling and thinking aloud while performing the writing process. Next, teachers and students jointly applied the strategies and dialogue they were learning to a class paper. Third, teachers provided guided practice by providing students with the opportunity to apply the strategies to write papers on topics of their own choosing.

Throughout the modeling and guided practice phases, teachers fostered dialogue and collaboration among students in two important ways. First, teachers encouraged students to share their ideas and strategies with each other as they moved through the process by asking students to hold conferences with their peers. For example, after students had planned their individual papers, teachers asked them to share their plans with a peer (or peers)

in order to elicit feedback, discussion, questions, and advice. Second, teachers fostered collaboration and classroom discussion by identifying examples of strategy use or problems displayed by students, and placing these examples on overhead transparencies to guide the writing discussion. Teachers then asked students to share their ideas with the class, with classroom discussion focusing on the types of decisions students had made, problems they had encountered, and possible alternative responses or strategies. This helped foster students' internalization of writing strategies and writing dialogue, while making strategies for the prevention and solution of writing problems more visible to themselves and other students. To further enhance students' internalization of strategies, teachers continually emphasized that think-sheets were simply note-taking tools with prompts to remind students of the thinking strategies and dialogue that good writers used.

Finally, students moved toward growing independence in writing. After being guided to write a class paper and an individual paper that involved the same structure as the one modeled, students were encouraged to write independently one more paper for publication in a class book. Now, students were encouraged to use the strategies more automatically, although teachers still continued to provide direct instruction by modeling and providing ongoing feedback on trained strategies throughout the process.

To ensure fidelity to the instructional procedures, experimental teachers' implementation of the program was monitored through weekly observations. Ongoing feedback to teachers was provided based upon their own questions and concerns as well as problems identified in classroom observations.

In the control classrooms, teachers and students engaged in their regular writing activities and routines. Teacher self-reports provided information about these activities. Students in the control conditions participated in writing lessons related to a district process writing program, and lessons related to the district-adopted language arts textbook. Students had opportunities to compose texts two and three times per week. Half of the regular and special education teachers had participated in the district writing workshops, and they believed in the importance of having students brainstorm topics and ideas, as well as engaging students in a recursive process of planning, drafting, editing, and revising. In all control classrooms, students were allowed some choices in the selection of writing topics, with opportunities for student-selected topics in such activities as journal, report, and narrative writing.

Scoring Procedures and Reliability

The metacognitive knowledge, writing, and comprehension measures were scored in a variety of ways to evaluate students' performance.

Metacognitive questionnaire. Since the metacognitive questionnaire generally involved the scoring of multiple-choice responses, the scoring procedures simply entailed the assignment of one point for correct responses

and zero points for incorrect responses. For the short-answer responses, students' written responses were compared to criterion answers developed beforehand. Reliability of the metacognitive questionnaire scoring was 98%.

Writing. Students' performance on the free writing measures was scored by six trained coders blind to the assignment of subjects to achievement groups. In the scoring of the tests, each student's written composition was read independently by two coders who assigned four scores per paper: (a) a primary trait score based upon the degree to which the composition used the required organizational pattern for a specific text structure and the degree to which it contained the appropriate key words and phrases (Mullis, 1980), (b) a holistic score ranging from 0–3 points based on the degree to which the paper was interesting and the degree to which it effectively communicated the top-level structure associated with a particular text structure form (Meyer, 1975), (c) a productivity score that represented the number of ideas contained in the paper, and (4) a reader sensitivity score that represented the extent to which the author showed sensitivity to his or her audience and ownership of the paper.

For explanation papers, four primary traits were assigned an individual rating from 0–3 points, for a maximum score of 12 points. These traits included (a) introduction to the topic being explained, (b) provision of a comprehensive sequence of steps, (c) inclusion of key words or signal words (e.g., first, second, third, finally), and (d) adherence to explanation organization (i.e., introduction, sensible sequence of steps, closure). For comparison/contrast papers, five primary traits were rated on a scale from 0–3 points, for a maximum score of 15 points. These traits focused on whether the paper successfully (a) identified two things being compared and contrasted, (b) described how the two things were alike, (c) explained how the things were different, (d) used key words (e.g., alike, different, but), and (e) adhered to the comparison/contrast organization (i.e., introductory sentence, alikes/differences, conclusion). For the near transfer measure, expert writing, six primary traits were rated on a scale from 0–3 points, for a maximum score of 18 points. These traits identified whether the paper successfully (a) introduced the reader to the topic, (b) introduced and labeled each category, (c) provided sufficient depth of information within each category, (d) provided sufficient breadth of coverage related to the topic across the categories to adequately discuss the topic, (e) used key words (first, second,) and (f) adhered to an expert text structure (introductory sentence, two to three relevant categories, and conclusion).

The holistic score was a qualitative rating indicating the overall quality of the student's paper. This was a subjective rating of the overall appeal of the paper, as well as the extent to which the student had accomplished the purpose of writing either an explanation, comparison/contrast, or expert paper. For all three types of text structures, the holistic rating ranged from 0–3 points.

In addition to the primary trait and holistic scores, each composition was assigned a productivity score that reflected the number of ideas in the paper. Productivity was evaluated in this study because prior research has shown that LD students differ in their ability to sustain their thinking about a topic (Nodine, Barenbaum, & Newcomer, 1988; Poteet, 1978; Poplin, Gray, Larsen, Banikoski, & Mehring, 1980; Thomas et al., 1987). In the case of explanation papers, the productivity score was a measure of the number of complete thought units or clauses in the composition; in the case of comparison/contrast papers, the number of ideas was the number of topic comparisons made by students. In the case of the near transfer measure, expert papers, the number of ideas was the number of categories of main ideas and details produced by students.

Finally, each composition was assigned a reader sensitivity score that represented the author's ability to implicitly produce "reader considerate" text (Armbruster & Anderson, 1982). Specifically, four traits were assigned individual ratings from 0–3 points, for a maximum score of 12 points. These traits were the extent to which the paper included (a) an introduction that grabbed the reader's attention in an interesting way (e.g., use of dialogue, questions, and so forth), (b) an explicitly stated purpose, (c) an awareness of communicating with the audience (e.g., asking questions of the reader, providing thorough information about the topic to answer readers' questions, use of "you" pronominal), and (d) the author's voice (e.g., author's use of personal humor, references to self and opinions, use of dialogue).

Reading. In scoring the reading measure, six coders independently read the free recall measure, with two coders assigning scores to each student's paper. Five scores were generated for the free recall measure. First, students were assigned an organization rating from 0–13 based on the degree to which their recalls reflected the primary traits and structure of the stimulus passage. Second, students were assigned a productivity score that reflected the total number of ideas from the original passage contained in their recall. The third score reflected the number of main ideas recalled from each passage. The fourth and fifth scores represented the number of "steps" recalled from the explanation portion of the passage, as well as the number of comparisons recalled from the comparison/contrast portion of the passage.

Reading/Writing coders' reliability. Reliability was scored on 10% of the composition and free recall measures. Reliability was calculated by dividing the number of agreements by the sum of agreements plus disagreements. On all variables, reliability was above 80%.

Results

For all variables, analyses were conducted in three steps. First, the posttest scores for all dependent variables were analyzed simultaneously in a multivariate analysis of covariance (MANCOVA) or analysis of covariance

(ANCOVA), covarying for pretest scores. Second, if the MANCOVA yielded significant findings for a factor, the separate univariate ratios were examined for each dependent variable to determine which dependent variables made significant contributions to the overall test of significance. Third, whenever significant univariate results were obtained, follow-up comparison tests using Scheffé's procedure were performed to determine where significant effects lay (criterion alpha level established at .05).

Metacognitive Interview

The individual scores on the metacognitive questionnaire were aggregated and subjected to a 2 (treatment: experimental, control) × 3 (achievement group: high, low, LD) ANCOVA. The pretest, posttest, and adjusted posttest scores for the questionnaire are shown in Table 2.

The results revealed significant treatment effects ($F(1,111) = 60.82$, $p < .000$) and group effects ($F(1,114) = 7.23$, $p < .001$) but no significant interaction between treatment and group effects ($F(2,124) = 0.44$, $p > .05$). Examination of the posttest scores (adjusted for initial pretest performance) suggested that CSIW students achieved significantly greater knowledge scores than control students in their knowledge of the writing process and strategies for composing text. In fact, CSIW students averaged pretest to posttest gains of 8.9 points, while control students showed virtually no gains from pretest to posttest (0.79 points). Post hoc comparisons of ability groups using Scheffé's procedure suggested that LD students' adjusted posttest scores were significantly different from both LA students ($t(114) = 3.19$, $p < .01$) and HA students ($t(114) = 3.56$, $p < .001$).

Writing Measures

Direct measures. The two direct measures of writing performance were analyzed simultaneously in a 2 (treatment: experimental, control) × 2 (text:

Table 2
Pretest, Posttest, and Adjusted Scores for Students' Metacognitive Knowledge

	Pretest			Posttest			Adjusted means		
Group	LD	LA	HA	LD	LA	HA	LD	LA	HA
CSIW	10.04	11.63	16.36	16.86	22.46	25.33	17.67	22.97	23.61
Control	9.00	12.78	15.94	9.25	14.31	16.86	11.26	14.23	15.36

Note. LD = learning disabled, LA = low-achieving, HA = high-achieving, CSIW = Cognitive Instruction Strategy in Writing program.

comparison/contrast, explanation) × 3 (group: high, low, LD) MANCOVA, with repeated measures on the two types of text structures and entering in the analysis the four dependent variables (primary trait, holistic, productivity, and reader sensitivity scores). Scores used in this analysis are reported in Table 3.

The results of the analysis revealed significant main effects for treatment, group, and text and a significant interaction between group and treatment, but no other significant interactions. Table 4 presents the multivariate and univariate results for the direct measures of writing.

To interpret the overall main effect for treatment, the univariate F-ratios were examined. These results revealed that the treatment effects seemed to be attributable to gains in students' holistic ratings, primary traits, and sensitivity to their readers. All of these differences favored the CSIW treatment group, suggesting that students in the CSIW treatment showed increasing mastery of the structures underlying text as well as growing sensitivity to their audience and purposes for writing.

For the group main effect, examination of the univariate F-ratios revealed that all four dependent variables contributed to the overall result. When Scheffé's procedure was applied to the scores of the three ability groups (see Table 5), the results revealed that HA students' adjusted posttest scores were significantly superior to LA and LD students on all dependent variables. There were no significant differences between LD and LA students.

For the text main effect, examination of the univariate F-ratios revealed that the primary trait and reader sensitivity scores of students distinguished their performance on the comparison/contrast and explanation text structures. Examination of adjusted mean scores revealed that comparison/contrast texts were significantly easier for students to organize (e.g., in terms of their primary trait scores) than explanations, although the reverse was true when students' papers were examined in terms of their writing voice and sensitivity to their audience. Students wrote more purposeful and interesting papers when they were writing explanations than comparison/contrast texts.

Finally, the findings were subsequently interpreted in light of the significant group × treatment interaction. When the univariate F-ratios were examined to determine where the effects were located, the results showed that treatment effects varied across achievement groups only for reader sensitivity, suggesting that the treatments had relatively consistent effects across the groups for all other variables. When Scheffé's post hoc procedure was applied to reader sensitivity scores, the results suggested that for high-achieving students, treatment differences between CSIW and control students were quite large ($t(146) = 8.09$, $p < .00000$); for low-achieving students, treatment differences also were significant ($t(146) = -3.69$, $p < .0003$), whereas treatment differences were not statistically significant for

Table 3
Pretest, Posttest, and Adjusted Scores for Explanation, Comparison/Contrast, and Transfer Measures

Measure	Pretest LD	Pretest LA	Pretest HA	Posttest LD	Posttest LA	Posttest HA	Adjusted means LD	Adjusted means LA	Adjusted means HA
				CSIW Students					
Comparison/Contrast									
Holistic	.83	.72	1.11	1.27	1.76	2.06	1.02	.25	2.06
Primary trait	5.03	4.17	6.53	7.00	8.90	10.89	7.20	6.63	10.38
Productivity	3.23	2.86	4.58	4.53	4.97	5.58	4.60	3.14	5.27
Reader sensitivity	.13	.97	1.53	.60	2.00	4.64	.16	.69	4.64
Explanation									
Holistic	.30	.76	1.28	1.23	1.52	2.17	1.12	−.25	2.17
Primary trait	1.47	3.76	4.97	5.27	7.07	9.00	5.76	4.24	8.54
Productivity	1.56	2.62	3.89	4.63	4.86	6.00	5.01	2.25	5.46
Reader sensitivity	.67	1.72	2.00	1.80	3.35	4.53	1.61	1.25	4.53
Expert									
Holistic	.38	.45	.83	.65	1.10	1.78	.75	1.12	1.74
Primary trait	2.53	2.87	5.19	4.77	8.13	11.97	5.29	8.21	11.68
Productivity	.56	.58	.94	.94	1.32	1.86	1.06	1.40	1.81
Reader sensitivity	1.00	1.94	1.94	2.12	3.13	4.72	2.31	3.43	4.70
				Control Students					
Comparison/Contrast									
Holistic	.95	1.50	1.48	1.10	1.67	1.85	−.08	.29	1.50
Primary trait	4.80	6.17	7.52	5.53	8.11	8.90	3.97	5.66	7.83
Productivity	2.21	4.00	5.56	3.80	4.44	7.00	2.18	2.69	5.76
Reader sensitivity	.80	1.39	.78	.000	1.33	.37	−1.00	.08	.44
Explanation									
Holistic	.42	1.11	1.22	.90	1.06	1.67	.20	−.63	1.31
Primary trait	1.74	4.11	4.85	3.79	4.50	6.93	3.41	2.47	5.91
Productivity	2.42	3.44	3.90	3.68	4.61	5.26	3.65	2.36	4.33
Reader sensitivity	.47	2.72	3.74	1.32	1.11	2.19	.19	−.33	1.91
Expert									
Holistic	.75	.59	1.00	.45	.88	1.18	.46	.88	1.08
Primary trait	4.55	3.88	5.89	2.75	5.53	6.43	2.93	5.46	5.99
Productivity	1.25	.77	1.43	.45	.59	.89	.41	.61	.76
Reader sensitivity	1.35	2.06	2.25	1.35	2.65	2.89	1.49	2.54	2.79

Note. LD = learning disabled, LA = low-achieving, HA = high-achieving, CSIW = Cognitive Strategy Instruction in Writing program.

Table 4
Multivariate and Univariate Results for Explanation and Comparison/Contrast

	Multivariate analysis of covariance			Univariate	
Source	*F*	*df*	*p*	*F*	*p*
Treatment	16.76	(4,146)	.000		
Holistic				21.40	.000
Primary trait				32.80	.000
Productivity				3.84	.052
Reader sensitivity				49.95	.000
Group	3.50	(8,292)	.001		
Holistic				11.13	.000
Primary trait				10.67	.000
Productivity				3.35	.038
Reader sensitivity				4.96	.008
Text	14.19	(4,146)	.000		
Holistic				3.26	.073
Primary trait				18.31	.000
Productivity				.51	*ns*
Reader sensitivity				8.86	.003
Treatment × Group	2.73	(8,292)	.006		
Holistic				.41	*ns*
Primary trait				.53	*ns*
Productivity				1.51	*ns*
Reader sensitivity				9.29	.000
Text × Group	1.30	(8,292)	*ns*		
Treatment × Text	1.25	(4,146)	*ns*		
Group × Treatment × Text	1.61	(8,292)	*ns*		

Note. An entry of *ns* indicates "no significance."

Table 5
Results of Scheffé's Test

		Contrast groups					
Measure	*df*	LD vs. HA		LD vs. LA		LA vs. HA	
Writing variables	(146)						
Holistic		4.49	.0001	−1.57	.119	3.33	.001
Primary trait		4.49	.0001	−1.87	.06	2.99	.003
Productivity		2.07	.04	−.03	.98	2.32	.022
Reader sensitivity		2.96	.004	−.93	.35	2.30	.022

Note. LD = learning disabled, LA = low-achieving, HA = high-achieving.

LD students ($t(146) = -1.41, p = .06$). For the most part, students in the CSIW group tended to gain in reader sensitivity from pretest to posttest, whereas control students' scores actually declined.

Near transfer measure. Next, analyses were conducted on the near transfer measure of writing (expert writing), in which students wrote on a topic of their own choosing and created their own text structure in which to present their information. Again, the MANCOVA results revealed a large main effect for treatment as well as a statistically significant main effect for group, but no significant group × treatment interaction. The scores used in this analysis are shown in Table 3. Multivariate and univariate results are shown in Table 6.

For the treatment main effect, univariate *F*-ratios revealed significant effects for all dependent variables, including holistic, primary trait, productivity, and reader sensitivity scores. Once again, all differences favored the CSIW treatment group. Furthermore, examination of the mean scores of students in the two groups revealed a remarkable finding. First, when pretest and posttest scores were examined, CSIW students' gains on the transfer task nearly equalled (and in the case of primary trait and reader sensitivity scores exceeded) the gains found on texts organized in terms of the taught text structures. At the same time, control students gained little on the transfer measure over time and, for the most part, their scores actually declined slightly from pretest to posttest. Thus, CSIW students showed a large increase in their ability to generate their own text structures on self-selected topics, whereas control students showed an actual decrease in this ability over time. This result suggested that students who received the specific modeling and training of the CSIW program were better able to control their use of writing strategies and to generalize their knowledge as they independently generated expository text structures appropriate to their own personal topics. The fact that the treatment effects were consistent across the three treatment groups, suggested that LD students also made large gains in their ability to transfer their knowledge to less constrained texts and topics.

Reading

Finally, adjusted posttest reading scores were analyzed in a 2 (treatment) × 3 (group) MANCOVA. Scores used in this analysis are shown in Table 7. Multivariate and univariate results are reported in Table 8.

Results of the MANCOVA revealed a significant interaction of group and treatment, but no significant main effects for group or treatment. To interpret the significant interaction, univariate *F*-ratios were examined to determine where effects were located. The results revealed significant effects for the number of main ideas recalled by students. When post hoc comparisons were performed, the results revealed no significant differences between the two treatments for any ability group.

Table 6
Multivariate and Univariate Results for Expert Transfer Measure

	Multivariate analysis of convariance			Univariate	
Source	*F*	*df*	*p*	*F*	*p*
Treatment	9.03	(4,153)	.000		
Holistic				10.72	.001
Primary trait				26.84	.000
Productivity				23.45	.000
Reader sensitivity				6.17	.014
Group	4.44	(8,306)	.000		
Holistic				15.59	.000
Primary trait				16.51	.000
Productivity				3.65	.028
Reader sensitivity				6.52	.002
Treatment × Group	0.83	(8,306)	*ns*		

Note. An entry *ns* indicates "no significance."

Comparisons between LD and Non-LD students. A final analysis was conducted to determine if the CSIW intervention had the potential to enhance LD students' performance to such a level that they would perform similar to a heterogeneous group of grade-level peers, as might be typically found in most classrooms. To address this issue, the pretest and posttest performances of the LD students were compared to a group of non-LD students that was comprised of a mix of ability levels (e.g., a combined group of LA and HA students). A *t*-test (with the alpha level set at .012 to adjust for multiple *t*-tests) was performed on the pretest writing and reading scores of preintervention LD students in the CSIW treatment and a comparison group of non-LD students in the control group, as well as a second *t*-test on their posttests. These analyses would indicate whether performance gaps existed prior to intervention and, if so, whether the intervention program could successfully diminish the gap between LD students and a heterogeneous group of control students.

When comparisons were run on students' pretest performance on the four writing dependent variables and aggregated across the three types of text (e.g., explanation, comparison/contrast, and expert), the results revealed large differences between preintervention LD and non-LD students on all writing variables (holistic, primary trait, productivity, and reader sensitivity). All of these differences favored the non-LD students. Similarly, when *t*-tests were performed on the pretest reading scores, all of the variables were approaching statistical significance, and two of the variables (primary trait,

Table 7
Pretest, Posttest, and Adjusted Mean Scores for Reading Measures

Reading measure	Pretest			Posttest			Adjusted means		
	LD	LA	HA	LD	LA	HA	LD	LA	HA
				CSIW Students					
Holistic	.53	.50	1.14	.68	.64	1.39	.93	.80	1.12
Primary trait	3.50	4.70	9.25	5.82	5.29	10.81	7.48	6.01	9.19
Recall	3.47	3.82	7.67	5.24	5.39	8.00	6.19	6.22	6.81
Main idea	.41	1.00	1.06	.35	.64	1.28	.65	.71	1.08
Comparisons	1.21	1.25	3.03	2.29	2.14	3.53	2.70	2.50	3.01
Steps	.68	.68	3.00	1.44	1.18	2.64	1.94	1.52	2.13
				Control Students					
Holistic	.54	.75	1.36	.54	.94	1.19	.77	.86	.89
Primary trait	3.54	8.63	10.68	4.54	7.25	9.58	6.08	6.80	7.72
Recall	3.63	6.44	7.32	6.17	5.50	8.16	7.13	5.32	6.79
Main idea	.54	.75	1.19	.71	1.31	1.13	.99	1.20	.79
Comparisons	1.29	2.75	3.19	2.13	2.00	3.58	2.56	1.90	3.01
Steps	1.00	2.13	1.76	2.08	1.50	2.94	2.56	1.30	2.33

Note. LD = learning disabled, LA = low-achieving, HA = high-achieving.

Table 8
Results of Multivariate Analysis on Reading Measure

	Multivariate			Univariate	
Source	*F*	*df*	*p*	*F*	*p*
Treatment	1.76	(6,152)	*ns*		
Group	1.28	(12,304)	.229		
Treatment × Group	2.04	(12,304)	.021		
Holistic				.57	*ns*
Primary trait				.83	*ns*
Recall				.70	*ns*
Main idea				4.33	.015
Comparison				.40	*ns*
Steps				.37	*ns*

Note. The entry *ns* indicates "no significance."

main ideas) were statistically significant at the .012 level. These results are shown in Table 9.

However, when *t*-tests were performed on the posttest scores of students, the results revealed few differences between students with learning disabilities and the heterogeneous group of students. In spite of large differences in writing performance on the pretest, LD and non-LD students were not significantly different on any writing variable on the posttest. These results suggested that although the control non-LD students made writing gains from pretest to posttest, LD students gained at an accelerated rate. Furthermore, whereas there were several reading comprehension variables that were either significant or approaching significance on the pretest, LD students were only significantly different from non-LD students in their recall of main ideas on the posttest. Thus, preintervention differences that existed prior to CSIW instruction tended to be eliminated by the time LD students exited the program. LD students' writing and reading performance was similar to that of a heterogeneous group of nonintervention non-LD students.

Discussion

This study sought to explore the effects of an integrated and comprehensive writing program on LD and non-LD elementary students' expository writing abilities. The results indicate strong support for the positive effects of such a program in terms of improved overall writing quality for expository texts. This improvement held when students wrote using text structures for which they had received instruction and when they wrote using a text structure that had not been taught as part of the intervention. Further,

Table 9
Non-LD Control Students vs. LD Tretament Students

	Pretest Non-LD vs. LD			Posttest Non-LD vs. LD		
Measure	*df*	*t*-value	*p*	*df*	*t*-value	*p*
Writing variable	(99)			(112)		
Holistic		−3.84	.000		−1.41	*ns*
Primary trait		−4.05	.000		−0.92	*ns*
Productivity		−3.85	.000		−0.75	*ns*
Reader sensitivity		−3.87	.000		0.42	*ns*
Reading variable	(102)			(121)		
Holistic		−2.49	.017		−1.32	*ns*
Primary trait		−3.24	.002		−1.40	*ns*
Recall		−2.39	.022		−1.42	*ns*
Main idea		−3.47	.001		−2.67	.01

Note. LD = learning disabled; *ns* indicates "no significance."

improvements occurred in terms of students' sensitivity to their audience.

There has been a strong emphasis and movement toward a process approach to writing in the regular education classroom for several years (Calkins, 1986; Graves, 1983; Hairston, 1982). However, the focus of most of the research within this paradigm has been on the writing of personal experience narratives. Further, even in regular education classrooms where teachers have used a process approach to writing instruction, there is little evidence of substantive dialogue about strategies or problem-solving processes (Anthony & Anderson, 1987). In part, these problems may be attributable to teachers' uncertainty about what skills or strategies to teach and how they should be introduced to students in a contextualized setting such as writing (see Isaacson, 1987; Pressley, Goodchild, Fleet, & Zajchowski, 1989).

In the field of special education, the process writing movement has had less impact. Writing instruction has typically focused on the instruction of mechanical skills rather than writing strategies important throughout the process (Barenbaum, 1983; Cristenson, Thurlow, Ysseldyke, & McVicar, 1989; Isaacson, 1987), although there have been several recent studies with special education students that have attempted to explicitly teach strategies through cognitive behavior modification. Graham and Harris, for example, have conducted an impressive series of studies using self-instructional routines and self-control training to promote students' narrative story writing abilities (Graham & Harris, 1985, 1989; Harris & Graham, 1985). Their research, which shows the effectiveness of text structure training and the feasibility of making underlying structures visible to students, provides an

important contribution to the self-regulation and writing literature. Researchers at the Research Institute at the University of Kansas have developed an instructional model for the teaching of learning and writing strategies (e.g., sentence writing, error monitoring, and theme writing) that provides an important foundation for developing writing curricula and teaching methods (Schumaker, Deshler, Alley, & Warner, 1983; Schumaker et al., 1981; Schumaker & Sheldon, 1985). However, the strategies and self-talk contained within the University of Kansas model tend to be rigidly prescribed and presented as isolated and hierarchical strategies.

While researchers have emphasized the importance of creating meaningful contexts for writing and increasing students' opportunities for frequent and sustained writing, few interventions in special education have been developed which focus on the complexity of the writing and the teaching-learning processes, and most of the interventions in regular education have not provided explicit forms of support for teachers who may not be familiar with or comfortable teaching the complexities of the writing process. By writing complexity, we mean that writing consists of several overlapping and recursive processes that are all under the writer's control. Writers must be knowledgeable of planning, drafting, editing, and revising strategies as well as be proficient in the use of text structures as tools for generating, organizing, and monitoring their text. Furthermore, the teaching-learning process instantiated for the instruction of literacy events must be predicated upon the assumption that writing does not have to be broken into smaller and smaller pieces for successful learning and that learners can be coconstructors rather than recipients of the prescribed dialogue and self-talk imposed by the writing curriculum (Poplin, 1988). Most importantly, the teaching-learning process must be contextualized and situated within the actual writing process, rather than talked about abstractly or removed from the process and reduced to a set of memorized writing principles, scripts, or rules (Gavelek & Palincsar, 1988; Poplin, 1988).

The intervention developed for this study, CSIW, taught students about the writing process as well as the role of text structure knowledge *throughout the process.* However, it was not just a curriculum for teaching expository writing. CSIW involved the construction of an entire teaching-learning context in which writing strategies were made visible to students during the process of writing papers, teachers and students talked about writing strategies and problems, self-talk related to the writing process was made apparent through the procedural facilitation format of the think-sheets and teacher think-alouds, and students collaborated with each other within a community of writers rather than writing in isolation. The question addressed in this study was whether such an integrated approach to instruction would be effective with elementary students and, particularly, learning disabled students—a population for whom many authors recommend the teaching of a few strategies sequentially and thoroughly, rather than

presenting simultaneously the multiple components of a package such as CSIW.

The question of whether an integrated and comprehensive writing program was effective with LD and non-LD students was answered resoundingly in the current study. These effects were observed in three essential areas: overall quality of expository writing on trained structures, transfer to untrained text structures, and sensitivity to the writer's audience.

First, the results suggest that CSIW did successfully improve students' expository writing performance. Experimental students produced significantly better organized compositions than control students. Furthermore, the parameters addressed in the writing program (process, organization) were apparent in the experimental students' increasing awareness of their audience and ownership of their own writing (as measured by significant changes in their reader sensitivity) as well as their increasing use of the text structure features.

Second, and more importantly, students who participated in the CSIW intervention were successful in generalizing their knowledge to less structured writing situations in which they wrote about unconstrained topics and used text structures of their own choosing. When asked to write an "expert" paper, students in the CSIW group generated texts that were generally rated equal in quality to those they generated when asked to produce taught text structures. In striking contrast, students in the control group showed a decrement from pretest to posttest in their ability to produce their own expert papers on self-selected topics. Thus, CSIW instruction was important in developing self-regulating writers who could successfully activate strategies on transfer tasks. Since self-regulation is an important goal of academic instruction, this finding was most significant as an indication of the program's success. This finding also is of practical importance in special education since teachers in elementary, middle, and high schools frequently assign expository papers and reports without providing students a given topic or text structure. Unless students are trained in the thinking strategies that underlie expository composition, these findings suggest that writing instruction alone may not ensure LD students' writing independence.

Third, CSIW students showed increasing sensitivity to their audience and their ownership of the writing process, suggesting the power of the scaffolded intervention in developing students' self-regulation. This finding suggests that experimental students were not simply working by rote in applying trained text structures to produce better organized texts. Instead, experimental students appeared to internalize the perspective of the reader to communicate their ideas more effectively. At the same time, their writing showed more of the author's personality, wit, and voice. This result occurred in spite of the fact that most control students were in process writing classrooms where emphasis was placed on activities that should have promoted students' ownership of the writing process and sensitivity to their

audience (e.g., writing on unconstrained topics, peer conferencing, and submitting papers for publication).

In accounting for the finding that students showed increasing ownership of the writing process and greater audience sensitivity, it is likely that this effect was attributable to the nature of the dialogue in experimental classrooms. In the CSIW treatment, teachers and students discussed their thinking and texts in a public manner. These classroom dialogues provided further opportunities for teachers to provide models for students and to allow students a voice in asking and responding to other authors' questions. These collaborative sessions reinforced the authors' strategies for writing interesting papers while underscoring the prerogative of the author in making final decisions. The power of this direct instruction in "authorship" and "audience" was apparent in the sizable effects obtained for this variable in the written compositions of the experimental students. Although we have no direct evidence to explain why the size of the effects for this variable increased with the ability of the student, we hypothesize that this aspect of writing was more implicit in the modeling of teachers than the text structure features that were explicitly modeled for students by teachers and thinksheets. LaBerge and Samuels (1972) have noted the importance of the amount of attention available in succeeding in any cognitive endeavor. Perhaps high-achieving students, who were more familiar with the features of the text structure being taught than low-achieving students, had more attention available to attend to the more implicit features of good writing associated with audience and voice. Low-achieving students, less familiar with the text structures being taught, may have directed their attention to text structures and had less attention available to focus on the more implicit features of well-written prose. The failure to find a significant interaction between these factors on the transfer measure may support the hypothesis that low-achieving students consciously concentrated more of their attention on criterion text structure features on trained texts, but were freed up on less constrained texts to attend to other factors associated with their own writing voice and audience. However, further research is needed that focuses upon the development of students' sensitivity to their audience to test these assumptions.

In addition, we have converging evidence from another study that students were internalizing the dialogue and talk modeled in the writing lessons. Although the metacognitive knowledge questionnaire used in the present study evaluated declarative knowledge in a multiple-choice and short-answer format, we recognize that such an evaluation format provides a rather narrow and cursory examination of students' knowledge, rather than a sensitive and accurate measure of students' knowledge and talk about writing strategies. Thus, we conducted a more in-depth study with a subset of LD and non-LD students in the CSIW intervention (Englert, Raphael, & Anderson, in press). We found that the talk of both groups of students was

progressively moving from other- to self-regulation as they acquired the vocabulary and language tools for describing the writing process and identifying communication breakdowns. Furthermore, study analyses indicated that the quality of students' talk was related to measures of academic achievement in writing and reading, suggesting that the acquisition of an inner language for talking about writing and writing problems was related to performance outcomes. When these findings are considered in light of the current research, the results suggest that students participating in the CSIW intervention were acquiring language tools that presumably enabled them to direct and regulate the writing process. In fact, intervention students in the present study showed large gains in their metacognitive knowledge on the group questionnaire, whereas students in the control group showed virtually no pretest to posttest change. With the acquisition of this new knowledge base and concomitant language tools, students seemed more successful in independently activating and applying strategies to produce well-formed expository texts.

Results of the comparative study also suggested that the reading and writing performance gains of LD students in the CSIW intervention tended to eliminate the performance gaps that existed prior to intervention. That is, postintervention LD students performed similar to a heterogeneous group of control students. Thus, LD students who received CSIW instruction in pull-out programs in special education may be expected to catch up with their non-LD counterparts who received traditional writing instruction in the general education classroom. On the other hand, both LD and non-LD students profited from CSIW instruction, and neither group of students seemed proficient in the writing strategies before their presentation. Thus, CSIW offered an instructional alternative of value in both the general and special education setting.

Although the writing results were unequivocal in their implications for writing instruction, the reading results were not. Students in experimental and control groups were not differentiated in their reading performance. It is hypothesized that this result was attributable to the rather focused nature of the CSIW intervention on writing rather than reading outcomes. In order to promote transfer to other literacy domains, teachers may need to directly instruct students to generalize, and demonstrate how writing strategies that are being introduced (e.g., use of text structures, text cues, and text monitoring) can be used in other content area domains. However, further research is needed to examine the question of transfer between writing and reading.

Finally, it is important to consider whether the treatment effects observed in this study are the result of teacher assignment to experiment and control groups, or merely the result of the greater attention of researchers to teachers and students in the experimental groups. This study actually does not provide any evidence regarding the relationship between treat-

ment effects and various factors such as teacher assignment, teacher implementation, and researcher attention. These represent limitations of the present study which remain unaddressed. However, in another related study, we did examine teachers' effective implementation of the CSIW instructional features (e.g., emphasis on writing as a cognitive and communicative process, cognitive strategies and the inner language that directs writing, flexible rather than rote application of strategies, and peer interactions) and the relationship of this implementation to writing outcomes (Anderson, Raphael, Englert, & Stevens, 1991). The analysis of these data suggested that, whereas all CSIW students gained in their ability to use those text structures made explicit through the intervention, only students of teachers who were "high implementers" grew in their abilities to transfer their knowledge and to generate their own topics and create appropriate text structures. Further, the students of high-implementing teachers tended to show greater sensitivity to their audience and writing voice, using both text structures that had been taught as well as those they created themselves, than did the students of low-implementing teachers. Thus, there was a clear effect attributable to the effective implementation of the instructional features of CSIW in promoting generalization and ownership of writing processes. Students' performance on the transfer measures increased with the level of their teachers' implementation of the CSIW treatment.

In summary, these results suggest that CSIW was an effective writing program that combined the best features of strategy instruction (e.g., the development of students' metacognitive knowledge, use of dialogue, and so forth) within a curriculum that fostered the development of students' knowledge of the writing process and text structures. Determining which components (or combinations of features) of the strategy instruction or curriculum produced the effects obtained is difficult to assess from the current study alone. Certainly, we agree with Swanson (1989) that a multiple-component package such as CSIW may represent an advance over instruction that focuses on simple, quick-fix writing strategies and methods. However, the complexity of the process must be scaffolded in such a way (through dialogue and think-sheets that cue strategy use) that the multicomponent program is successful. In fact, our informal observations suggested that, although LD students did not initially understand the complexity of the writing process and self-talk being modeled in the CSIW program, students gradually internalized the strategies, self-talk, and processes being taught over time. This is consistent with the literature on instructional scaffolding, inasmuch as the CSIW intervention did help students execute strategies even though they were not initially aware of how they fit into a cognitive framework. With repeated instruction and practice in the successive text structures, students gradually internalized the strategies and self-talk modeled by teachers. On this basis, it seems that the writing process need not be decomposed or reduced to a sequential set of strategies that are

learned and practiced in isolation (see Gavelek & Palinscar, 1988; Poplin, 1988). With the proper degree of instructional scaffolding, (e.g, teachers' dialogue and procedural facilitation), the writing process can be held constant while adjusting the nature of students' participation through graduated assistance (Greenfield, 1984).

Further empirical research would be useful in isolating the precise contribution of the various strategies and instructional techniques of CSIW. Our preliminary research in this area leads us to hypothesize that teachers' success in implementing the instructional principles for strategy instruction is related to gains in students' metacognitive knowledge and writing performance. Research needs to be conducted to address this and related questions regarding the effectiveness of various writing strategies, and multicomponent versus single-component packages. Certainly, the data from the present study suggest that instruction in the writing process and expository text structures can be effective when they are embedded in an instructional framework emphasizing teacher modeling, scaffolded assistance, procedural facilitation, peer collaboration, and the development of an inner language and vocabulary for talking about writing.

Note

Preparation of this article was supported in part by the U.S. Department of Education, Office of Special Education and Rehabilitative Services, Grant G008530201. The opinions expressed in this article do not necessarily reflect the position, policy, or endorsement of the U.S. Department of Education.

We wish to acknowledge the assistance of Fran Boehlein and Kathy L. Fear in data collection and scoring. The help of administrators, teachers, and students in East Lansing and Lansing School Districts is most gratefully acknowledged.

References

Anderson, L. M., Raphael, T. E., Englert, C. S., & Stevens, D. D. (1991, April). *Teaching writing with a new instructional model: Variations in teachers' practices and students' performances.* Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Anthony, H. M., & Anderson, L. M. (1987, April). *The nature of writing instruction in regular and special education classrooms.* Paper presented at the annual meeting of the American Educational Research Association, Washington, D.C.

Armbruster, B. B., & Anderson, T. H. (1982). *Producing considerate expository texts: Or easy reading is damned hard writing.* Reading Education Report No. 46. Urbana: University of Illinois, Center for the Study of Reading.

Armbruster, B. B., Anderson, T. H., & Ostertag, J. (1987). Does text structure/summarization instruction facilitate learning from expository text? *Reading Research Quarterly, 22*(3), 331–346.

Barenbaum, E. M. (1983). Writing in the special class. *Topics in Learning and Learning Disabilities, 3*(3), 12–20.

Calkins, L. M. (1986). *The art of teaching writing.* Portsmouth, NH. Heinemann.

Christenson, S. L., Thurlow, M. L., Ysseldyke, M. E., & McVicar, R. (1989). Written language instruction for students with mild handicaps: Is there enough quantity to ensure quality? *Learning Disability Quarterly, 12,* 219–229.

Daiute, C. (1985). Do writers talk to themselves? In S. Freedman (Ed.), *The acquisition of written language* (pp. 133–159). Norwood, NJ: Ablex.

Dyson, A. H. (1987). The value of "time off task": Young children's spontaneous talk and deliberate text. *Harvard Educational Review, 57,* 396–419.

Englert, C. S. (1990). Unraveling the mysteries of writing through strategy instruction. In T. E. Scruggs & B.Y.L. Wong (Eds.), *Intervention research in learning disabilities* (pp. 186–223). NY: Springer-Verlag.

Englert, C. S., & Raphael, T. E. (1989). Developing successful writers through cognitive strategy instruction. In J. E. Brophy (Ed.), *Advances in research on teaching* (Vol. 1, pp. 105–151). Greenwich, CT: JAI Press.

Englert, C. S., Raphael, T. E., & Anderson, L.M. (in press). Socially-mediated instruction: Improving students' knowledge and talk about writing. *Elementary School Journal.*

Englert, C. S., Raphael, T. E., Anderson, L. M., Gregg, S. L., & Anthony, H. M. (1989). Exposition: Reading, writing and the metacognitive knowledge of learning disabled students. *Learning Disabilities Research, 5*(1), 5–24.

Englert, C. S., Raphael, T. E., Fear, K. L., & Anderson, L. M. (1988). Students' metacognitive knowledge about how to write informational texts. *Learning Disability Quarterly, 11,* 18–46.

Englert, C. S., & Thomas, C. C. (1987). Sensitivity to text structure in reading and writing: A comparison of learning disabled and nonhandicapped students. *Learning Disability Quarterly, 10,* 93–105.

Fitzgerald, J., & Teasley, A. B. (1986). Effects of instruction in narrative structure on children's writing. *Journal of Educational Psychology, 80,* 143–151.

Flower, L., & Hayes, J. R. (1981). A cognitive process theory of writing. *College Composition and Communication, 35,* 365–387.

Gavelek, J. R., & Palincsar, A. S. (1988). Contextualism as an alternative world view of learning disabilities: A response to Swanson's "Toward a metatheory of learning disabilities." *Journal of Learning Disabilities, 21,* 278–281.

Gordon, C. J., & Braun, C. (1985). Metacognitive processes: Reading and writing narrative discourse. In D. L. Forrest-Pressley, G. E. MacKinnon, & T. G. Waller (Eds.), *Metacognitive, cognition, and human performance* (vol. 2, pp. 1–75). New York: Academic Press.

Graham, S., & Harris, K. R. (1985). Improving composition skills of inefficient learners with self-instructional strategy training. *Topics in Language Disorders, 7,* 66–77.

Graham, S., & Harris, K. R. (1989). Components analysis of cognitive strategy instruction: Effects on learning disabled students' compositions and self-efficacy. *Journal of Educational Psychology, 81,* 353–361.

Graham, S., & Harris, K. R. (in press). Cognitive training: Implications for written language. In J. Hughes & R. Hall (Eds.), *Handbook of cognitive-behavioral approaches in educational settings,* NY: Guilford.

Graves, D.H. (1983). *Writing: Teachers and children at work.* Exeter, NH: Heinemann Educational Books.

Graves, D. H., & Hansen, J. (1983). The author's chair. *Language Arts, 60*(2), 176–183.

Greenfield, P. M. (1984). A theory of the teacher in the learning activities of everyday life. In B. Rogoff & J. Lave (Eds.), *Everyday cognition: Its development in social contexts* (pp. 117–138). Cambridge, MA: Harvard University Press.

Hairston, M. (1982). The winds of change: Thomas Kuhn and the revolution in the teaching of writing. *College Composition and Communication, 33,* 76–88.

Harris, K. R., & Graham, S. (1985). Improving learning disabled students' composition skills: Self-control strategy training. *Learning Disability Quarterly, 8,* 27–36.

Hayes, J. R., & Flower, L. S. (1987). On the structure of the writing process. *Topics in Language Disorders, 7,* 19–30.

Isaacson, S. (1987). Effective instruction in written language. *Focus on Exceptional Children 19*(6), 1–12.

LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6,* 293–323.

Meyer, B.J.F. (1975). *The organization of prose and its effects on memory.* Amsterdam: North-Holland.

Meyer, B.J.F., Brandt, D. H. & Bluth, G. J. (1980). Use of author's textual schema: Key for ninth-graders' comprehension. *Reading Research Quarterly, 16,* 72–103.

Meyer, B.J.F., & Freedle, R. O. (1984). Effects of discourse type on recall. *American Education Research Journal, 21,* 121–144.

Mullis, I. (1980). *Using the primary trait system for evaluation writing.* Washington, D.C.: National Assessment of Educational Progress.

Nodine, B. F., Barenbaum, E., & Newcomer, P. (1985). Story composition by learning disabled, reading disabled, and normal children. *Learning Disability Quarterly, 8,* 167–181.

Nystrand, M. (1989). A social-interactive model of writing. *Written Communication, 6,* 66–85.

Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction, 1,* 117–175.

Paris, S. G., Lipson, M. Y., & Wixson, K. K. (1983). Becoming a strategic reader. *Contemporary Educational Psychology, 8,* 293–316.

Poplin, M. S. (1988). Holistic/constructivist principles of the teaching/learning process: Implications for the field of learning disabilities. *Journal of Learning Disabilities, 21,* 401–416.

Poplin, M. S., Gray, R., Larsen, S., Banikoski, A., & Mehring, R. (1980). A comparison of components of written expression abilities in learning disabled and non-learning disabled students at three grade levels. *Learning Disability Quarterly, 3,* 46–53.

Poteet, J. A. (1978). *Characteristics of written expression of learning disabled and non-learning disabled elementary school students.* Muncie, IN: Ball State University. (ERIC Document ED 1590850).

Pressley, M., Goodchild, F., Fleet, J., & Zajchowski, R. (1989). The challenges of classroom strategy instruction. *Elementary School Journal, 89,* 301–342.

Raphael, T. E., & Englert, C. S. (1990). Reading and writing: Partners in constructing meaning. *The Reading Teacher, 43,* 388–400.

Raphael, T. E., Englert, C. S., & Kirschner, B. W. (1989). Students' metacognitive knowledge about writing. *Research in the Teaching of English, 23,* 343–379.

Raphael, T. E., Englert, C. S., & Kirschner, B. W. (1986, April). *The impact of text structure instruction within a process writing orientation on fifth and sixth grade students' comprehension and production of expository text.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Rowe, D. W. (1989). Author/audience interaction in the preschool: The role of social interaction in literacy learning. *Journal of Reading Behavior, 21,* 311–349.

Scardamalia, M., & Bereiter, C. (1983). The development of evaluative, diagnostic and remedial capabilities in children's composing. In M. Martlew (Ed.), *The psychology of written language: Developmental and educational perspectives* (pp. 67–95). London: John Wiley.

Scardamalia, M., & Bereiter, C. (1986). Written composition. In M. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp. 778–803). NY: Macmillan.

Schumaker, J., Deshler, D., Alley, G., & Warner, M. (1983). Toward the development of an intervention model for learning disabled adolescents: The University of Kansas Institute. *Exceptional Educational Quarterly, 4,* 45–74.

Schumaker, J. B., Deshler, D. D., Nolan, S., Clark, F. L., Alley, G. R., & Warner, M. M. (1981). *Error monitoring: A learning strategy for improving academic performance of LD adolescents.* (Research Rep. No. 32). Lawrence, KS: University of Kansas, Institute for Research in Learning Disabilities.

Schumaker, J., & Sheldon, J. (1985). *The sentence writing strategy.* Lawrence, KS: University of Kansas, Institute for Research in Learning Disabilities.

Spache, G. (1953). A new readability formula for primary-grade reading materials. *Elementary School Journal, 53,* 410–413.

Spivey, N. N. (1984). *Discourse synthesis: Constructing texts in reading and writing.* Newark, DE: International Reading Association.

Swanson, H. L. (1989). Strategy instruction: Overview of principles and procedures for effective use. *Learning Disability Quarterly, 12,* 3–15.

Taylor, B. M., & Beach, R. W. (1984). The effects of text structure instruction on middle-grade students' comprehension and production of expository text. *Reading Research Quarterly, 19,* 134–146.

Tharp, R. G., & Gallimore, R. (1988). *Rousing minds to life: Teaching, learning, and schooling in social context.* New York: Cambridge University Press.

Thomas, C. C., Englert, C. S., & Gregg, S. L. (1987). An analysis of the errors and strategies in the expository writing of learning disabled students. *Remedial and Special Education, 8,* 21–30.

Vygotsky (1978). *Mind in society: The development of higher psychological processes.* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. & Trans.) Cambridge, MA: Harvard University Press.

Wertsch, J.V. (1980). The significance of dialogue in Vygotsky's account of social, egocentric, and inner speech. *Contemporary Educational Psychology, 5,* 150–162.

Wong, B.Y.L., & Wilson, M. (1984). Investigating awareness of and teaching passage organization in learning disabled children. *Journal of Learning Disabilities, 17,* 477–482.