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Author: Baker, Scott; Gersten, Russell; Graham, Steve.


Abstract: This article presents research-based examples of effective instructional approaches for improving the quality of the content of stories and essays written by students with learning disabilities. We also describe recent research on handwriting and spelling (transcription skills) and show how instruction in these areas affects overall writing quality. Examples of instructional approaches that improve writing quality are taken from experimental studies included in a recent meta-analysis by Gersten and Baker (2001) conducted on writing intervention research. A common goal in these studies was to teach students with learning disabilities how to organize writing tasks, generate ideas about the writing topics, and produce final written products that were coherent and organized. In this article, our goal is to illustrate how findings from these studies can be implemented in both general and special education settings.

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This article presents research-based examples of effective instructional approaches for improving the quality of the content of stories and essays written by students with learning disabilities. We also describe recent research on handwriting and spelling (transcription skills) and show how instruction in these areas affects overall writing quality. Examples of instructional approaches that improve writing quality are taken from experimental studies included in a recent meta-analysis by Gersten and Baker (2001) conducted on writing intervention research. A common goal in these studies was to teach students with learning disabilities how to organize writing tasks, generate ideas about the writing topics, and produce final written products that were coherent and organized. In this article, our goal is to illustrate how findings from these studies can be implemented in both general and special education settings.

During the past 15 years, an impressive number of intervention research studies in the area of expressive writing have been conducted with students with learning disabilities (LD). Whereas earlier studies focused predominantly on writing mechanics and grammar, more recent studies have addressed ways to improve writing content.

This shift was influenced by the development of cognitive models of writing that emphasized the mental operations employed by skilled writers (Hayes & Flower, 1986; Scardamalia & Bereiter, 1986). Skilled writers devote a good deal of time to planning, revising, monitoring, evaluating, and managing the writing process (Graham & Harris, 2002). In teaching writing to students with LD, research efforts have shifted to identifying methods for developing these writing strategies and processes.

Writing research has also been influenced by Hillocks's (1984) meta-analysis of writing instruction. Hillock found that effective writing lessons had clear and specific objectives and prepared students to write about specific topics. Effective writing instruction was characterized by planned brainstorming activities that helped students organize information prior to writing.

Hillocks's (1984) meta-analysis noted that older writing activities, such as combining simple sentences into
more complex sentences, were much less effective than the integrated series of lessons that traversed the entire writing process. Even less effective were methods in which students merely wrote a good deal of text with minimal guidance from a teacher or attempted to emulate features of good writing found in the work of others. Least effective were approaches that focused on studying parts of speech and sentence fragments.

In addition to Hillocks's meta-analysis and the emerging emphasis on the strategic nature of writing, several other reasons contributed to the generation of this body of high-quality research. Many researchers viewed writing instruction as one of the few aspects of special education instruction in which teachers could help students learn to express their own ideas effectively. Expository writing allows students to demonstrate their unique perspectives on-and understanding of-social, political, and historical issues (Gersten & Baker, 2001). Expressive writing was also viewed as a way to expand special education teaching to include activities that are both cognitively demanding and intrinsically motivating. Moving beyond an exclusive focus on systematically building foundational academic skills was appealing to many researchers. Also, writing was deemed essential for success in the workplace, although many students have problems with written communication.

In fact, a large number of American students, both with and without LD, have very poor writing skills. The latest results of the National Assessment of Educational Progress (National Center for Education Statistics, 1998) indicated that 16% of 4th-grade students, 16% of 8th-grade students, and 22% of 12th-grade students were not able to write at even the most basic level. Writing problems surface early and tend to remain with students throughout their schooling experience (Isaacson, 1995). Together with reading problems, writing problems lead to the greatest number of referrals to and placements in special and remedial education programs (Hallahan & Kauffman, 1986; Howell, Fox, & Morehead, 1993).

A central problem in the writing of students with LD is their failure to plan and organize their writing (Hillocks, 1984). This shortcoming was described by Graham and Harris (1997), who noted that when students with LD approach writing tasks, "little attention is directed to the needs of the audience, the organization of text, the development of rhetorical goals, or the constraints imposed by the topic" (Graham & Harris, 1997, p. 414).

One purpose of this article is to present research-based examples of effective instructional approaches for improving the quality of the content of stories and essays written by students with LD. These examples emphasize instruction in planning, organizational, and revision strategies. We also describe recent research on handwriting and spelling (transcription skills) and show how instruction in these areas benefits the writing of students with LD. In our view, both composing strategies and transcription skills need to be taught in order to provide an effective, comprehensive writing program for students with LD.

Examples of instructional approaches that improve writing quality are taken from experimental studies that were part of a recent meta-analysis by Gersten and Baker (2001) conducted on a relatively small but impressive body of empirical research. The common goal in the studies included in this meta-analysis was to teach students with LD strategies and procedures for planning their writing, for stimulating their thinking about the topic they are addressing, and for completing a coherent, organized essay or story. Some of these studies also emphasized strategies or procedures for revising text. Our goal in this article is to illustrate how the findings from these studies can be implemented in classroom settings, both in general and in special education.

Recent Research on Improving Writing Content

Special education research has contributed substantially to the development of effective methods for teaching students with writing problems to compose more effectively. Students have been taught structures for writing fictional narratives. They have been taught to analyze material learned in the classroom, to write personal narratives based on their own interpretations of life experiences (Graham & Harris, 1989b), and to compose persuasive essays in which they take positions on topical, social, and political issues (Graham & Harris, 1989b; Wong, Butler, Ficzere, & Kuperis, 1997). Students have been taught to write analytic essays, in which they compare and contrast two or more concepts, objects, people, or events.

In the recent meta-analysis summarizing research on improving the content of expressive writing for students
with LD (Gersten & Baker, 2001), 13 studies used experimental or quasi-experimental designs and explicitly implemented interventions to improve writing content in a variety of genres. A summary of these studies is presented in Table 1. As part of the analysis, each study was examined to determine whether it emphasized the teaching of the writing process—that is, explicit instruction in how to plan, organize, and carry out writing tasks. Invariably, these plans of action (sometimes called strategies or procedural facilitators) were encapsulations of the procedures that skilled writers use when they compose (e.g., Englert, Raphael, Anderson, Anthony, & Stevens, 1991; Graham & Harris, 1989b). Plans of action have been a key feature of expressive writing research, from the early seminal studies (e.g., Englert et al., 1991; Graham & Harris, 1989b) to the most recent (e.g., De La Paz & Graham, 1997a, 1997b; Wong et al., 1997).

The mean effect size across all 13 studies in the meta-analysis was .81, which is typically considered moderately strong (Cohen, 1988). Effect sizes were consistently in the moderate-to-large range across genres (e.g., compare-contrast essays versus narrative stories) and across methods used to rate quality (e.g., holistic ratings versus trait or rubric scores). The results of the meta-analysis suggested that teaching writing strategies to students with LD can result in considerable benefits to writing quality. This finding is also supported by a small body of more clinical, multiple-baseline studies on writing interventions for students with LD (Danoff, Harris, & Graham, 1993; De La Paz, 1997; Graham, MacArthur, Schwartz, & Page-Voth, 1992; Montague & Leavell, 1994; Wallace & Bott, 1989; Zipprich, 1995). Gersten and Baker (2001) also found that writing interventions had a positive impact on students’ perceptions of their own ability to write effectively.

The meta-analysis highlighted a range of research-based instructional approaches that educators should use to teach written expression to students with LD. We have organized these approaches into three broad categories and present examples of each in the following section. The three areas are:

1. teaching the steps in the process of writing a quality essay or narrative,
2. improving quality through feedback and elaborated dialogue, and
3. teaching students to understand different text structures and their relationship to writing genres.

Although the major emphasis in writing research has shifted toward ways of improving content quality, over the past 15 years empirical investigations of teaching fundamental aspects of writing (e.g., transcription skills) have not ceased. They have changed, however, in significant ways. Research on teaching writing fundamentals became more theory driven, striving to understand how and to what degree problems with basic aspects of writing (e.g., spelling, punctuation) contributed to problems with writing content and quality (Graham & Harris, 1997). In essence, this research has shown that by targeting explicit instruction in transcription skills—that is, spelling and handwriting—and by teaching sophisticated writing strategies, the student’s overall writing ability will improve by a greater degree than it would if the instruction were to focus only on improving content quality or only on mechanical aspects.
Explicit Teaching of Steps in Writing

Despite the fact that the researchers all had slightly different orientations, most recent studies adhered to a consistent framework of teaching three critical steps in the process of writing: planning, the actual writing of a first draft on the topic, and revision of this draft. Teachers should explicitly teach these steps, using several examples and varying levels of support. Teaching students to use think sheets, planning sheets, prompt cards, or some other type of mnemonic aid is essential. These concrete reminders of critical steps provide students with a structure that prompts and encourages them to complete critical steps involved in developing a written product. They provide guidance on what to do when the students feel stuck or overwhelmed. A second purpose of the planning sheets is to provide a common language for teachers and students to sharpen their dialogue about writing tasks and assignments.

Having a common language means that teachers or more competent peers can verbalize the steps they take when they attempt to write for a given purpose or when they organize their thoughts or their evidence for arguments in a way that provides less experienced students with reference points to help the novice learner better understand the process. Often, when teachers use a process approach to teaching writing, poor or inexperienced writers attempt to evaluate the compositions of more experienced writers and attempt to articulate their own analysis of strengths and weaknesses. Without a common language, these attempts are usually unclear and result in explanations likely to confuse less sophisticated writers. Many of us do not know how to analyze or articulate the reasons for our preferences. Although this approach is superior to asking students to write in the absence of a guiding structural framework, its effectiveness is severely limited for students who have little knowledge of the processes underlying effective written composition (Graham & Harris, 1997).

Think Sheets and Planning Sheets

Englert and colleagues (Englert & Mariage, 1992; Englert & Raphael, 1989; Englert et al., 1991) conducted extensive research on a comprehensive procedure for explicitly teaching the stages of the writing process. In a seminal study, Englert et al. (1991) tested an approach to the writing process called cognitive strategy instruction in writing. The study was conducted simultaneously in both general and special education settings and included students both with and without LD. Students in the cognitive strategy instruction condition received 5 months of instruction that consisted of four phases:

1. text analysis,
2. modeling the writing process,
3. guided student practice in composition, and
4. independent writing.

Students in the control classrooms received regular writing instruction, which included opportunities to compose texts two to three times per week.

The experimental curriculum centered on a set of think sheets with the acronym POWER: Plan, Organize, Write, Edit, and Revise (Englert, Raphael, Anderson, Anthony, & Stevens, 1991). The instructional approach was "designed to make the strategies, self-talk, and text structures for performing the writing process visible [italics added] to students" (p. 345). Think sheets were used during every stage in the writing process. Teachers were taught to extensively model the inner dialogue that competent writers engage in during the writing process and to support students during lessons and writing activities.

Instruction began with students' studying writing samples following a given text structure, such as compare-contrast. Teachers led discussions of the features and quality of the writing sample using text structures as a framework. The objective was to simultaneously provide students with an impression of what quality final written products were to resemble and to provide them with a language for expressing their perceptions.

Initial instruction established the analytic framework. Teachers then modeled strategies for how to brainstorm writing ideas and how to organize those ideas for the subsequent writing stage. Early on, teachers provided
extensive support by leading the writing of a class paper, with students serving as idea generators using the
POWER strategy. Over time, the students assumed greater control over this process. Eventually, each student
was required to complete a written composition independently. They also had to demonstrate mastery of each
stage of the writing process. Key to the intervention were extensive modeling and thinking aloud by the
teachers; provision of think sheets as guides for brainstorming, outlining, and writing; and fostering a feeling
among the students that their classroom was a community of writers.

Figure 1 shows an example of Englert et al.'s (1991) think sheet to facilitate the organization of explanatory
writing. Students explained and shared their think sheets with their peers before actually writing their brief
essays.

Teachers would identify specific examples of problems that students were having and use transparencies to
lead discussion groups that focused on the decisions students made and on possible alternative solutions. For
example, one student in the Englert and Mariage (1992) study who was supposed to brainstorm ideas for his
explanation about skateboarding simply listed things needed for the sport and what was needed to perform
particular tricks. With the other students in the class assisting, the teacher led the class through the process of
taking the student's list of details (or outline) and organizing them under conceptual categories: materials,
setting, tricks, and steps (Englert & Mariage, 1992).

To Englert and colleagues, it was critical that the think sheets did not become "worksheets" to simply fill out but,
rather, were seen by students as "note-taking tools with prompts to remind students of the thinking strategies
and dialogue that good writers used" (Englert et al., 1991, p. 352). Writing expectations were not modified for
special education students. Instead, modification came at the level of guidance, feedback, and extended
practice provided. The result was that consistent, positive effects were attained across achievement levels,
indicating that the approach benefited both special and general education students equally.

In contrast, reading comprehension research by Wong (1979), Wong and Jones (1982), and Chan and Cole
(1986) has shown that teaching explicit strategies to improve comprehension may help students with LD but
may sometimes have little effect on average-achieving students (Gersten, Fuchs, Williams, & Baker, 2001).

Developing Writing Style Through Revision

Extensive research on the use of procedural facilitators (think sheets, plans of action) in the writing process has
also been conducted by Graham, Harris, and their colleagues (Graham & Harris, 1989a; Graham, MacArthur,
& Schwartz, 1995; Graham, Schwartz, & MacArthur, 1993). Many of the facilitators investigated have been steps
that students verbally rehearse and internalize. As in Englert et al. (1991), teachers model how to use these
facilitators, and students receive considerable support as they learn to apply them independently (see Harris
& Graham, 1996). A focus in the research of Graham, Harris, and their colleagues has been the role of self-
regulation strategies, such as goal setting and self-monitoring, taught to help students evaluate and improve
their own behavior as writers.

This line of research began with a study by Graham and Harris (1989a) demonstrating that when students were
 taught a very specific question-asking strategy, they wrote better stories than students who were not taught this
strategy. The question-asking strategy was similar to the story grammar questions used by Idol (1987) in her
reading comprehension research, showing how reading comprehension instruction and expressive writing
instruction can be linked and integrated and how specific text structures are an excellent basis for generating
instructional approaches.

In the Graham and Harris (1989a) study, students were taught a question-asking strategy to improve their
narrative writing. Awareness of narrative text conventions was a prominent feature of all stages of the
intervention. Initially, students were taught to identify story grammar elements in the stories they read. A
mnemonic for seven story grammar questions was used during this phase. Once students could recite the mnemonic and discuss its meaning, they moved to the next phase, which involved generating story grammar elements while looking at a picture. A five-step learning strategy was used to help students write stories using the picture prompt. In modeling the strategy using think-aloud techniques, teachers were careful to stay close to the story grammar framework. Students then practiced the five-step learning strategy as they wrote their own stories. In the feedback dimension, the stories were read by the teacher and students as a group. If any of the story elements were missing, the group discussed how and where it could be added. Stories were returned to the students for revision based on teacher and student recommendations.

In subsequent studies with their colleagues, Graham and Harris decided to address the issue of improving writing quality by tackling the process of revision and refinement, which is a critical component of good writing instruction. Actually teaching students how to revise has been an important component of much writing intervention research in the LD field (Englert et al., 1991; Harris & Graham, 1996; MacArthur, Schwartz, & Graham, 1991; Schumaker, Denton, & Deshler, 1984; Wong, Butler, Ficzere, & Kuperis, 1996). Developing methods to help students with LD refine and edit their work has been problematic, but a few researchers have begun to develop specific strategies that appear quite promising.

Graham, MacArthur, and Schwartz (1995) noted that students in general "revise infrequently, or concentrate their revising efforts on proofreading . . . that is, [on] mechanical and word-level changes, that have little or no impact on the quality of their writing" (Graham et al., 1995, p. 230). They noted that this problem was particularly acute for students with LD, who "approach the revision of their compositions as a 'housecleaning task.' Most of their revisions are aimed at trying to tidy up the appearance of the paper, making it neater and correcting errors of mechanics and usage as best they can" (p. 237).

Their approach used a relatively simple solution to the complex act of revision, yet it produced impressive
dividends. Students in the experimental condition were taught to use procedural facilitators that directed them to add at least three things to their stories to make them better. Students in the control condition were simply requested to think about what they wanted to change or add to their first drafts to improve them. The result was that students in the experimental condition wrote final drafts of higher overall quality than students in the control condition. In other words, concrete setting of reasonable, achievable goals yielded greater improvements than less specific requests.

Analysis of the actual changes made in the revisions is particularly interesting and further demonstrates the benefit of concrete procedural facilitators. Students in both the experimental and control conditions made about the same number of revisions in their first drafts—about 23 revisions per 100 words. However, there were marked differences in the quality of the revisions. Students in the experimental condition made significantly more revisions that altered the meaning of the text than students in the control condition (47% versus 16%). Also, their revisions tended to improve the quality. Specifically, three out of four revisions made by the students who used the revision guide were rated as making the text better. This finding shows that a relatively simple instructional intervention helped students with LD to better reflect on their writing, critically analyze it, and improve its quality. Despite this overall positive effect, it is important to point out that the majority of changes that students made in their revisions remained at the individual word level and seldom entered the realm of more extensive, sentence-level revising characteristic of better writers.

A key to more extensive writing improvements may reside in the notion of cognitive apprenticeship (Collins, Brown, & Newman, 1989), where skill “development and externalization are accomplished through discussion, alternation of teacher and learner roles, and group problem solving” (p. 458). Key to cognitive apprenticeship models are efforts to externalize processes that are usually carried out internally. In writing, externalization is promoted by the use of procedural facilitators that guide students in their thinking and can help guide discussions. Another key to cognitive apprenticeship models is the verbal descriptions that students use to highlight their own efforts as well as the efforts of their peers. Dialogue between the apprentice and more proficient peers helps the students externalize their cognitive efforts and their plans for incremental improvements (Collins et al., 1989).

Role of Feedback and Interactive Dialogue
Planning sheets and cognitive strategies can help stimulate students’ thinking, organize writing ideas, and guide the actual task of putting pen to paper (Gersten et al., 2001). However, the successful application of procedural facilitators is enhanced considerably when they are linked to focused dialogue among students and teachers. In particular, extended dialogue and feedback can be another means for helping students significantly improve quality.

Dialogue about the texts that students compose can be an excellent way to illustrate the connection between reading and writing. When well implemented, dialogue can become a central construct in the development of literacy (Kucan & Beck, 1997; MacArthur, Schwartz, Graham, Molloy, & Harris, 1996).

A major purpose of the think sheets used by Englert and colleagues was to provide concrete support for extensive verbal interactions about the content and quality of students’ writing and use of conventions. In the words of Englert (1990), the ultimate goal was to help “unravel the mysteries of the writing process” (p. 186). Englert et al. (1991) hypothesized that substantive interactions among teachers and students are critical in unraveling these mysteries. Other researchers investigating procedural facilitators and cognitive strategies have also consistently emphasized the importance of capitalizing on the social nature of learning (Moll, 1990; Vygotsky, 1978), showing that doing so helps students move toward stronger independence and flexibility in their thinking (Englert & Mariage, 1996; Palincsar & Brown, 1989; Scanlon, Deshler, & Schumaker, 1996; Wong et al., 1997).

In writing intervention research, either teachers working with students or peers working together engage in dialogue about writing, providing frequent comments, thoughts and suggestions, missing elements, observed
problems, and specific strengths. Targeted prompts have been used to guide the nature of these verbal interactions, giving teachers and peers concrete suggestions for providing appropriate feedback. MacArthur et al. (1996) discussed the direct link between procedural facilitators and substantive dialogue about writing. Facilitators should be used to help bridge the gap between oral and written language, through a process called elaborated dialogue.

Kucan and Beck (1997) convincingly argued for the role of dialogue as an essential aspect of both reading and writing instruction, noting that it represents "the shift from identifying and teaching discrete strategies to focusing on students' efforts to make sense of ideas or build their own understanding of them" (p. 285). In writing, for example, it may be less important to teach all the steps in a writing strategy than to use a strategy to initiate and focus dialogue-and, ultimately, a level of self-reflection in the student-that leads to more sophisticated levels of performance (Kucan & Beck, 1997).

In substantive interactions about written composition, teachers verbalize ways of thinking about aspects of writing, and students display their current ways of thinking with the teacher. Feedback is provided by responding to students' attempts at organization, originality, and unique interpretation. New ways of thinking can be exposed; students are systematically apprenticed into more detailed and richer forms of thinking and expression (Englert & Mariage, 1996; Wong et al., 1997). This is, of course, the ideal situation, something for teachers to aspire toward. In reality, teachers approximate this level of nuanced dialogue. Yet, the consistent pattern of moderate to large effects indicates that students can benefit when teachers gear instruction toward these ideas and use the concrete aids (planning sheets, mnemonics, etc.) as tools to help both themselves and their students.

Some writing intervention researchers set up elaborate systems for peer feedback on writing content and quality (Englert et al., 1991; MacArthur et al., 1991; Wong et al., 1996, 1997). For example, Wong et al. (1997) provided students with specific guidelines for interactive dialogue on the elements of a successful compare-contrast essay and on the procedures for revising the first draft. De La Paz and Graham (1997a, 1997b) focused on the revision process as the critical time for interactive dialogue between teacher and student, who can then jointly analyze key components of the writing strategies taught that are either present in or absent from the written product. Wong and her colleagues hypothesized that interactive dialogue, which included multiple cycles of reflection, realization, and redress of problems, helped students see their own thoughts and write from another person's perspective.

The question of who is more effective at providing feedback-teachers or peers-has not been resolved, and it may never be. Resolution may be less crucial than pursuing a better understanding of the quality of the feedback offered that enhances performance. However, one study that specifically compared the impact of teacher feedback versus peer feedback on writing quality (Wong et al., 1996) found that the results were equivalent. What appears to be most important is how elaborate, specific, and explicit the systems for giving feedback are (Englert et al., 1991; Wong et al., 1996).

Although the research program of Wong and colleagues often emphasized peer interactions to improve writing quality, each intervention invariably began with explicit instruction in the writing process and about specific text structures by the teacher. For example, in a study by Wong et al. (1996), the students received extended instruction in how to write persuasive essays and were given a prompt card that listed key words and phrases that they were to use in their writing (e.g., introductory phrases such as "In my opinion," and "From my point of view").

Students had three class periods to write their essays. They worked together in pairs to plan their essays by jotting down ideas supporting their views. They were taught that prior to attempting to write out an argument, students should think aloud their arguments to their partners. The partners, in turn, were taught to seek clarification, explanation, or elaboration of the arguments when they felt it was needed. The students' planning sheets had columns for their own ideas about the argument and for the arguments made by their partners. Only
when a dyad completed these planning sheets to the satisfaction of the teacher did each student independently write his or her essay.

In a subsequent study, Wong et al. (1997) designed a multiple-component strategy for improving the quality of essay writing by students with LD in Grades 9 and 10. They increased the specificity of the tasks and procedures by using aspects of Englert et al.'s (1991) compare-contrast think sheets as the basis for first-draft essay composition and by using the COPS strategy (Capitalization, Organization, Punctuation, and Spelling; Schumaker, Nolan, & Deshler, 1985) to check mechanics during the revision phase. Pairs of students took turns assuming the role of teacher/critic and checking their partner’s work for clarity and use of conventions. As in the 1996 study, the research team began with extensive teacher modeling and think-alouds, moving toward student application of collaborative planning with their partner and, finally, to revision based on partner feedback.

Interactive dialogue was a key feature of each phase, helping students first to engage in the process of compare-contrast writing and then to make revisions to improve their writing. During the planning phase, for example, interactive dialogue centered on the think sheet helped two students clarify what they had done and what they still needed to do. One student said to the other, "we've got enough ideas for comparison.... We need more for contrast" (Wong et al., 1997, p. 13), which to the students meant that they had enough ways in which the things being compared were similar and needed more ways in which they were different.

In the Wong et al. (1996) system, students also worked with their teachers in initial conferencing activities. Teachers helped students learn to be critics, to spot ambiguities in their partner’s essay, and to assist with revisions. In the initial conferences, teachers would go through an essay, spot ambiguities, and model a process of collegial revision. Wong et al. (1996) said that these "interactive dialogues . . . served a cardinal role in pinpointing writing problems and effecting suitable revisions" (p. 204). Students learned to state their own and opposing views and "convince their partners of the soundness of their arguments" (p. 208). Throughout the intervention, there was a "relentless instructional emphasis on cogency [of argument]" (p. 208), as students learned the central aspects of writing opinion essays.

Wong and her colleagues concluded that the structure of the interactive dialogue provided a concrete way for students to engage in an ongoing and recursive process of reflecting on their own ideas and composition efforts. Dialogues with partner and teacher helped them to see rough spots and to develop a sense of audience. For students with LD, the supportive nature of this talk seemed to be particularly important because of the trouble they have "translating their verbalized ideas into words and sentences" (Wong et al., 1997, p. 7).

In other words, interactive dialogue with peers following the guidelines of the think sheets and the COPS strategy took students from simple to more complex states of written composition by building on their current levels of understanding, assisting them in providing supporting evidence or achieving more explicit articulation of their ideas, of what led them to generate these ideas, and of the relations between the ideas expressed in the essays. One of the central notions of elaborated dialogue is that students learn important aspects of written communication through verbal interactions that few can learn by working independently.

Ultimately, the most important element is that the process of learning to think aloud with teachers and peers leads to the internalization of procedures, processes, and patterns of thinking that result in better written products. In the long run, internalization contributes to more independent learners who know and can flexibly apply the secrets that proficient writers use.

These very same assumptions were at the heart of an earlier study by MacArthur et al. (1991) on the process of revision. MacArthur et al. found that when students worked together, they made more revisions than they did when they worked alone, and the quality of their papers improved. Improved revisions occurred only in the experimental condition, when students revised in consultation with their partners. Interactions were structured so that student pairs used one meeting to focus on substantive revisions and a second meeting to focus on the correction of mechanical errors. This is, of course, analogous to the combination of think sheets for planning
and COPS for revision that Wong et al. used in their 1997 study. The importance of the first (organizing/conceptual) meeting was emphasized. Peer editors were taught to listen to student authors reading their papers and to note positive aspects of the composition. The peer editors then read the paper alone, made revision notes about the parts of the paper that were unclear, and suggested details that could be added to make the paper more interesting or clearer. The focus for Phase 1 edits was on clarity of ideas and exposition. The peer dyads then discussed this feedback. Afterward, the student authors worked independently to revise their papers. In the second meeting, the revisions were discussed, and the peers checked each other's papers for mechanical errors (i.e., complete sentences, capitalization, punctuation, and spelling).

The positive effects found for the intervention were likely due to the combination of having a fresh eye to read and evaluate the compositions and establishing a structure for focused dialogue that gave students specific suggestions for improving their papers.

Explicit Teaching of Genre Conventions

Different types of writing are based on different structural elements. A persuasive essay contains a thesis and supporting arguments, elements that differ considerably from those found in narrative writing, which typically includes some combination of story grammar elements, such as plot, characters, and setting. Explicit teaching of these text structures is the third important instructional element in improving students' writing.

We have included text structure as a separate instructional element because it is a key feature in virtually all the research we reviewed. Yet, in practice it has always been and should be integrated with instruction about the writing process. Dialogue and feedback to improve writing quality, for example, are more productive when instruction strategically targets specific text structures and uses the text structure to build a common language. In learning to generate ideas for writing assignments, students would learn to generate elements to compare in a compare-contrast essay, for example, or personality attributes that would make a fictional character more interesting. Specificity of feedback and dialogue in the context of specific text structures can give students a better idea of how to improve their writing.

Instruction in specific text structures or genres should include a number of explicit models, examples, and prompts. Greater levels of specificity in the initial models and examples, and especially greater specificity in feedback, are associated with better written products. Figure 2 presents a procedural facilitator that could be used specifically for an explanation text structure (Englert, Raphael, &Anderson, 1992). Major categories are arranged in a way that helps students plan their writing. The visual structure for sequencing content gives them a way to take notes-and to brainstorm-which, when written out, can become their first draft.

Although different text structures include different essential components, it would be misleading to conclude that there is a "correct" way to construct any type of text. In writing a story, some writers begin with the climax of a story and proceed from there; others like to develop their characters before developing the plot. Ultimately, it is the story itself and not the organizational approach used to construct the story that makes it more or less engaging to the reader. Yet, facility with the core text structures and their conventions is a logical starting point for students to develop their own personal writing styles.

The integration of many text structures in most written materials makes it problematic to stipulate too rigidly what the precise differences are between them. In expository text, in particular, it is common for many different structures to be used in one piece of writing. Therefore, it is important to conceptualize the explicit teaching of writing differently from the explicit teaching of something more rule governed, such as word recognition in reading. Even within narrative text, rigid linearity-establishing the setting first, then introducing characters and the initiating event, followed by actions, consequences, and emotional reactions-does not provide for the creative organization of narrative elements so often found in great literature. For example, a very different narrative structure begins with the climax and uses flashbacks to tell the events leading up to it. These are advanced topics for writing instruction.

Good writing, and good writing instruction, involves repeated processes that overlap and build on one another
Implementation Issues

An important reason why many students with LD do not develop better writing skills is because research-based teaching methods that are available to improve their writing are rarely used in a consistent, well-orchestrated fashion (Graham & Harris, 1997). To become better writers, students have to practice writing on a daily basis and receive feedback on their writing that they can use to make improvements. Graham and Harris (1997) recommended that 45 minutes a day should be devoted to "planning, revising, or authoring text" (Graham & Harris, 1997, p. 417). Teachers need to explicitly teach students how to plan and author text and give them knowledgeable feedback on their effort. There is no evidence that this type of instruction is occurring with the intensity, frequency, or consistency necessary for students with LD to become better writers.

A cornerstone of contemporary approaches to improving content quality is that the technical demands of cognitively challenging writing tasks, such as accuracy of spelling and punctuation, are temporarily de-emphasized so that teachers and students can focus their intellectual energy on writing content. For many special education teachers, especially, this is a radically different way of teaching. In writing instruction and other subjects, a strong tradition in special education is that students need to learn the basics before they tackle learning more difficult concepts (Klenk & Palincsar, 1996). However, the argument is being increasingly made that basic skill development and instruction in challenging concepts need to be addressed simultaneously, following principles of effective instruction for students with LD.

Impact of Handwriting and Spelling

Transcription is the process of transforming the words writers want to say into written symbols (Berninger, Fuller, & Whitaker, 1996). It mostly involves the processes of spelling and handwriting (or keyboarding skills). Children with LD often experience considerable difficulty with these skills (Graham, Harris, MacArthur, & Schwartz, 1991). They routinely misspell words, and their writings are often marred by illegible letters or words. Many of these students produce letters so slowly that they trudge along at almost half of the rate of their peers without LD (Weintraub & Graham, 1998).

Mastery of transcription skills such as handwriting and spelling is important because their execution can consume a great deal of a writer's attention when they are not carried out fluently and efficiently (Berninger, 1999; Graham, 1999a; Graham & Harris, 2000). Not only do difficulties with these skills make papers hard to read, but lack of fluency and skill can undermine the process of composition (Graham, 1990; Scardamalia, Bereiter, & Goleman, 1982). When children have to concentrate heavily on mechanical concerns while writing, such as spelling words correctly or writing fast enough to keep up with their thoughts, they may easily lose track of plans being held in working memory. Children also have fewer opportunities to update their plans as they write or to craft expressions that precisely fit their intentions if they are preoccupied with handwriting or spelling. Difficulties with handwriting and spelling may constrain a child's development as a writer (Berninger, Mizokawa, & Bragg, 1991; Graham, 1999a). Children who experience difficulty mastering these skills may take steps to avoid writing tasks and develop a mind-set that they cannot write, leading to arrested writing development. When the act of spelling and handwriting is extremely demanding, students minimize their use of other writing processes, such as planning and revising, because these processes exert considerable demands as well. Three lines of evidence support the view that handwriting and spelling are important ingredients in children's writing development (Graham & Harris, 2000). First, individual differences in transcription skills predict how well...
and how much children write. Jones and Christensen (1999) found that handwriting skills accounted for 50% of the variability in second-grade writing. Juel (1989) reported that spelling performance accounted for 29% of the variability in first-grade writing, but for only 10% of the variability by the fourth grade. One interpretation of this finding is that transcription skills become less important in the intermediate grades, but the change may be related to spelling specifically and not to the larger construct of transcription.

Findings from a much larger and comprehensive study by Graham, Berninger, Abbott, Abbott, and Whitaker (1997) address this point. Graham et al. found that handwriting and spelling skills accounted for a sizable proportion of the variability in writing throughout the elementary grades. The importance of transcription skills actually seemed to increase over time. For instance, transcription skills accounted for 25% and 42% of the variability in writing quality at the primary and intermediate grades, respectively.

Additional support for the importance of transcription skills is provided in studies where the mechanical demands of writing were eliminated by having writers dictate their compositions. In reviewing studies on dictation, De La Paz and Graham (1995) found that students with LD produced more and better text when dictating their compositions than when writing them by hand or typing them via a word processor (see Graham, 1990; MacArthur & Graham, 1987). These findings support the idea that poorly developed handwriting and spelling skills restrain students’ expressive writing skills.

Finally, a small number of studies demonstrated that explicitly teaching handwriting and spelling to young children who are poor writers can have a positive effect on various metrics of writing performance. For instance, providing supplemental handwriting instruction to first-grade children with poor handwriting enhanced their sentence-writing skills (Berninger et al., 1997; Graham, Harris, & Fink, 2000), writing output (Graham et al., 2000), and writing quality (Jones & Christensen, 1999). Supplemental spelling instruction also enhanced the sentence-writing skills and the writing output of second-grade children who were poor spellers and writers (Graham, Harris, & Fink, 2000). These studies show that problems with handwriting and spelling can contribute
to the development of writing difficulties and that additional and early help mastering basic transcription skills can boost writing performance.

For students with LD, it is critical that handwriting and spelling be taught in an explicit and organized way. Failure to do so may impede the development of other important writing skills, such as planning and text generation (Berninger, 1999; Graham, 1999b). Although children acquire some of their facility with handwriting and spelling through incidental and informal methods of learning, by writing and reading frequently, students with LD tend to be much more reliant on systematic instruction. For example, a review by Graham (2000) found that children experiencing academic difficulties learned to spell only a small portion of the words that were not directly taught. They were less likely than proficient spellers to learn the correct spelling of a word by encountering it in their reading. Reading instruction and practice reading individual words had little carryover effect on these students’ ability to spell words correctly.

An Example of Handwriting Instruction

Graham et al. (2000) taught first-grade children the lowercase manuscript alphabet. Children who received this supplemental instruction were experiencing difficulty with both handwriting and content writing. Three new letters were introduced in each instructional unit (e.g., l, i, t), and each unit included three lessons. Easier and more frequently occurring letters were taught first.

Each lesson included four activities. With the first activity, Alphabet Warm-Up, students learned to name each letter of the alphabet, match letter names with their corresponding symbols, and identify where each letter occurred in the alphabet. Because the name of a letter serves as a cue for retrieving the motor program for writing it, children need to be fluent in naming, identifying, and accessing alphabet knowledge.

The second activity, Alphabet Practice, focused on teaching children how to write specific letters. In the first lesson, the teacher modeled how to form each target letter and discussed with children how the letters were similar and different. This was followed by practice with tracing, copying, and writing each letter. Children circled their best-formed letters. Letter practice in the next two lessons was similar, except that the children also wrote the letters in words and hinky-pinkys (e.g., tutti-frutti and willy-nilly). Children circled their best-formed word and hinky-pink.

The purpose of the third activity, Alphabet Rockets, was to increase the students’ handwriting fluency or speed. In the first lesson, children spent 3 minutes copying a sentence that contained multiple instances of the target letters (e.g., "Little kids like to get letters" for l, i, t). The number of letters written was recorded on a rocket graph. In the next lesson, children tried to beat their previous score by at least three letters. The teacher placed a big star above the rocket chart as the goal was met. The same procedures were applied during the third lesson.

During the final activity, Alphabet Fun, the teacher modeled how to write one of the letters in an unusual way (e.g., long and tall) or use it as part of a picture (e.g., the letter i as part of a butterfly). The primary purpose was to ensure that each lesson ended with an enjoyable activity.

The instruction had a positive impact on children’s handwriting as well as their content writing performance. Effects included faster and more correctly formed handwriting, greater facility in constructing sentences, and greater output when writing stories.

An Example with Spelling

Graham et al. (2002) taught a variety of spelling skills to second-grade children experiencing difficulty with spelling, writing, and reading. This included spelling patterns involving long and short vowels (e.g., long vowel in CVCe words); the spelling of words that followed these patterns (e.g., made); rimes that matched these patterns (e.g., make); and specific sound-letter associations.

Each instructional unit included six lessons that contained five instructional activities. During the first lesson, children completed a word-sorting activity (Activity 1) that focused on the spelling patterns taught in that unit. With the teacher’s help, children first sorted word cards into two or three spelling pattern categories. Each
category was represented by a master word (e.g., made for the long sound in a CVCe word), and children placed each word card in the appropriate category. If the children placed a word in the wrong category, the teacher corrected the miscue and modeled aloud how to decide where the word should be placed. Once all words were placed, the teacher helped students state rules for the patterns emphasized in that word sorting (e.g., When you hear a long /a/ in a small word, the a is often followed by a consonant and silent e). Students then generated words of their own that fit the patterns. Next, the word cards were reshuffled, and students completed the word sorting by themselves, getting help and feedback as needed. At the end of each lesson, students were encouraged to hunt for words that fit the target patterns (Activity 2).

During the second lesson, students began studying eight new spelling words (Activity 3). These were words that students had misspelled previously, and each word matched one of the spelling patterns emphasized in that unit. Students used two basic study procedures to learn these words. One procedure was called Graph Busters and involved students recording the number of times they correctly studied the words during a lesson using a traditional study strategy. The second procedure involved studying words while playing a game with a peer. An example of one of the games was Spelling Road Race. A laminated board with a racing track was divided into 30 segments. When a child correctly spelled one of the spelling words, he or she moved a place on the board for each letter or word.

Also starting in the second lesson, students learned and practiced sound-letter associations for consonants, blends, digraphs, and short vowels (Activity 4). Using flash cards with a picture on one side (e.g., a dog) and the corresponding letter on the other side, students practiced 9 to 16 associations during each lesson.

Students further completed a word-building activity during most lessons (Activity 5). This involved building words with rimes that fit the target spelling patterns. Students were asked to create as many real words as they could from a rime (e.g., ig) and 18 different consonants, blends, and digraphs.

In the final lesson of each unit, students completed three tests. One test was on the eight words they had studied, a second was on the words that had been studied in the previous two units, and a third was on the words that matched the rimes used during the word-building activity. Not only did students learn and maintain almost all of the words taught, but their performance on two standardized tests of spelling also improved dramatically. Even more important, there was a corresponding improvement in their sentence-writing skills.

Discussion

An important goal in writing instruction for students with LD is to help them upgrade their approach to writing by teaching them strategies for planning, writing, and revising. This instruction should be embedded in a comprehensive writing program, where students have ample opportunities to employ the strategies they are taught (Danoff et al., 1993). Teachers can foster students' internalization of writing strategies and processes by creating an environment in which the use of these tools is supported and reinforced.

For example, students are more likely to use writing strategies when they value what they and their classmates write; when predictable writing routines are established; when planning and revising are expected and reinforced; when teachers frequently model the use of writing strategies and the thinking behind their use; and when writing assignments are specific, challenging, and interesting for students (Gersten & Baker, 2001).

Effective writing instruction for students with LD also requires explicit and systematic teaching of handwriting and spelling. Difficulty in mastering these skills may undermine students' use of other writing processes, such as planning and revising, and may lead to arrested writing development (Berninger, 1999; Graham, 1999a). An important key to addressing and preventing writing difficulties is to tackle transcription instruction early. Several studies have demonstrated that extra instruction in handwriting and spelling in the primary grades enhances the writing performance of children with poor writing skills (Berninger et al., 1998; Berninger et al., 1997; Graham et al., 2000; Jones & Christensen, 1999).

Although instruction in writing strategies and text transcription skills are critical to improving the expressive writing of students with LD, it is important to emphasize that they do not encompass all the skills children need
to become effective writers (Graham & Harris, 1997). Students must also master other aspects of writing mechanics, such as capitalization, punctuation, and sentence construction. They also need to learn stylistic conventions associated with different writing genres. Students need to become familiar with the various functions of writing, develop a rich writing vocabulary, and gain an appreciation of the audience they are writing for. Although this broader instructional challenge seems immense, important gains have been made in a relatively brief period of time.

Future research should investigate ways to translate these gains in effective writing instruction into large-scale classroom practice in both special and general education. Not a great deal is known about the writing strategies that teachers actually use in the classroom—and even less is known about the quality of instruction—but the evidence that is available suggests that considerable improvements can be made in large-scale use of effective writing practices.

New frontiers in writing instruction should also be investigated. One need is to chart the typical development of students' writing skills over time. Models for teaching writing focus heavily on what particularly skilled writers seem to do during composition. Encouraging students with writing difficulties as well as typically developing writers to emulate what skilled writers do may ignore the fact that writers of different ability levels may face different barriers in improving their writing skills and performance. It would be informative and perhaps beneficial instructionally to have a more thorough understanding of how typically developing writers address issues of composition at different developmental stages.

One possible benefit of this understanding would be the creation of an integrated and sequenced writing curriculum. Research on effective writing instruction has identified a number of practices and strategies that improve writing outcomes for students, but research efforts have not addressed how these effective strategies should be linked together over time. A better understanding of typical writing development could be integrated with what we already know about effective writing instruction. Finally, expanding writing genres to include different narrative forms—non-Western story structures, for example—and a more expanded range of expository structures should also be a future research topic.

References


ABOUT THE AUTHORS

Scott Baker, PhD, is a senior researcher at Eugene Research Institute. His research interests include the prevention of reading difficulties, learning disabilities, and the education of English-language learners. Russell Gersten, PhD, is director of Instructional Research Group, a not-for-profit research institute located in Long Beach, CA. He also is a professor of special education at the University of Oregon. His research has focused on understanding effective modes for translating research into classroom practice, instructional research, and the education of English-language learners. Steve Graham, EdD, is a professor and distinguished scholar/teacher in special education at the University of Maryland. His current interests include writing development and instruction, and he is the co-editor of Contemporary Educational Psychology. Address: Scott Baker, Eugene Research Institute, 132 East Broadway, Suite 132, Eugene, OR 97401; e-mail: sbaker@oregon.uoregon.edu

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