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Self-regulated strategy development in writing: Premises, evolution, and the future

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Background. Self-regulated strategy development (SRSD) is a strategies instruction approach under development since 1982. Originally developed for struggling writers and students with learning disabilities, research has shown that SRSD is effective for average and above writers as well.

Aims. In this article, we establish that the development of SRSD was grounded in multiple theoretical approaches, including theories often seen as incompatible.

Arguments. First, we look at research in writing and then turn to what research tells us about the importance and impact of writing strategies instruction. The theoretical and empirical foundations of SRSD are presented. The components, characteristics, and instructional processes of the SRSD model of strategies instruction are then discussed, followed by a summary of the research base for SRSD and limitations of the work done to date.

Conclusions. Finally, we address research that is still needed as SRSD, and the future of writing research, continue to evolve.

In this paper, we focus on the development of and research base for an intervention in development since 1982: self-regulated strategy development (SRSD). We establish that the development of SRSD was grounded in multiple theoretical approaches, including theories often seen as incompatible. In our view, good instruction does not require a forced choice between competing theories, but rather a blending of what we know from various perspectives and lines of research. Further, students' perceptions of what they are learning, how they are learning it, and why they are learning it are also important to effective instruction.

SRSD has primarily been researched in the area of writing instruction in the schools. Thus, we first take a brief look at research in writing, and then turn to what research tells us about the importance and impact of writing strategies instruction. The theoretical and empirical foundations of SRSD are presented. The components, characteristics, and instructional processes of the SRSD model of strategies instruction are then discussed, followed by a summary of the research base for SRSD and limitations

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DOI:10.1348/978185409X422542

of the work done to date. Finally, we address research that is still needed as SRSD continues to evolve.

Writing research

As Prior (2006) noted, the history of writing and of research on writing has been narrated in varied ways. From its humble beginnings for record keeping, writing has advanced to become a critical tool for communication, learning, maintaining social connections and identities, enhancing self-exploration, and many other aspects of the human experience (Harris, Graham, Brindle, & Sandmel, in press). Approximately, 85% of the world's population now writes (Swedlow, 1999). Therefore, those who struggle with writing face considerable disadvantages in today's world and can face significant barriers in further education and employment. Clearly, studying the problems that struggling writers encounter and the development of effective interventions are critical, and many researchers have been involved in this enterprise. Researchers agree that writing is a complex activity, and that learning to write is therefore potentially even more complex (Harris, Graham, Mason, & Friedlander, 2008; Hayes, 2006; McCutchen, 2006). The writer must negotiate the rules and mechanics of writing, while maintaining a focus on factors such as organization, form and features, purposes and goals, audience perspectives and needs, and evaluation of communicative intent and efficacy (Bereiter & Scardamalia, 1987; Harris & Graham, 1992).

Thus, it is no surprise that research on writing is also complex and challenging. We briefly summarize the struggles often faced by students during the school years before turning to our examination of SRSD for writing, as SRSD was developed in response to research on struggling writers as well as research on models of writing and expert writers.

Expert, novice, and struggling writers

Five areas of competence have been identified as particularly difficult in learning to write among the general school population: (a) generation of content, (b) creating an organizing structure for compositions, (c) formulation of goals and higher level plans, (d) quickly and efficiently executing the mechanical aspects of writing, and (e) revising text and reformulating goals (Scardamalia & Bereiter, 1986). Further, students demonstrate significant difficulties with narrative, expository, and persuasive writing (Applebee, Langer, Mullis, Latham, & Gentile, 1994; Applebee, Langer, Jenkins, Mullis, & Foertsch, 1990). It is not surprising, therefore, that students frequently demonstrate a deteriorating attitude towards writing, even though most young children begin school with a positive attitude towards composing (Applebee, Langer, & Mullis, 1986).

When researchers turned their attention to the writing of students with learning disabilities (LD) or those with severe difficulties in school, they found that these students frequently have even greater problems with writing than their normally achieving peers (Curry, 1997; Harris & Graham, 1992, 1999). Generally, students with learning problems produce writing that is less polished, expansive, coherent, and effective than that of their normally achieving peers (for greater details on the research base, see Graham & Harris, 2002, 2003). Research indicates that these students lack critical knowledge of the writing process; have difficulty generating ideas and selecting topics; do little to no advance planning; engage in knowledge telling; lack important strategies for planning, producing, organizing, and revising text; have difficulties with

mechanics that interfere with the writing process; emphasize mechanics over content when making revisions; and frequently overestimate their writing abilities.

The picture looks quite different when we look at skilled, or expert, writers. These writers are able to not only negotiate the rules and mechanics of writing, but also maintain a focus on important aspects of writing such as organization, form and features, purposes and goals, audience needs and perspectives, and evaluation of the communication between author and reader (Bereiter & Scardamalia, 1987). In addition, skilled writers exhibit extensive self-regulation and attention control (Graham & Harris, 1994, 1996, 2000). Among skilled writers, writing is a flexible, goal-directed activity that is scaffolded by a rich knowledge of cognitive processes and strategies for planning, text production, and revision.

Further, skilled writers engage in purposeful and active self-direction of these processes and strategies (Harris, Schmidt, & Graham, 1998). In fact, the ability to monitor and direct one's own composing processes is a large part of writing ability (Flower & Hayes, 1980). Skilled writers organize their goals and subgoals and can switch flexibly from simple to complex goals. To achieve their goals, they draw upon a rich store of cognitive processes and strategies for planning, text production, and revision. They also draw upon their knowledge of the patterns or schemas evident in different writing genres or models, and develop novel or modified frameworks as the writing text becomes more complex (cf. Isnard & Piolat, 1994; Kellogg, 1994). Skilled writers are sensitive to the functions their writing is intended to serve and use effective self-regulation strategies throughout the recursive writing process. Finally, they evidence knowledge of the topic, motivation, and persistence.

Expertise in writing, however, does not develop easily. Bereiter, Burtis, and Scardamalia (1988) proposed that writing ability develops through a series of stages. Space does not allow a detailed discussion of models of writing development here, but greater detail can be found in the literature (Graham, 2006; Harris *et al.*, 2008; Hayes, 2006). These models of writing and the research base on writing clearly demonstrate that it is important to address multiple aspects of competence when teaching struggling writers how to compose.

Considering multiple aspects of writing

Drawing on three sources that help synthesize writing research to date, including a meta-analysis of experimental and quasi-experimental writing intervention studies (Graham & Perin, 2007a,b), a meta-analysis of single-subject design studies (Rogers & Graham, 2007), and a meta-synthesis of qualitative studies examining writing instructional practices among effective teachers and schools (Graham & Perin, in press), Graham and Harris (2009), listed 12 evidence-based recommendations for improving writing among students in grades 4–12 (ages 10–18 years). These 12 recommendations, ordered based on the strength of the evidence and the impact on writing, are presented in Table 1.

In this paper, we focus on the SRSD model of strategies instruction. Strategies instruction research has addressed many, but not all, of these recommendations. Strategies instruction explicitly incorporates three of the top four evidence-based recommendations for teaching writing; writing more sophisticated sentences has not yet been a major element in strategies instruction, though it clearly should be in future research. Strategies instruction also typically includes monitoring of performance, use of

Table 1. Twelve evidence-based recommendations for writing instruction

1. Teach strategies for planning, revising, and editing writing
2. Set clear and specific goals for what writers are to accomplish in their writing product
3. Help writers learn to write more sophisticated sentences
4. Engage students in prewriting activities that help them gather and organize ideas for their compositions
5. Engage students in the process writing approach
6. Teach students strategies and procedures for summarizing reading material, as this improves their ability to concisely and accurately present this information in writing
7. Incorporate instructional arrangements that allow students to work together to plan, draft, revise, and edit their compositions
8. Make it possible for students to use word processing as a tool for writing
9. Involve students in writing activities designed to sharpen their inquiry skills
10. Provide good written models for each type of writing that is the focus of instruction
11. Have students monitor their writing performance or behaviour
12. Provide ample time for writing

Note. Ordered based on the strength of the available evidence and impact on writing; for greater detail on each, see Graham and Harris (2009).

good models of writing, and making time for writing (Wong, Harris, Graham, & Butler, 2003). While some researchers have begun to integrate reading and writing in strategies instruction as well as peer support (cf. Harris, Graham, & Mason, 2006; Mason, 2004), further research is clearly needed in these areas.

Further, we note that research clearly demonstrates it is important to address additional aspects of competence when teaching struggling writers how to compose. For example, research demonstrated that additional, explicit instruction in handwriting and spelling influenced the development of two other important writing processes: content generation and sentence construction (Graham, Harris, & Fink-Chorzempka, 2000, 2002). Thus, we do not argue that strategies instruction is the most important consideration in instruction in writing, but rather that it is an important component.

Harris, Graham and their colleagues, and Englert and her colleagues, have developed two frequently cited strategies instruction models for composition. Englert and her colleagues refer to their approach as the cognitive strategy instruction for writing (CSIW) Program. Harris and Graham's approach has come to be called SRSD; the first study using this model was published in 1985. Englert and her colleagues published two influential studies involving CSIW (Englert, Raphael, & Anderson, 1992; Englert *et al.*, 1991). Results of these studies indicated that both students with and without learning disabilities improved their knowledge of the writing process and their writing abilities. In the Englert *et al.* (1991) study, students with learning disabilities performed similarly to their peers without disabilities on all five post-test writing variables. In the 1992 study, Englert *et al.* found that the quality of students' metacognitive knowledge was positively related to measures of performance in both reading and writing. We turn now to the SRSD model.

SRSD and writing instruction

Since 1985, more than 40 studies using the SRSD model of instruction have been reported in the area of writing, involving students from the elementary grades through high school (Graham & Harris, 2003, 2009). In the meta-analyses of true- and

quasi-experimental design studies, SRSD has had the strongest impact of any strategies instruction approach in writing (Graham & Perrin, 2007a). Results of meta-analysis of SRSD for writing in single-subject design studies are included in Rogers and Graham (2007). Here, we briefly summarize research on the effectiveness of SRSD, as details can be found in the article by Graham and Harris in this issue (Graham & Harris, 2009), followed by a discussion of the development of SRSD and important characteristics of this approach that are related to its effectiveness. We argue that the theoretically integrative nature of SRSD's initial and continuing development is important in understanding its effectiveness.

Evidence summary

Data from a relatively large number of group and single-subject design studies provide convincing evidence that SRSD is an effective method for teaching writing strategies to youngsters (both poor writers and students who represent the full range of writing ability in a typical class). SRSD research has resulted in the development of writing strategies (typically with the assistance of teachers and their students) for a variety of genres; these include personal narratives, story writing, persuasive essays, report writing, expository essays, and state writing tests. SRSD has resulted in significant and meaningful improvements in children's development of planning and revising strategies, including brainstorming, self-monitoring, reading for information and semantic webbing, generating and organizing writing content, advanced planning and dictation, revising with peers, and revising for both substance and mechanics (cf. Harris, Graham, & Mason, 2003).

SRSD has resulted in improvements in five main aspects of students' performance: genre elements included in writing, quality of writing, knowledge of writing, approach to writing, and self-efficacy. Across a variety of strategies and genres, the quality, length, and structure of students' compositions have improved. Depending on the strategy taught, improvements have been documented in planning, revising, content, and mechanics (Wong *et al.*, 2003). These improvements have been consistently maintained for the majority of students over time, with some students needing booster sessions for long-term maintenance, and students have shown generalization across settings, persons, and writing media.

Harris and Graham have emphasized from the beginning, however, that SRSD should not be thought of as a panacea; promoting students' academic competence and literacy requires a complex integration of skills, strategies, processes, and attributes (Harris, 1982; Harris & Graham, 1996; Harris *et al.*, 2003). While SRSD represents an important contribution to teachers' instructional repertoires, it does not represent a complete writing curriculum. No research to date has been conducted examining the contribution of SRSD to the larger writing curriculum; such research is clearly needed. While SRSD helps get children 'on the playing field' for writing, research has not gone on to address how to take this beginning and continue children's development of expertise in writing.

Development of SRSD

While students with learning problems are a heterogeneous group, research indicates that one commonality among these students is that the significant difficulties they face often arise from multiple problems of an affective, behavioural, and cognitive nature

(Harris, 1982; Harris & Graham, 1992, 1996). Ecological variables, including the situational, educational, cultural, and community networks the student is part of, are also critical concerns (Harris, 1982). As researchers have noted for some time, the transactional relationships among affect, behaviour, cognition, and social and ecological variables need to be carefully considered (Harris, 1982).

Further, many of these students have difficulty with self-regulation, including the self-regulation of organized, strategic behaviours (Graham, Harris, & Reid, 1992; Harris, 1986). They may have difficulty comprehending task demands, producing effective task strategies, and using strategies to mediate performance (Harris & Graham, 1992). Some may lack or fail to make use of effective verbal mediation processes or may not have developed an effective linguistic control system, and thus experience difficulties using verbalizations (often referred to as self-speech) to guide behaviour. Many of these students also experience reciprocal relationships among academic failure, self-doubts, learned helplessness, maladaptive attributions, unrealistic pre-task expectancies, low self-efficacy, and low motivation. Impulsivity, difficulties with memory or other aspects of information processing, low task engagement and persistence, devaluation of learning, and low productivity are also among the problems these students and their teachers may need to deal with.

Underlying premises

Harris and Graham began development of the SRSD approach to instruction with the underlying premise that students who face significant and often debilitating difficulties would benefit from an integrated approach to instruction that deliberately and directly addressed their affective, behavioural, and cognitive characteristics, strengths, and needs (Harris, 1982). Further, they argued that these students often require more extensive, structured, and explicit instruction to develop skills, strategies (including academic, social, and self-regulation strategies), and understandings that their peers form more easily. The level of explicitness of instruction, however, should be adjusted to meet student needs (Harris & Graham, 1996). This perspective requires that the same academic and self-regulation strategies are not necessarily targeted for all students, and that instructional components and processes need to be individualized. SRSD research indicates that as students' learning and behavioural challenges become more significant, strategy and self-regulation development becomes more complex and explicit, involving multiple learning tasks, components, and stages (Sawyer, Graham, & Harris, 1992; Sexton, Harris, & Graham, 1998).

While SRSD has been used in other academic areas, including math and reading (see Wong *et al.*, 2003), Harris and Graham began SRSD in writing with three goals (Harris *et al.*, 1998, p. 134): (1) assist students in developing knowledge about writing and powerful skills and strategies involved in the writing process, including planning, writing, revising, and editing. (2) support students in the ongoing development of the abilities needed to monitor and manage their own writing, and (3) promote children's development of positive attitudes about writing and themselves as writers.

Theoretical bases

The SRSD approach to strategies instruction views learning as a complex process that relies on changes that occur in learners' skills, abilities, self-regulation, strategic knowledge, domain-specific knowledge and abilities, and motivation. There exists to

date no single theory of teaching or learning that addresses all of the challenges faced by struggling learners, their teachers, and their schools (Harris, 1982; Pressley, Graham, & Harris, 2006). Thus, a further premise evident from the beginning of Harris and Graham's work on SRSD was the need to integrate multiple lines of research from multiple theoretical perspectives in order to develop powerful interventions for students who face significant academic challenges (Harris, 1982; Harris & Alexander, 1998; Harris & Graham, 1985). A thoughtful, effective integration of diverse, validated approaches to learning, regardless of whether or not the theories and disciplines from which they originated are viewed by some as discordant (such as affective, behavioural, and cognitive approaches to teaching and learning), has been key to the development of SRSD.

Four initial foundations

Detailed descriptions of the evolution of SRSD over the past decades have been offered elsewhere (cf. Graham & Harris, 1989; Harris, 1982; Harris & Graham, 1992, 1999; Harris & Pressley, 1991). Here, we look at some of the most critical theoretical influences in the development of SRSD. Four theoretical and empirical sources provided the initial foundation for this model in the early 1980s. First, based on Meichenbaum's (1977) cognitive-behavioural intervention model, and its emphasis on Socratic dialogue as well as stages of intervention, Harris and Graham developed their initial stages of instruction and an emphasis on the role of dialogue/discussion in instruction. A number of basic principles from Meichenbaum's cognitive-behaviour modification approach were incorporated into our earliest version of SRSD (referred to as self-control strategy training in our first study, Harris & Graham, 1985): (1) emphasis on interactive learning between teacher and student, with responsibility for recruiting, applying, and monitoring strategies gradually placed on the student (much the same concept as scaffolding from the social-cognitive perspective or shaping and successive approximations from the behavioural perspective), (2) the use of sound instructional procedures including initial teacher direction and modelling, feedback, reinforcement, and individualization, (3) the inclusion of the student as an active collaborator, and (4) the modelling and development of self-statements designed to assist the student in comprehending the task, producing appropriate strategies, and using these strategies and verbalizations to mediate behaviour.

A second initial foundation, the work of Soviet theorists and researchers (including Vygotsky, Luria, & Sokolov) on the social origins of self-control and the development of the mind was very influential, and contributed further to the self-regulation and modelling components of the model (cf. Harris, 1982; Harris & Graham, 1992). Third, the work of Brown, Campione, and their colleagues on development of self-control, metacognition, and strategies instruction was also foundational (Brown, Campione, & Day, 1981). One critical aspect emphasized by Brown and her colleagues was 'informed instruction'; meaning that students should clearly understand what they are doing and why they are doing it, as this makes learning more meaningful and increases student motivation and commitment. Also important here was the emerging work on metacognition and learning being conducted by many researchers (see Harris, Alexander, & Graham, 2008). The fourth initial foundation for our approach was the work of Deshler, Schumaker, and their colleagues on the validation of acquisition steps for strategies among adolescents with learning disabilities (cf. Schumaker, Deshler, Alley, Warner, & Denton, 1982), steps that were also influenced by the work of Meichenbaum.

Behavioural research on self-regulation

Our early development of SRSD was also strongly influenced by early and important research on self-regulation conducted by behavioural researchers (Harris & Graham, 1985). These researchers identified four efficacious procedures: self-instruction, self-determined criteria, self-assessment, and self-reinforcement (Harris, 1982; O'Leary & Dubey, 1979; Rosenbaum & Drabman, 1979). Each of these self-regulation procedures were integrated into our strategies instruction model. Further, the work of Zimmerman and his colleagues on self-regulation was also a critical influence. Working from a social-cognitive perspective, they defined self-regulation as the 'process whereby students activate and sustain cognitions, behaviours and affects, which are systematically oriented towards attainment of their goals' (Schunk & Zimmerman, 1994, p. 309). Zimmerman (1989) also theorized that students are capable of self-regulating components of their learning behaviours, environment, and internal cognitive and affective processes. Schunk and Zimmerman (1997) formulated a model of the development of self-regulatory abilities, which has four levels of development: observation, imitation, self-control, and self-regulation. This model is consistent in many ways with Meichenbaum's and Brown's work.

Social-cognitive research on self-regulation and writing

In 1997, Zimmerman and Risemberg reviewed the models of writing developed by Hayes and Flower (1980) and by Bereiter and Scardamalia (1987). They argued that although these models included the task environment and self-regulatory strategies, they focused on the role of cognitive processes in students' writing *competence*, as opposed to writer *performance* and its self-regulated development. They further argued that 'explanations focusing on writing performance and its self-regulated development need to include the role of social, motivational, and behavioural processes as well as cognitive ones' (p. 75). Working from social-cognitive theory and self-regulation theory (Zimmerman, 1989), they proposed a model of writing composed of three fundamental forms of self-regulation: environmental, behavioural, and covert or personal. The authors argued that these triadic forms of self-regulation interact reciprocally via a cyclic feedback loop that allows writers to self-monitor and self-react to feedback about the effectiveness of specific self-regulatory techniques or processes.

Zimmerman and Risemberg (1997) argued that the self-regulation of writing involves a complex system of interdependent processes. Further, they placed particular emphasis on the construct of self-efficacy, as they proposed that these complex, interdependent processes are closely linked to an underlying sense of self-efficacy. A writer's sense of efficacy may be enhanced or diminished depending upon the perceived success of the self-regulatory strategies they put into play for controlling their actions, the writing environment, and their internal thoughts. Self-efficacy, in turn, influences intrinsic motivation for writing, the use of self-regulatory processes during writing, and eventual literary attainment. The work of Zimmerman and his colleagues, and that of other researchers on self-efficacy and attributions, has also strongly influenced the development of SRSD over the years. A critical and explicit goal in SRSD is the development of self-efficacy and attributions for effort and strategy use, as noted earlier.

Research on expertise

Another important influence on the development of SRSD over the past two decades has been research on the development of expertise. Research on the development of

competence and expertise provided critical information for cognitive strategy instruction (Harris & Graham, 1992). As expertise develops, students exhibit a knowledge base that is increasingly coherent, principled, useful, and goal oriented (Alexander, 1997, 2003; Glaser, 1991). Not all learners progress to expertise; some progress only to competence, or remain at that stage for a long time. Examining the process of development to competence and potentially expertise has been important to strategies instruction designers. Writing researchers today continue to explore key characteristics distinguishing the expert from the novice writer, as well as individual differences in writing, and the implications of these characteristics for writing development (Galbraith, 1996; Galbraith & Torrance, 2004; Torrance, Thomas, & Robinson, 1999).

Research on strategies and strategies instruction in reading

Last, but certainly not least in any sense, all of our work on the development of SRSD for writing has been strongly influenced by research on strategies instruction in reading, especially that of Pressley and his colleagues. While initial models of strategies instruction varied in numerous ways, over time these models have converged to include typical components (Pressley & Harris, 2001, 2006). A critical factor in this recognition of core components was the articulation of the good information processor model and the good strategy user model (Harris, Alexander *et al.*, 2008; Pressley, Borkowski, & Schneider, 1987).

According to Pressley and his colleagues, the good information processor: knows a large number of strategies, and understands when, where, and why these strategies matter; is reflective and planful, selecting and monitoring strategies wisely; believes in the incremental development of abilities and the importance of effort; is intrinsically motivated, task oriented, and establishes mastery goals; accepts failure as a part of learning; has strong relevant knowledge and can access that knowledge rapidly; and has been supported in the development of these attributes by family, school, and society (Borkowski, Carr, Rellinger, & Pressley, 1990). The evolution of this model was based on the work on numerous researchers and theorists working from differing theories and viewpoints (cf. Pressley, 2005). Thus, it is not surprising that common components of strategies instruction have their bases in multiple areas of research from multiple theoretical perspectives, including research on development, behaviour, learning, and motivation (cf. Pressley & Hilden, 2006). Together, these components work to create change across affective, behavioural, and cognitive attributes of learners (Pressley & Harris, 2001; Pressley *et al.*, 2006).

Core components and characteristics of strategies instruction

Current components common to many approaches to strategies instruction, including the approach developed by Pressley and colleagues, include teacher modelling and explanations; powerful task strategies; support for working and long-term memory; teacher support (scaffolding) that is gradually faded until students develop independent use and ownership of the strategies; developing understanding of what is being learned, why, and where it can be used; and developing attributions for effort and strategy use and other means of enhancing motivation (Pressley & Harris, 2006; Pressley & Hilden, 2006; Pressley *et al.*, 1990). These components alone, however, are not adequate in creating effective strategies instruction. The nature of strategies instruction is as important as its components. Good strategies instruction is based on collaboration

among teachers and students; emphasizes interactive learning that requires understanding and meaningful processing; requires teachers to be enthusiastic and responsive to the instructional needs of learners varying in cognitive capacity, relevant knowledge, motivation, and other characteristics; and requires assessment of changes in affect, behaviour, cognition, and metacognition (Harris, Alexander *et al.*, 2008; Harris & Graham, 1992).

Unique characteristics of SRSD

At its inception in 1982, SRSD differed in several significant ways from other strategies instruction models (Harris & Graham, 1999; Harris, Reid, & Graham, 2004; Wong *et al.*, 2003). The majority of the early models of strategy instruction targeted normally achieving students, were based on one main theory, and development of self-regulation skills was implicitly embedded in intervention as opposed to being taught explicitly. SRSD, on the other hand, was initially developed for students with LD, was based on integrating findings from research based on multiple theories, and incorporated explicit instruction in and development of both writing and self-regulation strategies.

Explicitness

As we noted earlier, Harris and Graham began development of the SRSD approach to instruction with the underlying premise that students who face significant and often debilitating difficulties would benefit from an approach to instruction that deliberately and directly addressed their affective, behavioural, and cognitive characteristics, strengths, and needs (Harris, 1982). Further, they emphasized that these students often require more extensive, structured, and explicit instruction to develop skills, strategies (including academic, social, and self-regulation strategies), and understandings that their peers form more easily. Thus, explicit instruction in both writing and self-regulation strategies is an additional, critical feature of SRSD. The level of explicitness of instruction, however, should be adjusted to meet student needs (Harris & Graham, 1996). This perspective requires that the same academic and self-regulation strategies are not necessarily targeted for all students, and that instructional components and processes need to be individualized. As students' learning and behavioural challenges become more significant, strategy and self-regulation development becomes more complex and explicit, involving multiple learning tasks, components, and stages (Carroll, 1963; Sawyer *et al.*, 1992; Sexton *et al.*, 1998).

Explicit development of self-regulation

Many struggling learners and writers, including those with LD, experience difficulty with self-regulation, including the ability to activate and regulate strategic behaviour. Deficiencies in self-regulatory behaviours have considerable effects on students' emotional well-being, leading to low self-esteem and low intrinsic motivation (Garcia-Sanchez & Fidalgo-Redondo, 2006; Zimmerman, 1997). For these students, development of self-regulation skills is critical to their success in school. Informed by research on expertise in the writing domain as well as social cognitive theory and motivational theory, explicit development of self-regulation strategies was integrated throughout the stages of instruction in the SRSD model (Harris *et al.*, 2003; Harris *et al.*, 2004).

Explicit focus on motivation, attitudes, and beliefs

An additional way SRSD differed from other strategies instruction models was based on the premise that struggling learners and writers experience many affective, behavioural, and cognitive challenges (such as maladaptive attributions, low self-efficacy, low motivation and low engagement in academic tasks; Harris, 1982; Harris & Graham, 1996). Thus, SRSD was designed to directly addresses children's motivation, as well as their attitudes and beliefs about themselves as writers, by developing attributions for effort and strategy use, self-efficacy, and high levels of engagement. Instructional elements were developed that explicitly and consistently address goals for development in these areas.

Criterion-based learning

Finally, SRSD differed from other strategies instruction in that progression through the stages of instruction is criterion-based as opposed to time based. Students move through the instructional process at their own pace and do not proceed to later stages of instruction until they have met at least initial criteria for doing so. Just as importantly, instruction does not end until the student can use the strategy and self-regulation procedures efficiently, independently, and effectively. Criterion-based instruction is strongly supported by behavioural research and theory (cf. Worell & Stilwell, 1981) and by models of school learning (Carroll, 1963). This sets the stage for success in achieving desired outcomes for students who traditionally have been unsuccessful due partly to pace of instruction.

SRSD Instruction

Here, we present an overview of SRSD instruction, as space precludes a detailed presentation. Detailed descriptions of SRSD instruction are available to teachers, administrators, and parents, however.[1] We begin with a discussion of the characteristics of instruction critical to effective use of SRSD, then explain the process of instruction, and finally, address how maintenance and generalization are planned for and obtained.

Critical characteristics

There are five critical characteristics of SRSD instruction. First, as we have detailed, strategies, accompanying self-regulation procedures, and needed knowledge are explicitly taught. Second, children are viewed as active collaborators who work with the teacher and each other during instruction. Third, instruction is individualized so that the processes, skills, and knowledge targeted for instruction are tailored to children's needs and capabilities. Goals are adjusted to current performance for each student, with more capable writers addressing advanced goals. Instruction is further individualized through the use of individually tailored feedback and support. Fourth, as

[1] *For detailed descriptions of SRSD instruction,* see *Graham and Harris, 2005; Harris and Graham, 1996; Harris* et al., *2003, 2008. Detailed lesson plans and support materials for instruction are provided in Harris* et al. *(2008). All the stages of instruction can be seen in both elementary and middle school classrooms in the video, 'Teaching students with learning disabilities in the regular classroom: using learning strategies' (ASCD, 2002). Finally, online interactive tutorials on SRSD are available at: http://iris.peabody.vanderbilt.edu. The tutorials include all stages of instruction and video from the ASCD video. From the IRIS homepage, select Resources, and then select Star Legacy Modules. For the first tutorial, click on 'Using Learning Strategies: Instruction to Enhance Learning'. For a tutorial on a persuasive writing strategy for elementary students, locate the header 'Differentiated Instruction', then click on the module titled 'Improving Writing Performance: A Strategy for Writing Expository Essays'. Finally, a website devoted to strategies instruction can be found at http://www.unl.edu/csi/.*

described earlier, instruction is criterion based rather than time based. Fifth, SRSD is an on-going process in which new strategies are introduced and previously taught strategies are upgraded. These characteristics are critical to the effectiveness of SRSD.

SRSD has been used successfully with entire classes, small groups, and in tutoring settings (Graham & Harris, 2003). Classroom teachers are as successful, or more successful, than research assistants in implementing SRSD (Graham & Harris, 2003; Harris *et al.*, 2006). Finally, lessons have typically run anywhere from 20 to 40 min (depending on grade level and class schedules) 3 to 5 days a week. In most of our work with teachers and students, instruction has taken less time than teachers anticipated. In the elementary grades, 8–12, 30–40 min lessons conducted over 3–5 weeks have typically been what students need to reach independent use of the writing and self-regulation strategies (further details by grade and genre can be found in Graham & Harris, 2003).

The process of instruction

Six basic stages of instruction are used to introduce and develop the writing and self-regulation strategies in the SRSD approach. These stages are outlined in Table 2. Throughout the stages, teachers and students collaborate on the acquisition, implementation, evaluation, and modification of these strategies. The stages are not meant to be followed in a 'cook-book' fashion. Rather, they provide a general format and guidelines. The stages can be reordered, combined, revisited, modified, or deleted to meet student and teacher needs. Further, the stages are meant to be recursive – if a concept or component is not mastered at a certain stage, students and teachers can revisit or continue that stage as they move on to others. Some stages may not be needed by all students. For example, some students may already have the background knowledge needed to use the writing strategy and self-regulation processes, and may skip this stage or act as a resource for other students who need this stage.

Generalization and maintenance

Procedures for promoting maintenance and generalization are integrated throughout the stages of instruction in the SRSD model. These include: identifying opportunities to use the writing and/or self-regulation strategies in other classes or settings, discussing attempts to use the strategies at other times, reminding students to use the strategies at appropriate times, analysing how these processes might need to be modified with other tasks and in new settings, and evaluating the success of these processes during and after instruction. It is helpful to involve others, including other teachers and parents, as they can prompt the use of the strategies at appropriate times in other settings. Booster sessions, where the strategies are reviewed and discussed and supported again if necessary, are very important for most of the students we have worked with in terms of maintaining the strategies.

SRSD: An illustration[2]

Sandy, a third grader with learning disabilities, was given the following question by her teacher: 'Should children your age be allowed to choose their own pet?' Sandy's class had

[2] *This illustration is adapted from Harris, Graham, and Adkins (2004).*

Table 2. SRSD stages of instruction

Develop and activate knowledge needed for writing and self-regulation

- Read works in the genre being addressed (personal narrative, persuasive essays, etc.) to develop declarative, procedural, and conditional knowledge, and important vocabulary (e.g. what is an *opinion?*; What are the parts of a persuasive essay, are they all here?; How do you think the author came up with this idea, What would you do?; What might the author have done to help herself come up with all of these ideas?; What might the author have done to organize the ideas?; What might the author do when frustrated?; and so on), appreciation of characteristics of effective writing (How did the writer grab your interest?), and other knowledge and understandings targeted for instruction. Continue development through the next two stages as needed until all key vocabulary, knowledge, and understandings are clear
- Discuss and explore both writing and self-regulation strategies to be learned; may begin development of self-regulation, introducing goal setting and self-monitoring

Discuss it

- Explore students' current writing and self-regulation abilities, attitudes and beliefs about writing, what they are saying to themselves as they write, and how these might help or hinder them as writers
- Graphing (self-monitoring) may be introduced, using prior compositions; this may assist with goal setting; graphing prior writing can be skipped if the student is likely to react negatively (performance during instruction is graphed)
- Further discuss strategies to be learned: purpose, benefits, how and when they can be used or might be inappropriate (generalization support)
- Establish students' commitment to learn strategy and act as collaborative partner; establish role of student effort and strategy use

Model it

- Teacher modelling and/or collaborative modelling of writing and self-regulation strategies, resulting in appropriate model compositions
- Self-instructions modelled can include problem definition, focusing attention and planning, self-evaluation and error correcting, coping and self-control, and self-reinforcement
- Analyse and discuss strategies and model's performance; make changes as needed
- Can model self-assessment and self-recording through graphing of model compositions
- Continue student development of self-regulation strategies across composition and other tasks and situations; discuss use here and in other settings (generalization support)

Memorize it

- Though typically begun in earlier stages, require and confirm memorization of strategies, mnemonic(s), and self-instructions as appropriate
- Continue to confirm and support memorization in following stages, make sure students have memorized the mnemonics and what they mean before independent performance

Support it

- Teachers and students use writing and self-regulation strategies collaboratively to achieve success in composing, using prompts such as strategy charts, self-instruction sheets, and graphic organizers (can initially use pictures with graphic organizers, then fade pictures in graphic organizers)
- Challenging initial goals for genre elements and characteristics of writing established collaboratively with individual students; criterion levels increased gradually until final goals met
- Prompts, guidance, and collaboration faded individually (graphic organizer replaced with student creating mnemonic on scratch paper) until the student can compose successfully alone
- Self-regulation components not yet introduced may begin (typically, goal setting, self-instructions, self-monitoring and self-reinforcement are all being used by this stage; additional forms of self-regulation, such as environmental control, use of imagery, and so on may be used as desirable)
- Discuss plans for maintenance, continue support of generalization

Independent performance

- Students able to use writing and self-regulation strategies independently; teachers monitor and support as necessary
- Fading of overt self-regulation may begin (graphing may be discontinued)
- Plans for maintenance and generalization continue to be discussed and implemented

Note. Adapted from Harris *et al.*, 2008.

been working on both developing a paragraph and writing an opinion essay since September; it was now January. Writing to persuade is an important skill in the state curriculum, and one assessed in the state writing competency test. Most of the students were doing well; they were able to write a paragraph of five or more sentences and clearly state their opinion, provide supporting details, and end with a concluding sentence. Sandy's teacher described her as 'not yet writing', and not especially fond of writing. In response to the question regarding choosing a pet, Sandy wrote the following:

> I like children my age should choose their own pet because they're old enough.

In consultation with the general and special education teachers, we determined that Sandy and several other third graders would profit from the SRSD approach to writing. Some of these students were LD, and some were considered at risk. All were writing one to two sentence opinion essays. Sandy and the other students worked in groups of two with their writing teacher (research assistants) in a quiet area for 20-min sessions, three times a week.

POW plus TREE

Sandy and her peers worked with us to learn *POW*: *P*ick an Idea, *O*rganize Notes, *W*rite and Say More. We established that *POW* is something you should do whenever you do any kind of writing, and that using *POW* 'gives power' to what you write. Then, instruction focused on learning *POW plus TREE* (*T*opic sentence, *R*easons – at least three, *E*xplain each reason further, and *E*nding, wrap it up right).

Stage 1: Develop background knowledge

Instruction began with a discussion of what the students already knew about opinion essays, including the purpose of opinion essayed and the elements that are commonly found in such an essay. Then, the teacher introduced *TREE* and stressed that good opinion essays make sense and have several parts. The teacher and students discussed why the living tree shown in the mnemonic chart they were given fits the parts: the topic sentence is like the trunk, as all the other parts are connected to it; the reasons and the explanations for your reasons are like the roots because they make the tree strong; and the ending (conclusion) is like the earth because it holds it all together (all materials mentioned can be found in Harris *et al.*, 2008). Together, they read several short model essays and identified these parts in each. The teacher and students filled out a graphic organizer for *TREE* for each essay they read together. Throughout this stage, important vocabulary, background knowledge, and declarative, procedural, and conditional knowledge the students needed were developed (see Table 2). The teacher began helping the students memorize the mnemonic. Finally, each time they met during this stage, the teachers and students discussed how they could 'transfer' what they were learning about *POW plus TREE* to other places and times when they wrote. Each time they met with the teacher, each student reported chances they had to transfer *POW plus TREE*. These discussions helped promote generalization.

Stage 2: Discuss it

Although a great deal of discussion obviously takes place during Stage 1 and in later stages, Stage 2 is called 'discuss it' because not only does the initial discussion of the

strategy continue, but students are asked to evaluate and discuss their previous writing using what they have learned (Graham & Harris, 2003; Harris & Graham, 1996). During all stages of instruction, the teacher emphasized that learning *POW plus TREE* would take effort and commitment on the students' part, and that effort combined with these powerful strategies (or 'tricks') would result in being able to write good opinion essays. Each session during discuss it began with a quick review of the mnemonic (POW + TREE) to help memorize it and what it stands for. The teacher decided to continue reading and evaluating a couple more good opinion essays before she had the students evaluate their pre-test essay. As they read these model essays, she asked the students to brainstorm additional good reasons and explanations for reasons that the authors might have used.

Next, the teacher had each student get out their opinion essay about choosing a pet, and find out what parts they had. She stressed that it certainly was not a problem if they did not have all the parts when they wrote this essay – they had not learned this trick for writing opinion essays yet, and that is what they were here to learn together. Each student evaluated their essay, and students discussed what parts were commonly missing. The teacher also began discussion regarding what else writers do to make their essays powerful, including: give more than three reasons, use good vocabulary choice (what the students called use 'million dollar words'), catch the reader with an interesting first sentence, use an interesting ending sentence, and so on (these were modified to individual students' abilities). Examples of these were noted in the students' essays and in the model essays read. Then, each student was given a graph (a line of rockets with each rocket divided into five parts; this was used each time they wrote an opinion essay during instruction) and filled in the number of parts on the first rocket representing the number of parts he or she had in their pre-test essay. These students typically had one or two parts. Finally, the students and the teacher discussed the goal of working together: to write better opinion essays. Good opinion essays tell the readers what you believe, give you at least three reasons why, and have an ending sentence. They are fun for you to write, fun for others to read, make sense, and might convince the readers to agree with you! The students went on to Stage 3 when the teacher determined they had developed the necessary background knowledge, vocabulary, and understanding of what they were learning, and why they were learning it.

Stage 3: Model it

The teacher modelled how to use *POW plus TREE*, thinking out loud as she planned and wrote an essay. The students participated by helping her as she planned and made notes on the graphic organizer, and as she wrote her first draft. Together, they accepted and rejected possible ideas to support her premise and explanations for her reasons, keeping the reader in mind. They continued to modify their plan while writing the paper.

While planning and writing, the teacher used a variety of out loud self-instructions (see Table 2). She explained that saying these things to herself helped her work, and that sometimes she thought out loud and sometimes she said them in her head. Each student was given a sheet titled 'My self-statements' and asked to record one or more self-statements to say to help think of good ideas, to say while working, and to say to help check their work. Students were encouraged, but not forced, to use these

self-statements throughout the next two stages of instruction, and their lists were left near them while they wrote.

Finally, the students evaluated this collaborative essay, and graphed the number of parts contained (the teacher, of course, had made sure that all five parts – premise, three reasons, and conclusion – were present) on their graphs. If the teacher decided students could profit from additional teacher-led or collaborative modelling, this was done.

Stage 4: Memorize it

While listed here as a stage, in fact memorizing the mnemonic and what it stands for had been going on since Stage 1. At this point, most students had the strategy memorized and were able to write the mnemonic on blank paper so they could make notes in the future using the mnemonic without a graphic organizer. Students who needed to do so engaged in more practice of the mnemonic and its meaning until it was memorized. As one student said, you cannot use what you cannot remember!

Stage 5: Support it

This stage is typically the longest. Research indicates, however, that students make the biggest jump in performance in this stage, and that support in using the strategy is necessary even after the explicit, collaborative modelling in Stage 3 (Harris & Graham, 1999). At first, the students worked together with the teacher's assistance to write an opinion essay, sharing ideas, crafting notes, and then writing a draft. The teacher re-modelled if necessary. At first, students kept out their mnemonic chart and list of self-statements wile they worked, and used the graphic organizer. Over time, the teacher provided less help and students began writing independently; pace was based on student performance.

For each essay written during *support it*, the student first set a goal to include all five essay parts. Each essay was evaluated and graphed by the student. Students were able to help each other throughout this stage as well as receive teacher help. They shared their essays with each other, providing feedback on both strengths and areas where improvements could be made in each other's arguments. Use of the mnemonic chart, list of self-statements, and graphic organizer was faded and then discontinued during this stage.

Stage 6: Independent performance

At this point, each student wrote 1–2 opinion essays without teacher or peer support. Students were encouraged to write the mnemonic and notes for each part on blank paper before writing. The teacher provided positive and constructive feedback as needed, and students continued to share their essays with each other. Graphing was continued for one or two essays, and then the students were told they could decide whether to continue graphing in the future. As in previous stages, the students shared opportunities and ideas for transfer of this strategy with each other and the teacher.

What to expect

Five weeks after she began instruction (13, 20-min sessions later), at the end of *independent performance*, Sandy wrote the following essay on her own, after planning on scratch paper:

> Boys and Girls Soccer Team!
>
> I believe boys and girls should not play soccer together. Boys could push the girls over for the ball because boys play rough sometimes. Girls might not kick too good on their team. Boys might be teasing the girls, because of that boys might get over excited. Boys really want to win the games. Boys might fight with each other because girls got mixed up with the goals. The girls might forget about the game. They went to the mall. Girls might wear some high heels because they forgot their sneakers at home. This is why girls should read my essay if you do not want to be bullied.

Sandy clearly has the concept of an opinion essay, and has made the strategies she learned her own. Her progress was typical among the students we taught. Obviously, there is more to be done and more to be learned, including how to revise this draft, but she now has the foundation for doing so.

Limitations and the research we need

Harris and Graham have emphasized from the beginning that SRSD should not be thought of as a panacea; promoting students' academic competence and literacy requires a complex integration of skills, strategies, processes, and attributes (Harris, 1982; Harris & Graham, 1996; Harris *et al.*, 2003). While SRSD makes an important contribution to teachers' instructional repertoires, it is not a complete writing curriculum. Further, there are a number of future research needs. Many questions remain to be answered regarding strategy instruction for all students; for example, further improvements in maintenance and generalization remain to be addressed.

As we noted previously, SRSD remains a dynamic and evolving model of strategies instruction, one that continues to be impacted by ongoing research and theory development. Currently, social-cognitive theory and research point to the value of peer support and peer involvement in instruction (cf. MacArthur, Schwartz, & Graham, 1991). This is an area of research requiring further attention in terms of SRSD – how can peer support best be incorporated successfully into SRSD, and does it create further improvements in performance? In two recent studies, we predicted that the addition of a peer support component to SRSD instruction could lead to incremental gains in writing, knowledge, and motivation (Graham, Harris, & Mason, 2005; see Graham, Harris, & Zito, 2005, for a discussion of both studies). These two initial studies indicated that peer support as part of SRSD resulted in some gains in immediate performance after instruction, as well as some gains in both maintenance and generalization (cf. Graham *et al.*, 2005). However, a great many questions remain to be addressed in terms of peer support. For example, these studies involved only struggling writers, and we did not examine if peer support is also effective with average and above average writers. Further, these initial studies of peer support as a component involved second graders, and we do not know how older students might respond to peer support as part of SRSD.

Social-cognitive theory further posits that learners often receive useful and persuasive information from teachers, parents, and peers (Schunk & Zimmerman, 1997). Such information can be received through modelling, a key component of SRSD. No research has addressed the effectiveness of peers as models in the SRSD approach; all research to date has involved the teacher as writing model. Further, writing anxiety is one student characteristic that might be addressed through SRSD, and is a characteristic

we have observed in many students we have worked with. No research, however, has specifically addressed if, and how, SRSD impacts writing anxiety. Future research in SRSD might also address how SRSD can be further modified for students who experience severe writing anxiety.

In our opinion, one of the most intriguing questions is the long-term results of strategy instruction and development of self-regulation across the grades in writing and other domains. No such research has been conducted; the longest studies have involved teaching two writing strategies within a single school year (Graham, Harris, & Zito, 2005). Parents could be partners in such long-term intervention, and research is needed here. Researchers have also argued that a focus on how teachers become adept at, committed to, and supported in strategy instruction is needed, as is more work aimed at filtering this approach in supporting schools (Harris & Alexander; 1998; Pressley & Harris, 2006). As Levin and O'Donnell (1999) explained, teachers must become knowledgeable of research supported practices; then they must decide if their classroom and students are an appropriate match to the treatment and validating data; and finally, they must implement and evaluate the effects of the treatment with their own students.

We believe that the continued integration of knowledge gained from various theoretical perspectives, including constructivist theories such as social cognitive theory, result in continually improving models of strategies instruction.

Conclusion

Throughout this paper, we have communicated the importance of multiple theoretical and empirical works in the evolution and future of SRSD. This position might be referred to as theoretical pragmatism or theoretical pluralism. We believe that such a position remains important not only in the study of writing intervention, but in the study of writing itself. While many theories have contributed to the study of writing, including cognitive theory and social-cognitive theory, Prior (2006) noted that sociocultural theories 'represent the dominant paradigm for writing research today' (p. 54). Interestingly, however, as theories evolve, theorists respond to both critiques of their paradigm and to new ideas. Harris, Santangelo, and Graham (2008, in press) argued that developments in socio-cultural theory have occurred in the past few decades alongside developments in cognitive, information processing, social-cognitive theory, and others. Thus, over time it can become more difficult to ascertain critical differences between some theories, especially at an applied level.

The challenges faced by students with difficulties in learning and writing, and indeed by all of us today, are complex. When we treat competing viewpoints with thoughtfulness and respect, a powerful repertoire for teaching and learning can be developed. This does not negate the important contributions made by competing theories, and the importance of this competition in advancing our thinking and research (Dubin, 1978; Harris & Alexander, 1998; Harris & Graham, 1992; Harris *et al.*, 2003). As Dubin urged, let us work to 'give up constraining commitments to theories, methods, and apparatus' (p. 276). By studying hypotheses rather than substantiating theories, we can focus on 'finding out', with a 'willingness to ask *open* questions unhampered by the prior constraints of a particular view or method' (Dubin, 1978, p. 278). Let this indeed by the future of research and instruction in writing.

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