CHAPTER 6

Research in Writing Instruction

What We Know and
What We Need to Know

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Compared with writing, research on the teaching of reading, the focus of many of the chapters in this volume, has a much longer and richer history. Moreover, reading instruction and its outcomes have been accorded preeminence by policymakers, educators, researchers, and the public, and consequently there has been a large investment by many stakeholders in reading research and instruction. Likewise, there is great concern about America's capacity to prepare a globally competitive workforce for increasingly technically demanding jobs, especially those that place a premium on math and science knowledge and skills. Thus, calls for action and funding opportunities in math and science instructional research abound. In this context, it is little wonder that writing is the most neglected of the three *Rs* (National Commission on Writing in America's Schools and Colleges, 2003). According to Juzwik et al. (2005), writing research historically has been (1) comparably underfunded, (2) mostly descriptive rather than experimental in nature, and (3) typically conducted in postsecondary education settings. I will not attempt to explicate cause–effect relationships among these factors or to account for the current state of writing research; suffice it to say that instructional research in writing is not as mature as

that in reading and does not enjoy the same level of distinction or rally as much concern as the other two *Rs*.

The yield of such diminished status is seen in the poor performance of America's children and youth on the National Assessment of Educational Progress (NAEP) (Persky, Daane, & Jin, 2003). The NAEP for writing is administered approximately every 4 years to a representative sample of students in grades 4, 8, and 12. Each student responds to two 25-minute narrative, informative, or persuasive prompts accompanied by a brochure with guidelines for planning and revising the compositions. Each paper is rated on a 6-point rubric, and this score is converted to a scale score (ranging from 0 to 300). The scale score corresponds to one of four levels of performance—below basic, basic (partial mastery of fundamental knowledge and skills), proficient (solid mastery needed to perform challenging academic tasks), or advanced (superior mastery). According to published NAEP data, only 28% of 4th graders, 31% of 8th graders, and 24% of 12th graders achieved at or above a proficient level of writing performance in 2002. Nevertheless, two-thirds of 4th graders and about one-half of 8th and 12th graders reported that they like to write and that they believe themselves to be good writers in a 1998 NAEP student survey (National Center for Education Statistics, 1999). Apparently, many students are overly sanguine about their composing skills. This misimpression accords with empirical work in several domains that has demonstrated that many students, especially males and individuals who are less competent on a given task, tend to overestimate their ability (e.g., Alvarez & Adelman, 1986; Kruger & Dunning, 1999; Meece & Courtney, 1992; Stone & May, 2002).

Although there are many factors to which we can attribute these alarming statistics, we must acknowledge that there is often less than optimal writing instruction in classrooms (see Bridge, Compton-Hall, & Cantrell, 1997; Graham & Harris, 2002; Palincsar & Klenk, 1992; Troia, 2006; Wray, Medwell, Fox, & Poulson, 2000). Even teacher self-report data from the 1998 NAEP suggest this is the case: nearly 7 out of 10 teachers indicated they employ process-oriented instruction to teach composing; yet, no more than a third of those same teachers said they spend 90 minutes or more per week teaching writing (National Center for Education Statistics, 1999). For teachers to be able to use a process approach to teaching writing adeptly, 90 minutes per week is a bare minimum (e.g., Graves, 1983); but most teachers who espouse such an approach appear to be devoting less than that to their instruction. Similarly, Graham, Harris, Fink, and MacArthur (2003) found that only slightly more than half of primary grade teachers across the nation reported making more than one or two instructional adaptations for struggling writers, and sometimes the adaptations were counterproductive to promoting the development of

skilled writing and motivation to write, including limiting the degree to which students paced their own writing efforts, selected their own topics, and worked with peers.

One crucial step in elevating the status of writing instruction and its associated research is to identify what we know and where we need to invest further effort for the field to flourish and draw the attention it deserves from various stakeholders. To that end, I summarize research findings in four areas: characteristics of struggling writers' products and processes, essential instructional content and processes, assessment, and teachers' practices and professional development. These areas are not mutually exclusive; for example, the attributes of students with writing problems clearly inform instructional design and teaching practices, just as assessment determines who is a struggling writer and what he or she should be taught. Finally, I give my recommendations for future inquiry intended to propel the field of writing instruction forward by providing traction to critical issues facing researchers and practitioners.

Characteristics of Struggling Writers' Products and Processes

Compared to the texts of their more accomplished peers, papers written by struggling writers are shorter, more poorly organized, and weaker in overall quality (e.g., Englert & Raphael, 1988; Graham & Harris, 1989, 1991; Thomas, Englert, & Gregg, 1987). In addition, these students' compositions typically contain more irrelevant information and more mechanical and grammatical errors that render their texts less readable (Deno, Marston, & Mirkin, 1982; Fulk & Stormont-Spurgin, 1995; Graham, 1990; Graham & Harris, 1991; MacArthur & Graham, 1987; MacArthur, Graham, & Skarvold, 1988; Thomas et al., 1987). The problems experienced by struggling writers are attributable, in part, to their difficulties with executing and regulating the processes underlying proficient composing, especially planning and revising (e.g., Englert, Raphael, Fear, & Anderson, 1988; Graham & Harris, 1994a, 1997; Graham, Harris, & Troia, 1998). Motivational factors such as perceived competence also play an important role in the writing outcomes of students with and without writing problems (e.g., Pajares, 2003).

Planning

Struggling writers typically employ an approach to writing that minimizes the role of planning, one in which they generate content in an

associative, linear fashion without considering broader rhetorical or personal goals for their compositions and the constraints imposed by the topic and text structure (Bereiter & Scardamalia, 1987; Graham, 1990; MacArthur & Graham, 1987; McCutchen, 1988, 1995). As a result, poor writers either "dive in" to writing assignments with little forethought or become immobilized when faced with a blank page or computer screen and no conception of their final product. When poor writers do allocate time for planning, they often list potential content in a first draft format, one that hinders the elaboration and exploration of ideas (Bereiter & Scardamalia, 1987; Elbow, 1981; Torrance, Thomas, & Robinson, 1991). Students with writing problems tend to rely on a retrieve-and-write text generation process for at least three reasons. First, they are overwhelmed by the demands of text transcription (Graham, 1990; Graham et al., 1998; McCutchen, 1988, 1996). Second, they possess impoverished and poorly organized topic and genre knowledge to use in planning activities (e.g., Englert & Raphael, 1988; Graham, 1990; Graham & Harris, 1989; Lin, Monroe, & Troia, in press; Nodine, Barenbaum, & Newcomer, 1985; Saddler & Graham, in press; Thomas et al., 1987). Third, they are frequently asked to complete writing assignments that do not necessitate overt planning of content because the tasks entail a familiar genre and common format (Scardamalia & Bereiter, 1986).

Revising

Text appraisal and revision also pose a considerable challenge for struggling writers. They generally spend very little time revising and focus on localized and superficial alterations such as changing word and phrase selections and editing mechanical errors (Fitzgerald, 1987; Graham, 1997; MacArthur & Graham, 1987; McCutchen, 1995). These minor revisions have little impact on the quality of their texts (e.g., Graham, MacArthur, & Schwartz, 1995; MacArthur & Graham, 1987; Scardamalia & Bereiter, 1986). There are numerous reasons why poor writers are not adept at making more substantive discourse-level revisions. One set of reasons pertains to cognitive and motivational issues, while another pertains to instructional issues.

Cognitive and Motivational Issues

Struggling writers rarely establish writing goals that are adequately challenging, specific, and proximal (Wong, 1988, 1994). For example, if a fifth-grade teacher gave her class an assignment to write an interesting story for an anthology, a skilled writer might select the genre of sci-

ence fiction and set out to write an action-packed 15-page story that describes how a time travel device is used to avert a major war started by an evil dictator, but ultimately has dire consequences for the time traveling hero. A struggling writer, on the other hand, would not be as adept at making this writing task so concrete and full of purpose. Without a clear vision of the final paper, it would be impossible to determine when one has or has not achieved that vision and to make any necessary changes. Similarly, poor writers often fail to detect inaccuracies and mismatches between what they intended and the actual text (and even when they do detect a problem, they may not know how to resolve the apparent dissonance). In some cases this is because of poor reading skills, in others because students fail to adequately monitor their writing output (Beal, 1987; Fitzgerald, 1987). Additionally, struggling writers possess a limited ability to assume the reader's perspective (Bereiter & Scardamalia, 1987; Sperling, 1996). For example, Bartlett (1982) reported that elementary students are better able to detect problems and revise when reading a paper written by someone else than when reading their own work. Young authors and those less competent in writing thus seem to presuppose too much shared understanding between themselves and their readers, which obscures the need to revise. Finally, poor writers tend to be too wedded to existing text and consequently are reluctant to make substantive revisions. These students' lower-level text production skills often are not fully developed and automatic (e.g., Fulk & Stormont-Spurgin, 1995; Graham & Weintraub, 1996), with handwriting and spelling performance accounting for two-thirds of the variance in writing fluency and one-fourth of the variance in writing quality for children in the primary grades and about 40% of the variance in written output for students in the intermediate grades (e.g., Graham, Berninger, Abbott, Abbott, & Whitaker, 1997). If students do not possess accurate and fluent text transcription skills, the time and effort they need to produce a draft will be considerable and undermine their willingness to abandon text produced with "blood, sweat, and tears" and to spend more time and effort transcribing additional text.

Instructional Issues

A strong emphasis on mechanics by teachers who work with struggling writers serves to bias their students' views of writing, leading them to believe that text appearance is paramount (Englert & Raphael, 1988; Graham, 1982, 1990; Palincsar & Klenk, 1992; Wong, Wong, & Blenkinsop, 1989). For example, Clare, Valdez, and Patthey-Chavez (2000) found that nearly 60% of teachers' comments on narrative and expository pa-

pers written by students in grades 3 and 7 were directed at microstructural elements. Thus, when asked what constitutes good writing, these students stress form over content more often than their peers who write well (Graham, Schwartz, & MacArthur, 1993; Lin et al., in press; Saddler & Graham, in press). In addition, many teachers too infrequently ask students to produce multiple drafts or revise and edit their work (National Center for Education Statistics, 1999). Without opportunities and guidance to revise, students cannot be expected to make progress in this aspect of the composing process.

Motivational Factors

Students with writing problems frequently are unmotivated because they do not possess adequate writing skills and strategies, have repeatedly failed at writing tasks, and thus lack the confidence and will to expend effort to write (e.g., Bandura, 1986; Ellis, Lenz, & Sabornie, 1987; Paris & Winograd, 1990; Wong, 1994). Self-efficacy, or perceived competence, has been found to play a powerful role in predicting writing outcomes, even when gender, grade level, prior writing performance, and measures of other motivation constructs (e.g., writing apprehension, perceived task value, goals) are included in statistical analyses (Pajares & Johnson, 1994; Pajares, Miller, & Johnson, 1999; Pajares & Valiante, 1997, 1999; Zimmerman & Risemberg, 1997). Apparently, self-efficacy beliefs mediate antecedents of those beliefs, such as apprehension, and subsequent writing behaviors and performance.

Negative self-beliefs can be modified, with collateral effects on writing performance, if students are given process-oriented strategy goals and regular feedback regarding their strategy use (Graham, MacArthur, Schwartz, & Page-Voth, 1992; Schunk & Swartz, 1993). Additionally, motivational problems can be counteracted through self-monitoring of writing behaviors and performance and the use of cognitive behavior modification such as self-encouragement (Graham & Harris, 1994a; Harris, Graham, Reid, McElroy, & Hamby, 1994). Self-efficacy, the best independent motivation-related predictor of writing performance, thus is not immutable.

Essential Instructional Content and Processes

Gersten and Baker (2001) conducted a meta-analysis of 13 intervention studies with students with learning disabilities to determine the impact writing interventions (e.g., cognitive strategy instruction for composing) have on these students and to identify instructional components

associated with the best writing outcomes for them. They reported overall weighted effect sizes ranging from 0.41 to 1.17 with an aggregate effect size of 0.81, which represents a large effect favoring the selected interventions, for varied measures of writing including standardized writing tests, quality ratings of student papers, and scores on trait and genre structure rubrics. In their sample of studies, larger effect sizes were associated with true experiments in comparison with quasi-experimental studies, whereas smaller effect sizes favoring the treatment group were observed when a control group received some form of writing instruction rather than simply engaging in writing practice. Contrary to findings reported in most meta-analytic studies, effect sizes were greater when outcomes were assessed with standardized tests than when evaluated with experimental measures, which suggests that observed gains in writing performance following an intervention were not restricted to measures that closely matched the intervention parameters. Although writing strategy interventions were found to yield rather large gains in writing performance, they produced weaker effects on students' writing knowledge, self-efficacy beliefs, and attitudes about writing (effect sizes ranged from 0.40 to 0.64, or small to moderate, on associated measures). In addition, Gersten and Baker reported that generalization and maintenance of treatment effects were inconsistent across studies: the majority of students appeared to have difficulty transferring what they learned to novel situations, and the impact of writing interventions noticeably diminished over time (also see De La Paz, in press; Troia, 2002). Gersten and Baker identified five components that appeared to be associated with strong positive writing outcomes for poor writers in the set of studies they examined:

- Explicit teacher modeling of the writing process and composing strategies.
- Peer collaboration and teacher conferencing to gain informative feedback.
- Use of procedural prompts (e.g., graphic organizers, mnemonics, outlines, checklists) to facilitate planning and revising.
- Limiting barriers produced by poor text transcription (e.g., dictating).
- Self-regulation (e.g., self-statements and questions).

A descriptive synthesis of a small group of cognitive strategy intervention studies performed by De La Paz (in press) produced similar findings—this kind of writing instruction was effective for students of all ages and abilities (also see Graham, 2006), and intervention effects, particularly strategy maintenance and generalization, were incremen-

tally enhanced when self-regulation was included as a treatment component. Self-regulation is beneficial because it can do the following: (1) help students attain greater awareness of their writing strengths and limitations and consequently be more strategic in their attempts to accomplish writing tasks; (2) enable them to reflect on their writing capabilities; (3) adequately manage paralyzing thoughts, feelings, and behaviors; and (4) empower them to make adaptations to strategies when necessary (see Harris & Graham, 1992, 1996; Troia, 2006).

In a review of the writing instruction literature, Gleason and Isaacson (2001) also identified many of the same critical components of effective instruction for students with and without writing problems. They noted that explicit modeling is a core element, because simply being exposed to the writing process is insufficient for most students (e.g., Dowell, Storey, & Gleason, 1994; Gambrell & Chasen, 1991). Demonstration using overt mental dialogue (i.e., think-aloud) is a particularly effective method, because it permits novice writers to observe the tactics and motives of more experienced authors and to appropriate more sophisticated thinking and language to guide their independent writing endeavors (Englert, Raphael, & Anderson, 1992). They too identified instructional scaffolds such as procedural prompts and conferencing as critical for promoting student success with writing tasks (e.g., Englert, Raphael, Anderson, Anthony, Stevens, & Fear, 1991; Montague, Graves, & Leavell, 1991; Wong, 1997). However, only some procedural facilitators have been empirically validated (see, e.g., Ellis & Friend, 1991; De La Paz, Swanson, & Graham, 1998; Singer & Bashir, 1999; Stoddard & MacArthur, 1993; Wong, Butler, Ficzere, & Kuperis, 1996, 1997), while others have not. They also noted that sufficient time to write and practice the skills and strategies being learned is an important feature of an effective writing program—sustained writing nearly every day embedded within a predictable routine should be a staple of classroom writing instruction if students are expected to demonstrate mastery over writing content, style, organization, and conventions (e.g., Graves, 1985; Troia & Graham, 2003; Troia, Graham, & Harris, 1999).

Another ingredient of high-quality writing instruction identified by Gleason and Isaacson is in-depth examination of text structures and explicit modeling of how to write in varied genres (e.g., Graham & Harris, 1994b; Hillocks, 1984; Wolf & Gearhart, 1994). Text structures provide frameworks that allow young authors to label, order, evaluate, and change their ideas (Dickson, 1999). Examining touchstone texts for the salient features of a particular genre, collaboratively developing evaluative guidelines for those features to use in judging texts written by others and oneself, and linking genres with personally engaging topics

are all means by which teachers can support students' development of text structure knowledge and use (Bos, 1988; Calkins, 1986; Gleason, 1999; Englert et al., 1992; Troia, 2006). However, teachers must be careful not to emphasize form (e.g., the five-paragraph essay) over content, because students tend to permit organizing structures to dictate and limit the ideas they choose to write about (Durst, 1987; Langer & Applebee, 1987). Finally, Gleason and Isaacson point to instruction in writing mechanics and conventions as paramount in addressing students' overall development as writers (for teaching recommendations, see Graham, 1999; Troia & Graham, 2003). This area is particularly important because teaching spelling and handwriting rarely receives more than a passing nod by those in the language arts community, and many teachers presume that technology can help students bypass difficulties in these areas. There is a limited body of research on computer-assisted writing tools such as word processors, interactive graphic organizers, spell checkers, word prediction, and speech recognition and synthesis. The extant work generally indicates that assistive technology has inconsistent and modest effects on writing processes and performance, especially if teachers treat the technology as an add-on feature to writing instruction and do not appreciate the limitations of the tools and help their students do the same (for a comprehensive review, see MacArthur, 2006; MacArthur, Ferretti, Okolo, & Cavalier, 2001).

I will elaborate further on two aspects of effective writing instruction that have been identified in the extant literature—establishing a predictable routine to permit ample practice with skills and strategies and teaching writing mechanics and conventions. These are essential components of a strong writing program regardless of grade or student writing ability. Nevertheless, they are aspects of instruction that often create confusion and frustration for teachers.

Establishing Routines

A major step in implementing strong writing instruction is establishing routines for (1) daily writing instruction, (2) covering the whole writing curriculum, and (3) examining the valued qualities of good writing. A typical writing lesson will have at least four parts:

- *Mini-lesson (15 minutes)*: A teacher-directed lesson on writing skills, composition strategies, and craft elements (e.g., writing quality traits, character development, dialogue, leads for exposition, literary devices), which are demonstrated and practiced through direct modeling using the teacher's writing or others' work (e.g., shared writing, literature, student papers). Initially,

      mini-lessons will need to focus on establishing routines and expectations.

- *Check-in (5 minutes)*: Students indicate where they are in the writing process (i.e., planning, drafting, revising, editing, publishing). The teacher asks students to identify how they plan to use what was taught during the mini-lesson in their writing activities for that day.
- *Independent writing and conferring (30 minutes)*: Students are expected to be writing or revising/editing, consulting with a peer, and/or conferencing with the teacher during this time.
- *Sharing (10 minutes)*: Students identify how they used what was taught during the mini-lesson in their own writing and what challenges arose. The teacher may discuss impressions gleaned during student conferencing. The students share their writing (it does not have to be a complete paper and may, in fact, only be initial ideas for writing) with the group or a partner while others provide praise and constructive feedback. Students discuss next steps in the writing assignment.

Several tools can help the teacher maintain the integrity of this lesson structure. One, a writing notebook can be used for (1) recording "seed" ideas for writing, such as memories, wishes, observations, quotations, questions, illustrations, and artifacts (e.g., a letter or recipe); (2) performing planning activities; (3) drafting writing pieces; and (4) logging writing activities and reflections (see Fletcher, 1996). Two, writing folders for students' papers can be kept in boxes that are labeled for different phases of the writing process. The folders can help organize different versions of a piece of writing as well as the various projects on which students are working at a given time. Three, some means for visually displaying check-in status will help students and the teacher monitor individual and class progress in writing. Each student might, for example, put a card in the appropriate slot of a class pocket chart labeled with the stages of the writing process. Or, the student might display a cube that represents the different writing stages (the sixth side might simply be labeled "help" and would be used when assistance is required). Four, a personal journal (that may or may not be shared with the teacher and/or other students) can help teachers encourage writing outside of the writing block (e.g., content-area instruction, independent activity, writing homework) and may be used as material for a dialogue format that yields productive interactions between the author and readers (e.g., a double-column entry journal for another's remarks in response to the writer's entry).

      Likewise, a carefully orchestrated routine should guide coverage of

the writing curriculum. One type of routine includes genre study. In genre study, each instructional cycle focuses on a single genre (e.g., poetry) and one or two particular forms of that genre (e.g., cinquain and haiku). To develop a strong sense of the genre, a genre study cycle should typically last about one marking period. For primary grade students, it is advisable to begin genre study with a highly familiar genre, such as personal narrative, so that students have an opportunity to become accustomed to the activities associated with genre study. For any genre of instructional focus, teachers need to do the following:

- Develop students' explicit understanding of the genre structure, perhaps using a graphic aid or mnemonic device.
- Share "touchstone" texts that exemplify the structure and valued genre traits (perhaps solicit suggestions from students).
- Give students time to explore potential ideas for writing through reflection, discussion, and research (writing notebooks are helpful for this).
- Identify and teach key vocabulary/phrases and leads that will help students create texts that "sound" like those written by accomplished authors.
- Provide students with graphic aids for planning their texts.
- Have students quickly write (flash-draft) parts of their papers to diminish their reluctance to revise.
- Allow enough time for students to proceed through multiple iterations of revising and editing before publishing the finished product.

One way of thinking about the organization of genre study is to relate it to the process of growing a prize-winning rose for entry into a garden show. The first step is to *plant the seed* for writing by immersing students in touchstone texts (i.e., exemplary models) of the genre targeted for instruction and discussing the key qualities of those examples to illustrate the structure and function of the genre. The next step is to *grow the seed* idea through careful planning and small increments of drafting (much like giving a seed just the right amount of sunlight, water, and fertilizer to help it grow). Then, as any accomplished gardener will tell you, once a rose plant begins to grow, it is often necessary to *prune back dead branches and leaves, add structural supports, and perhaps even graft new plants*. Likewise, once a draft has been produced, it requires multiple trimmings of unworkable portions or irrelevant information, expansion through the addition of details, examples, and even new portions of text, and attention to writing conventions for ultimate publication. Displaying one's writing in some public forum to gain valuable

feedback and accolades, much like a prized rose, is the culmination of all the hard work invested in the writing process and the written product.

Finally, students need to develop an understanding of the valued aspects or traits of good writing and the capacity to incorporate these traits into their writing. Developing a routine for communicating about specific writing qualities is essential to the success of a writing program. A number of resources are available to help teachers do this (e.g., Culham, 2003; Spandel, 2001). The most commonly taught writing traits are ideas, organization, voice, word choice, sentence fluency, and conventions. These closely resemble the dimensions on which many state-mandated accountability measures base their writing achievement assessment (i.e., content, organization, style, and conventions). To help students develop a sense of what constitutes a strong example of a particular trait, teachers can have students listen to or read excerpts from a touchstone text (which could be a student writing sample) to (1) identify the primary trait evident in the excerpts and (2) identify concrete evidence for characterizing a piece of writing as strong on that particular trait. Teachers also might ask students to develop their own definition for the trait and/or the descriptors for different scores on a trait rubric by examining superb, average, and weak examples. It is better to limit the number of traits that receive instructional focus at any given time to one or two; the decision regarding which traits are targeted should be guided by the genre and form of writing being taught as well as students' needs.

Teaching Writing Mechanics and Conventions

Elementary school teachers must explicitly teach spelling and handwriting to their students (this is not to say that secondary educators do not address these skills, but they do so to a lesser extent). For students with disabilities and for other struggling writers, more extensive practice and review of spelling, vocabulary, and letter forms and the thoughtful application of other adaptations (e.g., individualized and abbreviated spelling lists, special writing paper) by the teacher will be required. Whether teaching spelling or handwriting, certain curriculum considerations should be addressed, including the following:

- Sequencing skills or grouping elements (words or letters) in developmentally and instructionally appropriate ways.
- Providing students opportunities to generalize spelling and handwriting skills to text composition.
- Using activities that promote independence.

- Establishing weekly routines (e.g., pretest/posttest, distributed and cumulative daily practice).
- Providing spelling or handwriting instruction for 15 minutes per day.
- Introducing the elements at the beginning of the instructional cycle.
- Modeling how to spell the words or write the letters correctly.
- Highlighting patterns and pointing out distinctive attributes (or having students "discover" these).
- Giving students ample opportunity to practice with immediate corrective feedback.

Students should spend time practicing the elements being taught and self-evaluating their performance, with the teacher frequently checking their work and correcting errors as necessary. Depending on how well the students do, the teacher may teach additional skills lessons. The students also might work with one another to study or practice and evaluate each other's work. Finally, at the end of a cycle of instruction, the teacher should assess how well the students learned the elements.

The content for an actual lesson is derived from the spelling patterns (either orthographic or morphemic) or handwriting elements targeted for instruction. Spelling vocabulary includes words drawn from children's reading materials, children's writing, self-selected words, high-frequency word lists, and pattern words. Handwriting elements are typically manuscript or cursive letters that share common strokes or difficult cursive letter sequences, as well as tripod grasp, paper positioning, posture, and fluency. Teacher-directed activities, including spelling word sorts, guided spelling (e.g., making words), and model/trace/copy/write from memory handwriting exercises, are used to provide more explicit instruction, as student self-study or partner activities are insufficient for many students, especially those who struggle with spelling and handwriting.

Assessment

There are several approaches to writing assessment, but I will discuss only two of the most commonly used and researched: portfolio assessment and curriculum-based measurement. Portfolios are purposeful collections of authentic student writing and associated products accumulated over time to represent a body of work that can help inform teachers' instruction and permit students to set meaningful goals for their writing (Au & Valencia, 1997; Valencia & Au, 1997). As such,

portfolio assessment is viewed as a more valid method for evaluating writing performance than standardized tests or on-demand direct writing assessments, because it represents the complexity of the types of writing tasks students perform in the curriculum (e.g., Wolf, 1989). Portfolio assessment is a response to the inherent limitations of these other methods of writing assessment, which have been criticized for evaluating students' writing capabilities in a narrow set of genres, requiring students to respond to dry and irrelevant topic prompts, if they are asked to produce extended written discourse at all, and circumventing the writing process in the interests of time (Freedman, 1993; Tierney, Carter, & Desai, 1991).

Gearhart and her colleagues (e.g., Gearhart, Herman, Baker, & Whittaker, 1993), though, take issue with the claim of increased validity in portfolio assessment. Specifically, they ask the question "Whose work is it?" That is to say, true authorship of writing samples included in portfolios can be expected to vary by degree across students, depending on how much peer or adult assistance was provided to each student for each writing assignment. If one student is given more assistance than another to write a biographical account of Thomas Jefferson's political activities—most likely an unfamiliar genre and novel topic for most students—it may very well be impossible to make reliable and valid judgments about the relative performance of the two students. Likewise, if a student receives considerably greater support to write his biography compared to that which he receives to write a poem commemorating the birth of his baby sister, judgments about his writing quality may be unduly influenced by the amount of support he was provided.

Curriculum-based measurement (CBM) is quite popular in reading because federal legislation has increased scrutiny of the effectiveness of reading curricula and instruction. CBM is an assessment system that uses reliable and valid indicators of general outcomes (in reading, the most widely recognized indicator of general reading achievement is reading fluency), usually draws assessment materials from the local curriculum, is simple to use and easy to interpret, and allows for repeated and efficient administration to monitor progress and make instructional decisions (Deno, 1985). It also has potential for helping teachers and others monitor the efficacy of writing programs and the development of individual students' writing capabilities.

Unlike portfolio assessment, writing CBM does not attempt to measure directly how well students produce authentic pieces of writing to meet rhetorical, personal, and task goals. Rather, it seeks to predict general writing performance through measures such as total words written, number of different words, number of words spelled correctly, and mean length of T-unit. These metrics are much simpler and

quicker to calculate than rating a paper with a rubric, can be collected in as little as 3–5 minutes of writing in just about any genre, and reliably predict elementary school-age children's writing performance on standardized tests, holistic ratings of writing quality, and teachers' ratings of writing proficiency (e.g., Marston, 1989; Nelson & Van Meter, in press). However, more sophisticated measures are required to accurately predict the writing performance of secondary students, presumably because these students are not bound to the same extent by writing mechanics and are expected to exhibit much more knowledge through their writing (Espin & Tindal, 1998; Espin, Shin, Deno, Skare, Robinson, & Benner, 2000). Measures such as number of correct word sequences (i.e., two adjacent words that are grammatically, semantically, and orthographically acceptable) and number of correct minus incorrect word sequences demonstrate sufficient reliability and validity at the middle school level (though not at the high school level), accounting for 30–70% of variance in writing quality (e.g., Espin, De La Paz, Scierka, & Roelofs, 2005; Espin et al., 2000). Collecting lengthier writing samples (e.g., 35-minutes; Espin et al., 2005) may improve the technical adequacy of these measures, but this modification also necessitates violating one of the basic tenets of CBM—rapid and frequent administration.

Unfortunately, we do not yet have research regarding how well writing CBM can be used to actually monitor student progress or inform teaching practice. For instance, writing CBM may lack face validity for teachers because writing is a complex generative activity that does not easily conform to fixed preconceptions of typical or desired performance—one student may write a lengthy paper without errors and yet express weak, empty ideas without a driving purpose, while another may write much less with some mistakes but communicate to his or her audience in a powerful way. Thus, it may be difficult to convince teachers that CBM will provide them with useful data about their students' writing to guide their instructional efforts. If, however, CBM is viewed as one tool within a comprehensive assessment system, its potential might be realized. Just as a good physician will not make a medical diagnosis based solely upon a general outcome measure such as pulse, body temperature, or blood pressure, a good teacher will not rely on a single type of measure or procedure to judge the writing performance of students.

Teachers' Practices and Professional Development

In contrast with process-oriented instruction (e.g., Writers' Workshop), traditional writing instruction (1) is more teacher-directed, (2) focuses

more on discrete skills, (3) uses fewer authentic writing tasks, (4) devotes limited time to the composition of whole texts, and (5) values product over process (e.g., Pollington, Wilcox, & Morrison, 2001; Tidwell & Steele, 1995). Students in primary grade classrooms where teachers use a traditional approach to instruction tend to fare poorer in writing achievement, though they are no worse off in terms of their self-beliefs (see Bottomley, Truscott, Marinak, Henk, & Melnick, 1999; Hillocks, 1984; Monteith, 1991; Pollington et al., 2001; Varble, 1990). However, students in the intermediate grades appear to fare equally well in either a traditional or process-oriented classroom (e.g., Varble, 1990). Even teachers who use Writers' Workshop display quite a bit of variability in how they enact process-oriented instruction, which is influenced by their epistemologies, their experiences as teachers and writers, and the teaching context, and such variability might be expected to have some influence on the writing performance of students (Graham, Harris, Fink, & MacArthur, 2001; Graham, Harris, MacArthur, & Fink, 2001; Lipson, Mosenthal, Daniels, & Woodside-Jiron, 2000; Troia, Lin, Cohen, & Monroe, in preparation; Troia, Lin, Monroe, & Cohen, in preparation; Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998). For example, Lipson et al. (2000) observed that 11 teachers who reported using process writing instruction differed in how much control they exerted, their treatment of the writing process as a flexible tool versus an object of study, and how central peer- and teacher-led conferences were to explicit writing instruction. Troia, Lin, Cohen, et al. (in preparation) found that a group of six teachers who were provided strong support for implementing Writers' Workshop (e.g., on-site professional development staff, weekly demonstration lessons and conferences with the staff, materials for conducting follow-up lessons, school-wide inservice training, and trained community volunteers) instituted the "curriculum" of Writers' Workshop rather consistently but varied greatly with respect to their classroom management and student engagement tactics and their instructional strategies. What they found missing from the writing instruction of these teachers was systematic and integrated teaching of transcription skills and a focus on self-regulation in writing through goal setting, progress monitoring, and self-evaluation, two critical ingredients to successful writing programs and student outcomes, especially outcomes for struggling writers. In fact, Troia, Lin, Monroe, et al. (in preparation) determined that in general, only the best writers in these teachers' classrooms achieved significant gains in writing over the course of a school year; less accomplished writers did not make such gains.

Professional development provided through participation in intensive summer institutes offered through local affiliates of the National

Writing Project (NWP) and follow-up consulting projects designed and implemented by institute participants in their schools (i.e., a replication model for teacher training) have shown great promise. In the NWP model, participants spend about a month at a summer institute during which they write, share their work in peer response groups, publish their work, read scholarly papers about writing instruction, discuss teaching and learning issues, and create demonstration lessons for their later use at school. They subsequently become teacher-consultants, using their newfound expertise to collaborate with local school colleagues as they examine and modify their writing instructional practices. Pritchard's (1987; Pritchard & Honeycutt, 2006; Pritchard & Marshall, 1994) work indicates that the NWP model (and variations thereof) has a positive effect on teachers' views of themselves as writers and teachers of writing and their attitudes about writing instruction, with concomitant changes in their reported practices and their students' writing achievement. Nevertheless, the findings from the studies conducted by Troia and his colleagues described earlier suggest that, even with outstanding professional development opportunities and intensive support, teachers struggle to implement an exemplary model of Writers' Workshop. Numerous factors may impede teachers' ability to teach writing effectively, including substantial disparities in students' backgrounds and abilities, pressure to cover curriculum content, competing mandated priorities, underdeveloped and misaligned district-sanctioned writing curricula and assessments, and uncertainty regarding how to integrate basic skills instruction with process writing instruction (Troia & Maddox, 2004).

Recommendations for Future Inquiry

In a number of writing instruction investigations, not all students (in some cases, less than half) who are taught a strategy actually use it after treatment is discontinued. Moreover, although changes in writing behaviors and performance can be maintained a month or so following treatment, they frequently dissipate beyond that point. Additionally, although generalization of remediation effects to different instructional contexts is rather easily accomplished, transfer to different tasks, such as writing in a different genre, is more difficult to attain. These results suggest that strategy maintenance and generalization are elusive goals (see Gersten & Baker, 2001; Troia, 2002; for contrary evidence, see Graham, 2006). There may be a number of reasons why writing strategy interventions are not more successful in helping struggling writers maintain and generalize the strategies they acquire, each of which re-

quires investigation. First, strategy instruction research often is conducted over a period of several weeks or months, but students with learning difficulties may need a prolonged period of intervention to accrue demonstrable benefits in affect, behavior, and performance (Wong, 2000). Second, in many cases, writing strategy interventions are conducted outside of the regular classroom writing block or in classrooms in which students are not exposed to a strong and comprehensive writing program. As such, students may have limited opportunity to apply what they have learned, either because they have not acquired pathways for strategy transfer to educationally relevant contexts or because those contexts offer few supports for engaging in strategic writing behavior. Consequently, future research should examine the effectiveness of a combination of writing strategy instruction and the components of a strong writing program with particular emphasis on how writing strategies and performance can be maintained over time and generalized across writing assignments. Third, there has been a tendency to examine the effectiveness of writing strategies in isolation—planning strategies rarely have been investigated in conjunction with revision or editing strategies to determine their impact on writing behavior and performance, both separately and in combination (see Graham, 2006). It could very well be that revising is at the heart of accomplished writing and that much less time should be devoted to planning instruction, an aspect of the writing process that is highly variable across tasks and individuals. Fourth, the impact of writing strategies often has been assessed with discrete writing tasks that are not well articulated with the general education curriculum in terms of the variety of writing activities or content-area mastery. It is likely that embedding strategy training in more meaningful writing activities will produce more impressive outcomes in the fidelity, maintenance, and transfer of writing strategies, but this requires the application of sophisticated research designs.

As of yet, a comprehensive model of the dynamic relationships between writing and reading has not been developed. Although there is ample evidence that writing and reading are indeed related—the proportion of shared variance between them has been found to range from approximately 65–85% in multivariate correlational studies—they are far from being similar enough to readily predict how development in one domain affects development in the other and how to leverage instruction to foster knowledge, skill, and strategy transference between them (see Fitzgerald & Shanahan, 2000). There is a growing body of evidence to suggest that teaching transcription skills such as spelling and handwriting directly influences word recognition proficiency, though teaching word reading may not have as strong an effect on text produc-

tion (e.g., Berninger, Abbott, Abbott, Graham, & Richards, 2002). More such research is needed to inform theory and practice. Of course, any research that examines relationships between writing and reading must reconcile findings with the instructional context, which serves to confound these relationships (Smagorinsky, 1987).

Similarly, the extant research has yet to fully evaluate potential explanatory factors for individual responsiveness to writing instruction. Multivariate studies with advanced regression modeling procedures are needed to ascertain the relative contributions of oral language ability, reading ability, topic and genre knowledge, information processing skills (e.g., attention, perception, and memory), transcription capabilities, strategic behavior, and motivation to predicting achievement gains and long-term outcomes in writing as well as predicting each other. This kind of information will be particularly helpful in developing specialized interventions for nonresponders who receive strong writing instruction in their general education classrooms, nonnative English-speaking students, and older students who continue to struggle with basic writing skills. Likewise, identifying instructional adaptations that are valid and readily integrated into practice will go far in helping teachers, special educators, and other education professionals maximize the writing potential of grade school children and youth. Graham et al.'s (2003) research suggests that most classroom teachers implement few, if any, adaptations, so it is imperative to more fully understand why teachers fail to adapt to meet the needs of struggling writers, how they can effectively incorporate meaningful adaptations, and which adaptations are likely to be parsimonious with process writing instruction and still reap the greatest benefits for students.

Finally, investigators should develop and validate integrated writing assessment systems that provide immediate instructionally relevant multivector data to teachers so that they are better equipped for pinpointing writing problems and responding accordingly. Thus far, no written language measurement approach appears to be adequate for this demanding task. Portfolios lack sufficient reliability and immediacy, though they do offer teachers and students a mechanism for deep reflection about writing processes, performances, and beliefs. CBM provides reliable and immediate information, but its relevance to teachers' instructional choices is questionable because the measures themselves do not reflect the complexity inherent in most writing tasks. Standardized tests provide reliable data, some of which may help pinpoint specific deficiencies, but these data are summative rather than formative and thus are too far removed from daily writing instruction. An integrated combination of these approaches, perhaps coupled with computer-assisted delivery and interpretation (see Shermis, Burstein,

& Leacock, 2006), will likely confer greater advantages to instructional design and student achievement than any one alone.

I began this chapter by stating that writing instruction research is relatively immature and receives too little attention from key educational stakeholders. Although the writing instruction research literature has far to go to attain a depth and breadth equal to that in reading, based on the studies discussed in this chapter, we actually know quite a bit about what works for students, especially those who perform least well in writing. In light of the multitude of research issues that need to be addressed and the importance of writing to academic and career success, it seems that a step in the right direction would be to fund an institute or center that can leverage the intellectual resources of writing experts around the country, much as was done with the National Center for the Study of Writing and Literacy during the 1980s and early 1990s, which was based at the University of California at Berkeley with a site at Carnegie Mellon University.

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