

# Improving the writing and knowledge of emergent writers: the effects of self-regulated strategy development

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**Abstract** The purpose of this study was to investigate the effectiveness of implementing the Self-Regulated Strategy Development (SRSD) model of instruction (Graham & Harris, 2005; Harris & Graham, 1996) on the writing skills and knowledge of six first grade students. A multiple-baseline design across participants with multiple probes (Kazdin, 2010) was used to test the effectiveness of the SRSD intervention, which included story writing and self-regulation strategy instruction. All students wrote stories in response to picture prompts during the baseline, instruction, post-instruction, and maintenance phases and stories were assessed for essential story components, length, and overall quality. Participants also participated in brief interviews during the baseline and post-instruction phases. Results indicated that SRSD can be beneficial for first grade writers. Participants wrote stories that contained more essential components, were longer, and of better quality after SRSD instruction. Participants also showed improvement in writing knowledge from pre- to post-instruction.

**Keywords** Writing · Self-Regulated Strategy Development (SRSD) · Writing knowledge · Writing self-regulation

## Introduction

Emergent writers (pre-school to early elementary school) often lack the skills and metacognitive strategies required to manage the complex processes of writing

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(Bangert-Drowns, Hurley, & Wilkinson, 2004; McCutchen, 1988). Such writers typically rely on a knowledge-telling approach when composing (Bereiter & Scardamalia, 1987; Graham, 2006) in which they begin with a mental representation defining the topic and purpose of the writing task and then use their knowledge of the topic and writing process to decide what information to convey to the reader. Young writers using this approach are often focused more on text production and mechanical features of the text than on self-regulation or planning processes (Graham, 2006; Saddler & Graham, 2007), and often produce compositions of limited length, completeness, and quality (Graham & Harris, 2000, 2003).

The Self-Regulated Strategy Development (SRSD) model of writing instruction (Graham & Harris, 2005; Harris & Graham, 1996) involves teaching students strategies for planning and organizing their writing, as well as self-regulation procedures, such as monitoring and goal-setting. SRSD has been shown to be highly effective for elementary age students (Graham & Harris, 2003), with consistent positive effects on writing performance demonstrated for students as young as the second grade (Harris, Graham, & Mason, 2006; Lane, Harris, Graham, Weisenback, Brindle, & Morphy, 2008; Lane, Graham, Harris, Little, Sandmel & Brindle, 2010; Little, Lane, Harris, & Graham, 2010; Saddler, Moran, Graham, & Harris, 2004). For instance, Saddler, et al., (2004) assessed the effects of SRSD instruction on second grade struggling writers' writing performance in the genres of story writing and personal narrative, finding that the majority of students' stories and personal narratives were longer, more complete, and qualitatively better. Similar results were observed in a follow-up study of second grade students with lower levels of writing ability (Saddler, 2006). Research further has shown that implementing the SRSD model of instruction can improve students' writing knowledge (Graham, Harris, & Mason, 2005; Harris, et al., 2006; MacArthur & Philippakos, 2010; Saddler & Graham, 2007) by providing them with the cognitive and pragmatic tools necessary for writing success.

The present study examines the effects of an SRSD intervention with first graders. If, as some research has shown, even very young writers are able to develop basic writing and self-regulation skills, given a supportive instructional context (Berninger, Vaughan, Abbott, Brooks, Abbott, Rogan et al., 1998; Page-Voth & Graham, 1999), then systematically developing such skills very early in the schooling years might help circumvent future writing difficulties. This may be particularly important given that writing instruction now often begins as early as pre-school or kindergarten for students. Considering the discouraging findings that students from elementary to high school across the nation consistently write with below grade-level proficiency (Greenwald, Persky, Campbell, & Mazzeo, 1999; Persky, Daane, & Jin, 2003; Salahu-Din, Persky, & Miller, 2008), there is a need to test whether an intervention using SRSD principles for first graders can be effective.

To date, most research aimed at preventing the writing struggles of very young students has focused on improving students' handwriting and spelling skills (Berninger, Vaughan, Abbott, Abbott, Rogan, Brooks, et al., 1997; Berninger, Rutberg, Abbott, Garcia, Anderson-Youngstrom, Brooks, & Fulton, 2006; Jones & Christensen, 1999). For example, Graham, Harris, and Fink (2000) found that structured handwriting instruction improved the handwriting and overall writing

performance of first grade students with and without disabilities. These positive findings are important in showing the key role of basic skills for young writers, but explicitly teaching higher-level skills such as planning, goal-setting, and self-evaluation has been recommended, though not tested, with children younger than second graders. Many young children—both those who struggle with writing and those who do not—typically do not spontaneously use self-regulation procedures (McCutchen, 1988). A system like SRSD, which encourages self-regulation while providing students with ample challenging, yet developmentally appropriate and scaffolded writing opportunities, may be able to promote writing development and motivation (Bruning & Horn, 2000; Cutler & Graham, 2008; Pressley, Wharton-McDonald, Allington, Block, Morrow, Tracey, et al., 2001) in even our youngest writers.

Although the literature contains multiple examples of the positive effects of SRSD instruction with relatively young writers (second and third graders), at this point there is no evidence documenting the use and effectiveness of this model of instruction with younger students. Investigating the effectiveness of this type of intervention with typically-achieving first graders is the first step toward modifying the instructional model for even younger writers or for struggling writers of the same age. Some posit that such young students may struggle with coordinating the cognitive and metacognitive processes necessary for accomplishing complex tasks (McCutchen, 1988; Winne, 1997; Zimmerman, 1990), as is required by SRSD instruction, though more recent research suggests that young children (kindergarten through third grade) can learn to regulate their learning behavior (Graham & Harris, 2003; Perry & Vandekamp, 2000). Findings from this research show that many young students can be taught to plan, monitor, problem solve, and evaluate during writing tasks. Given these encouraging findings, it is reasonable to assume that strategy instruction following the SRSD model could have a positive effect on beginning writers.

The aim of the current study was to examine the effectiveness of SRSD instruction with typically-achieving first grade students. On the basis of previous research with older students (e.g., Graham & Harris, 2003; Sandler, 2006; Sandler, et al., 2004), we hypothesized that SRSD instruction would increase the length and number of essential components included and improve the overall quality of students' stories both immediately following instruction and at maintenance. It is important to note, however, that we did not expect intervention effects to be as robust as those obtained with struggling writers by Graham and Sandler et al., as the participating students in the current study were typically achieving writers.

## Method

### Setting and participants

The study was conducted during the spring semester at a mid-sized, predominantly middle-class elementary school in a large school district in the Midwest. At the time of the study, the school was serving 514 students in kindergarten through fifth grade

and had a mobility rate of 5 %. The school population consisted of 10 % minority students. Eighteen percent of the student body qualified for free/reduced meals and 6 % of students qualified for special education services.

Six first grade participants with typical writing skills were purposively selected for this study from the same general education classroom. All students in the class were screened, with participant selection based on several criteria. Teacher nomination was used as the initial screening assessment. Students who were judged to be average first grade writers (in the areas of handwriting, spelling, and overall composition) were considered for this study. Additionally, students who scored “average” on middle of the year first grade writing report cards were considered. A rating of “average” indicated that students were able to write independently about self-selected topics or in response to a writing prompt, express a main idea with some details, use a variety of descriptive words and phrases, identify and write complete sentences, use correct punctuation at the end of sentences, and proofread and correct for spelling errors.

Four male and two female typical first grade writers were chosen to participate. Students ranged in age from 6.9 to 7.5 years (mean = 7.3 years). All students were Caucasian and none qualified for reduced lunch prices or special education services. Students were randomly paired into one of three groups: Pair 1: Tanner and Nathan; Pair 2: Camden and Seth; and Pair 3: Lindsey and Cassie (all pseudonyms).

Writing instruction was a priority of the participating students’ classroom teacher. The teacher held a bachelor’s degree in Elementary Education and had 17 years experience in the classroom at the time of the study. The Primary Grade Writing Instruction Survey (Cutler & Graham, 2008) and an observation checklist (Harris, et al., 2012) were used to examine the instructional writing practices used by the teacher. She indicated that she used a process writing approach (see Calkins, 1986; Graves, 1983) and reported that her students spent approximately 200 min planning, drafting, revising, and editing their writing each week. Specifically, she indicated that 40 % of instruction was spent teaching whole class activities and the remaining 20 and 40 % of instructional time was devoted to small groups or individualized instruction, respectively. Observations confirmed the teacher’s self-report.

## Measures

Several measures were used to determine the effects of SRSD on participants’ writing skills and knowledge. In a manner similar to other SRSD studies (e.g., Saddler, 2006; Saddler, et al., 2004), all participants wrote stories in response to prompts during the baseline, instruction, post-instruction, and maintenance phases. Black and white picture prompts used in previous studies to assess SRSD instructional effectiveness (e.g., Reid & Leinemann, 2006; Saddler, et al., 2004) were randomized and used during all phases. Stories were assessed for essential story components, length, and overall quality. Participants also participated in brief interviews during the baseline and post-instruction phases.

Writing performance assessments were independently scored by two trained research assistants. Prior to scoring, all identifying information was removed from students’ assessments to minimize potential scoring bias (Graham, Harris, & Hebert,

2011). As a further check against scoring bias, students' stories were typed and spelling, punctuation, and capitalization errors were corrected. Research assistants were trained to assess each measure to establish accuracy and reliability. A 1-h rater training session included a detailed description of assessment procedures, controlled practice, and independent scoring. Raters practiced until 80 % agreement on each of the measures was achieved. After independently rating students' writing, raters met with the lead author to discuss scores. During this discussion the two raters made an attempt to reach consensus in the event of a disagreement in scoring. Final scores for completeness and quality were agreed upon by both raters. The lead author observed score disagreement discussions, but did not participate. Interrater reliability was calculated as agreements divided by agreements plus disagreement, multiplied by 100.

### *Essential story components*

The completeness of each story was scored by tabulating if participants included the seven essential story components, which included the elements of: character(s), setting, time, goals and actions of the main character, ending, and the characters' feelings. A point was awarded for each element present in students' stories and scores could range from 0 to 7. Prior to consensus, interrater reliability was .74 (Pearson's  $r$ ).

### *Overall writing quality*

Overall writing quality was assessed using anchor papers that represented quality categories ranging from 1 (lowest quality) to 7 (highest quality). Anchor stories were obtained from first grade students at the participating school (excluding the participating classroom) using procedures similar to those used in related studies (e.g., Graham & Harris, 1989; Saddler, et al., 2004). Prior to consensus, interrater reliability was .67 (Pearson's  $r$ ).

### *Number of words*

The length of each story was calculated by summing the total number of words written, regardless of spelling. After writing each story, participants read their stories aloud to the researcher. Words indecipherable or those added while the students read their stories aloud were eliminated from the final typed copy. Each story was recorded and typed. Number of words was calculated by the word count function of the word processor, *Microsoft Word*. Thus, reliability was not calculated for length.

### *Writing interview*

A writing interview was used to qualitatively assess students' discourse knowledge about writing. Questions were the same as those used in a recent study by Olinghouse and Graham (2009), which examined the writing knowledge of elementary students. The interview was comprised of five questions. The first question probed students' general knowledge of writing (Question 1: "Suppose you

were asked to be the teacher of your class today and one of the other kids asked you, ‘What is good writing?’ What would you tell that student about good writing?’). Questions 2–4 explored students’ knowledge of the writing process (Question 2: “What do good writers do when they write?” Question 3: “What if you were having difficulty or trouble with a writing assignment; what kinds of things would you do?” Question 4: “When you are asked to write for your teacher, what kinds of things can you do to help you plan and write well?”). The final question probed students’ knowledge of the essential parts of a story (Question 5: “Suppose you have a friend who had to write a story for school. If your friend asked you what kinds of things are included in a story, what would you tell him/her the parts of a story are?”).

Questions were read aloud to students and rephrased if they had difficulty with interpretation. Students were prompted for additional details if they gave vague or general answers. All interviews were audio-recorded and transcribed verbatim. After the transcription process, interviews were read and broken down into idea units, or specific, unique ideas within responses. Example idea units are “good writing has details” and “good writing has capital letters.” Idea units were then grouped into categories. Idea units for Questions 1–4 were classified into the following categories: environmental structuring (e.g., “find a quiet place to write,” “make sure I have all my materials”), production procedures (e.g., “use capital letters,” “use good handwriting”), substantive procedures (e.g., “use exciting words,” “include details”), and seeking assistance (e.g., “ask the teacher for help,” “talk to a friend”). For Question 5, student responses were assessed for story elements (e.g., “has an ending,” “there’s a problem,” “there are characters”). These scoring systems were based on those developed by Graham, Schwartz and MacArthur (1993) and subsequently used by Graham et al. (1993) and Olinghouse and Graham (2009) to differentiate between stronger and weaker writers. Interviews were individually scored by two research assistants. To examine reliability for each question, the percentage of exact agreement between scores was calculated. Reliability ranged from 84 % (Question 4) to 100 % (Question 1) with a median reliability score of 95 % (Question 3).

## Design

A multiple-baseline design across participants with multiple probes (Kazdin, 2010) was used to monitor the overall effectiveness of the intervention. The study included four phases: baseline, instruction, post-instruction, and maintenance. During the baseline phase, a trained research assistant, unfamiliar with the purpose and design of the study, met with students individually and administered the writing knowledge interview. Students also were asked to independently write at least three stories related to picture prompts to establish a stable trend of data representing typical story writing ability. Prompts were delivered to all students in the same order. SRSD instruction was provided by the lead author to students in groups of two, but participants moved through the instruction phase at their own pace. Students again met individually with the research assistant during the post-instruction phase to complete the writing knowledge interview and independently write at least three stories related to picture prompts. To determine maintenance effects, students were

asked to independently write a story related to a picture prompt 2 weeks following the post-instruction phase.

Using story completeness as the phase change variable, instruction was staggered for each participant group. That is, students in Pairs 2 and 3 continued to respond to baseline probes until students in Pair 1 established the criterion performance, which was defined as the ability to independently write a story, complete with all seven essential components, without any prompting. Once criterion performance was established for the participants in the group, students moved into the post-instruction phase. These procedures were repeated with each pair of students. This staggered start for participant groups approach allowed for controlled comparison to other students, as the intervention had not yet begun for participants in the latter groups.

Visual inspection of level, trend, and variability of performance during all phases was used to evaluate intervention effects. Additionally, the percentage of non-overlapping data points (PND) was used to examine intervention outcomes (Scruggs, Mastropieri, & Casto, 1987). Although PND cannot measure the magnitude of the effect of the intervention, it has been suggested that PNDs over 50 % indicate intervention effectiveness (Graham, Harris, & McKeown, in press; Mathur, Kavale, Quinn, Forness, & Rutherford, 1998).

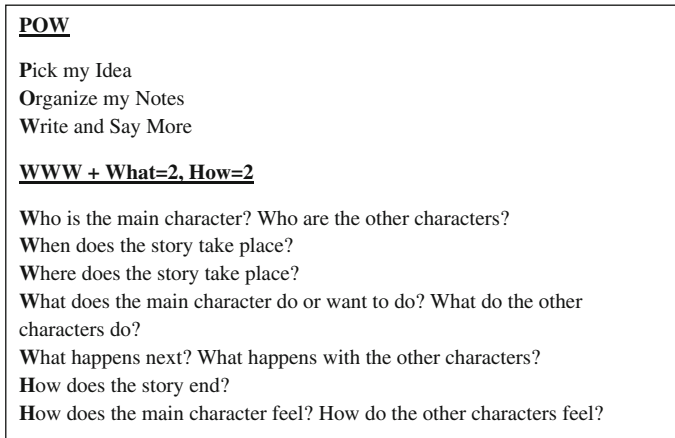
### Instructional procedures

The SRSD instructional model was used to teach a story planning and writing strategy, represented by the POW + WWW What = 2, How = 2 mnemonic (see Fig. 1). Using this model, students were taught specific strategies for planning and writing a complete story, as well as how to set goals, monitor their understanding and writing, and how to talk themselves through tasks. Instruction was divided into six lessons, which sometimes extended over multiple sessions. The number of instructional sessions varied for each of the groups. Whereas Pair 1 participated in 12 instructional sessions, Pairs 2 and 3 participated in 10 and 11 sessions, respectively.

Instruction included the following five stages of SRSD: develop background knowledge, discuss it, model it, memorize it, and support it (Harris & Graham, 1996). These stages provided a framework that guided students in developing and applying effective strategies in their writing; however, the stages are designed to be re-ordered and modified to meet individual student needs. Students worked through the stages at a pace appropriate for their needs.

#### *Develop background knowledge*

Prior to explicit strategy instruction, students were introduced to the strategy elements, the seven essential components of a story, and the importance of word choice to develop necessary background knowledge. During this stage of instruction, students also were introduced to the POW planning mnemonic (P = Pick my idea, O = Organize my notes, W = Write and say more) and the importance of each step in the planning process was discussed. The instructor explained that each letter in the mnemonic represents a key component in planning



**Fig. 1** POW + WWW What = 2, How = 2 Story Writing Framework and Mnemonic

for a writing task. The instructor and students then discussed why planning is essential to effective or *POWERful* writing. To ensure understanding, students were asked to verbally recall each step. Next, the group discussed the components of a good story. The instructor emphasized that good stories: (a) make sense, (b) are fun to read, (c) are fun to write, (d) include interesting details, and (e) include all necessary story parts.

Following the discussion of planning, students were introduced to the WWW, What = 2, How = 2 story writing mnemonic and graphic organizer. The story mnemonic was described as a way to remember the seven components of a story. Each component was explained with relevant examples. For instance, to help students understand the story component of setting, students were guided in a discussion of the different locations where stories could take place. Next, students were asked to identify each of the story components as the instructor read a sample story. As each component was identified, the instructor wrote students' responses in the appropriate section of the graphic organizer. Students were then introduced to million dollar words (MDWs). MDWs were described as exciting vocabulary words that are used infrequently. Students were given examples and then asked to think of examples of their own and find MDWs in a sample story. The process of identifying story components and MDWs was repeated with additional stories. Finally, students were reminded of the importance of memorizing each of the seven story components and told that there would be a quiz over story components during the next session.

*Discuss it, model it, memorize it*

The next three stages of instruction focused on the importance and use of the story writing and self-regulation strategies. The instructor continued discussions of the strategy elements, the seven essential story components, and the importance of word choice. Additionally, discussions focusing on self-regulation procedures were



initiated. The instructor also explicitly modeled using the strategy and self-regulation procedures and emphasized the importance of memorizing the strategy mnemonic throughout these stages.

First, students reviewed the planning and story writing mnemonic, POW + WWW What = 2, How = 2, and were encouraged to memorize the mnemonic for fluent use during writing. Students practiced the mnemonic until they were able to independently identify each component. If extra practice with the mnemonic was needed, they then were given cue cards to review outside of the instructional sessions.

Next, self-statements were introduced. Self-statements were described as encouraging things writers say to themselves before, during, and after the writing process. The instructor modeled using specific self-statements for each part of the POW mnemonic, such as, “Ok, I need to take my time. What ideas do I see in the picture?” to give students example self-statements for idea selection.

The instructor then modeled the entire process of writing a story using POW + WWW What = 2, How = 2, being careful to use self-statements, re-read writing, and monitor the inclusion of the story components from the organizer as they were written. When the story was complete, the group identified the self-statements the instructor used throughout the writing process. Students also discussed the self-statements they used in the past and recorded possible self-statements they might use before, during, and after the writing process.

Finally, students were queried about the importance of goal-setting and were introduced to the Rocket Story Graphing Sheet. Each rocket on the graphing sheet is divided into seven parts—one for each of the seven essential story components. The graphing sheet also included outlines of star shapes for students to shade in for each MDW included in their writing. The instructor explained and modeled how the graphing sheet could be used to graph the seven story parts and MDWs. Students then determined and graphed the number of story parts and MDWs included in the story modeled by the instructor. Finally, the group discussed the meaning and importance of goal-setting and set goals for the next writing session.

### *Support it*

Appropriate scaffolding that meets the individual needs of each student is key to the SRSD instructional model. Instruction during the Support It stage emphasizes scaffolded, collaborative practice with the SRSD strategy and self-regulation procedures. This stage began with collaborative writing. Students and the instructor set a goal to write a good story with all seven parts. The group also set a general goal to use MDWs while writing. Next, they planned and organized a story using POW + WWW What = 2, How = 2. Students were encouraged to lead the process, but the instructor prompted students as much as needed. After they had completed their planning and organization, students individually wrote stories using their WWW What = 2, How = 2 organizer as a guide. Students monitored whether each component was included in the story as they wrote. The number of story components and MDWs included in the writing were then graphed after stories were written, and students determined if their goals were reached. Following the first

collaborative writing experience, students read one of their stories written during baseline, graphed the number of story parts included, and discussed with the instructor how the stories could be improved. Instruction concluded with a discussion of the importance of goal-setting and students set goals for the next story.

Collaborative writing sessions continued until students were able to individually write a story complete with all seven components. Although seated in a group, students wrote their individual stories independently of each other. Participants were weaned off of the story reminder organizer and taught to make their own WWW What = 2, How = 2 notes on blank paper. Students also received less instructional support and prompting as they demonstrated independence.

### Fidelity of treatment

To ensure fidelity of treatment, detailed lesson plans were followed for every session and all lessons were audio recorded. A trained assistant listened to a random sample of 25 % of the sessions and used the same lesson plans as the instructor and an associated checklist to evaluate if each component of the lessons was implemented as planned. Fidelity was 100 %.

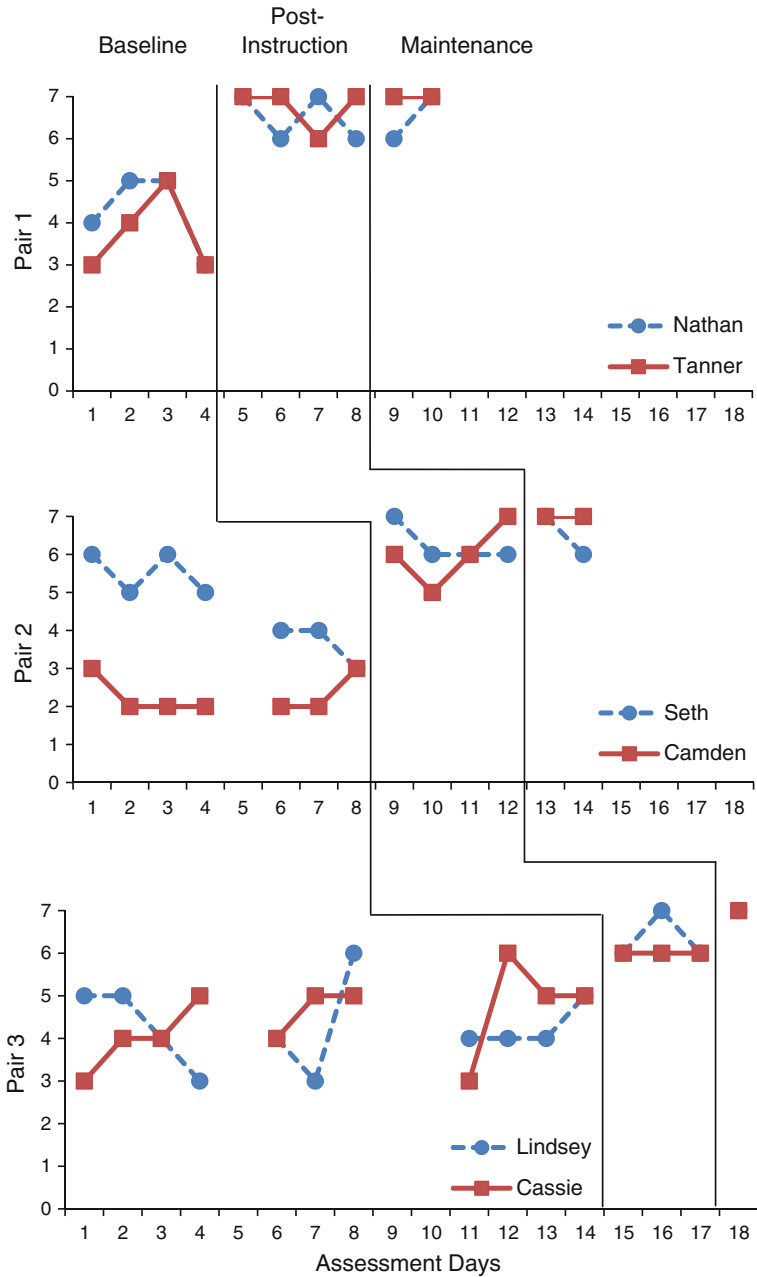
## Results

### Story completeness

All students made gains in the completeness of their stories from baseline to post-instruction (see Fig. 2; Table 1). Prior to instruction, none of the students included all seven elements in their stories. Mean scores for completeness ranged from 2.29 to 4.71. Although students were inconsistent in their ability to include all essential components at post-instruction, mean increases were substantial, 53, 80, 33, 162, 48, and 35 % for Nathan, Tanner, Seth, Camden, Lindsey, and Cassie, respectively. All students wrote two stories at the 2- and 4-week maintenance points with the exceptions of the third instructional group. Lindsey and Cassie only had one maintenance point because the school year came to an end. At the 2- and 4-week maintenance points, each student in the first and second instructional groups wrote at least one story with all essential components. At the 2-week maintenance point, Lindsey and Cassie each included all seven essential components in their stories. With percentages of at least 50 %, PND between baseline and maintenance phases illustrates stronger instructional effects compared to post-instruction findings.

### Length

Figure 3 shows the length (i.e., number of words) of each student's story. Mean scores for the number of words for students' writing during each experimental condition and PND for student data in post-instruction and maintenance phases are shown in Table 1. These means represent percentage increases of 47, 262, 18, 309, 30, and 102 % for Nathan, Tanner, Seth, Camden, Lindsey, and Cassie,



**Fig. 2** Effects of SRSD instruction on number of essential story components in students' stories

respectively. With PND ranging from 0 to 100 % between baseline and post-instruction phases, there was considerable variability among students' data. Similar variability was found for PND between independent and maintenance phases.

**Table 1** Changes in writing performance across students and by phase

Participant (number of data points)	Completeness		Total words		Quality	
	Mean	PND (%)	Mean	PND (%)	Mean	PND (%)
Nathan						
BL (4)	4.25		42.75		3.00	
PI (4)	6.50	100	63.00	25	4.75	75
MT (2)	6.50	100	38.50	0	3.50	0
Tanner						
BL (4)	3.75		22.50		2.25	
PI (4)	6.75	100	81.50	100	6.00	100
MT (2)	7.00	100	48.00	100	4.50	100
Seth						
BL (7)	4.71		30.57		2.71	
PI (4)	6.25	25	36.00	25	3.25	25
MT (2)	6.50	50	26.00	0	3.00	0
Camden						
BL (7)	2.29		11.43		1.00	
PI (4)	6.00	100	46.75	100	4.00	100
MT (2)	7.00	100	44.00	100	4.00	100
Lindsey						
BL (11)	4.27		46.64		3.36	
PI (3)	6.33	33	60.67	0	5.00	33
MT (1)	7.00	100	61.00	0	5.00	0
Cassie						
BL (11)	4.45		35.82		3.09	
PI (3)	6.00	0	73.00	100	5.00	100
MT (1)	7.00	100	69.00	100	6.00	100

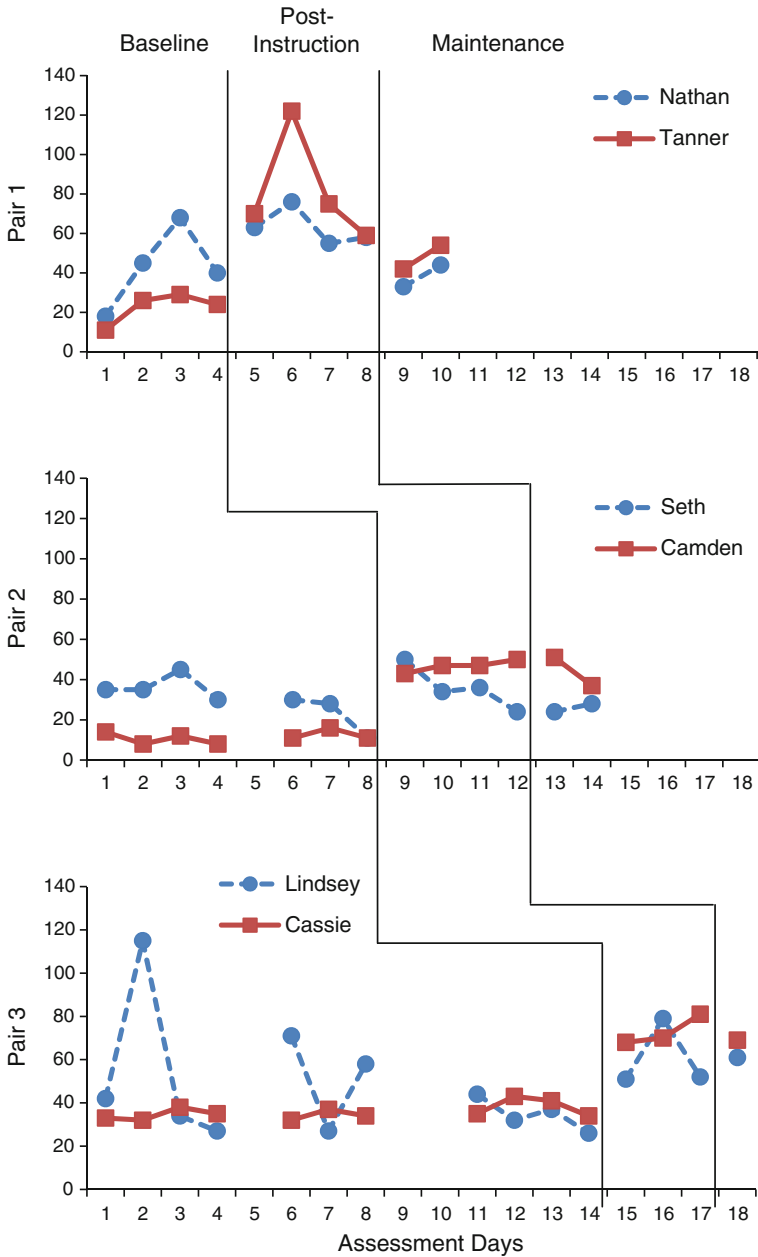
Completeness and quality scores could range from 0 to 7. *PND* percentage of non-overlapping data

### Story quality

All students made gains in overall quality of writing (see Fig. 4; Table 1), although improvement was more pronounced for some students than others. Mean percentage increases were 58, 167, 20, 300, 49, and 62 % for Nathan, Tanner, Seth, Camden, Lindsey, and Cassie, respectively. *PND* between baseline and post-instruction phases illustrates the variability among students' data. At the 2- and 4-week maintenance points, effects were maintained by all of the children. For Nathan, Tanner, and Seth, however, scores were slightly below the levels at post-instruction, although still higher than levels at baseline. Again, *PND* between baseline and maintenance phases revealed variable effects.

### Qualitative interview

A qualitative interview was conducted before and after SRSD instruction to better understand students' writing knowledge. The qualitative data supported and



**Fig. 3** Effects of SRSD instruction on number of words in students' stories

expanded the other findings of this study and revealed a more descriptive picture of students' perceptions of writing.

Specifically, the interview data illustrated students' knowledge of writing and writing strategies both before and after SRSD instruction.

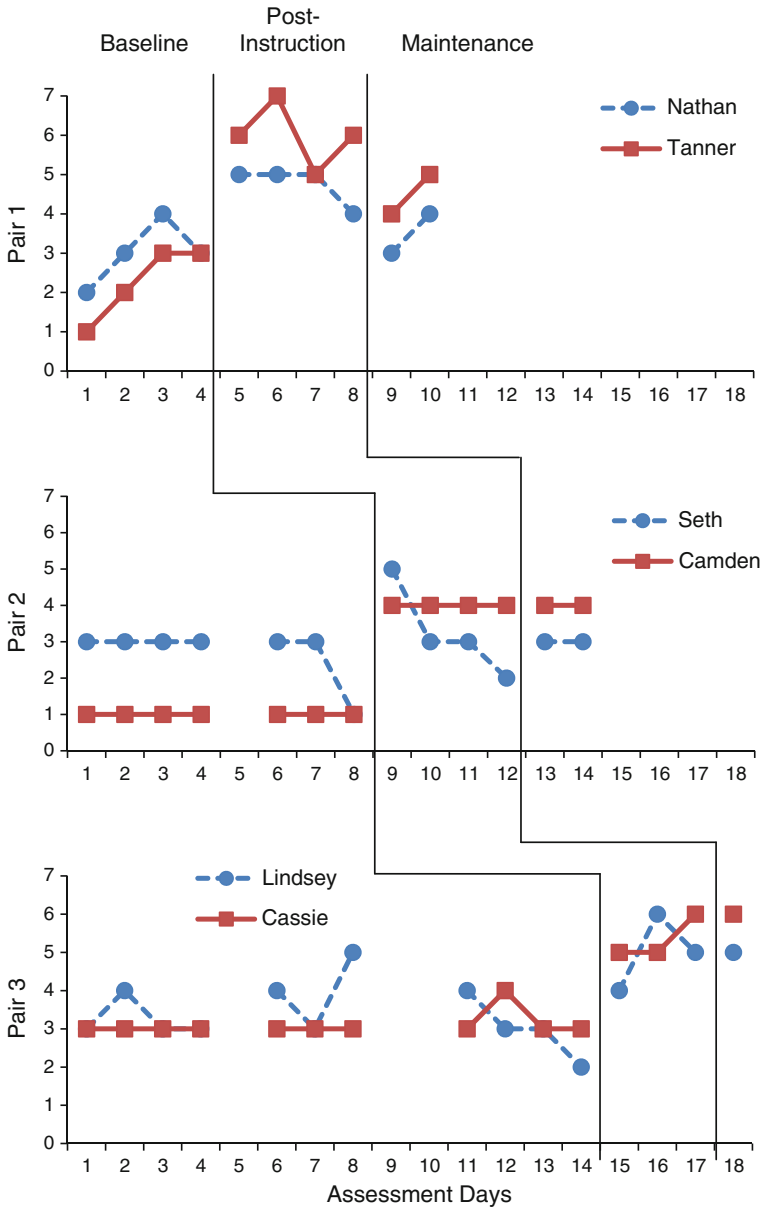


Fig. 4 Effects of SRSD instruction on holistic ratings of students' story quality

When asked about the characteristics of good writing and what good writers do while they write, four out of six students mentioned production procedures in their responses before the intervention. In particular, students commented on the importance of neat handwriting and appropriate punctuation. Nathan described,

“To be a good writer, you have to make sure you add a period when you’re done with a sentence.” Almost all students mentioned substantive processes in their responses at baseline, agreeing that including details and exciting words was important in a good composition. Camden captured this well, “You want your reader to feel like they’re there. You want your story to reach their heart.” Following instruction, all students mentioned substantive processes in their responses and still agreed that details were important; however, five of the six participants also mentioned SRSD components or procedures in their responses. Specifically, students mentioned including all seven essential story components, including MDWs, and monitoring their writing. Nathan said during the post-interview, “Good writers always re-read and make sure they have everything—you know—all of the parts [essential story components].”

Participants were asked what they would do if they encountered difficulty with a writing assignment. Prior to instruction, students referred to environmental structure, seeking assistance, and production and substantive procedures in their responses. For example, Lindsey commented that she would “move to a quiet place,” while Tanner said that he would “start a new story” altogether. Four of the six students were fairly general in their replies, reporting that they would think about the problem. For instance, Lindsey stated that her solution would be to “think really hard inside my brain and think really hard what to do.” Following instruction, all responses were categorized as either substantive procedures or seeking assistance and students were able to clarify what they would think about in the face of writing difficulty. Five of the six students mentioned self-regulation procedures they would use, such as drawing a picture to help them think of ideas or using a graphic organizer, to overcome the challenge. In particular, three students reported that they would use self-statements. Lindsey commented, “I would say to myself, ‘Keep on trying, Lindsey.’” Similarly, Cassie answered that she would “... ‘tell myself, ‘You can do it.’”

Also interesting was the way students described the parts of a story before and after the intervention. All six participants mentioned story elements in their responses before instruction correctly identifying that stories have a beginning, middle, and end. After instruction, all students listed the seven essential story components taught using the SRSD POW WWW What = 2, How = 2 mnemonic. It appears the students’ classroom teacher had taught them the general parts of a story—beginning, middle, and end—but the SRSD intervention seemed to add and clarify their story schemas.

## Discussion

SRSD has been shown to be an effective instructional model for improving the writing performance (Graham & Harris, 2003) and writing knowledge (Graham, et al., 2005; Harris, et al., 2006; Saddler & Graham, 2007) of students in second grade through high school. Findings of the current study show that SRSD instruction can be beneficial for typical first grade writers as well. All students showed improvement in their writing as a result of SRSD instruction. Specifically, students’ stories were more complete after SRSD instruction. Each participant wrote stories

with more essential story components during post-instruction, with all students making additional progress at maintenance, though results were more pronounced for some students than others. Ceiling effects likely played a role in at least some of the students' limited gains, as several students had average levels of completeness at baseline. Out of all the participants, only Camden had a mean completeness score below what would be considered "average" (2.71). It is possible that cognitive processing abilities might have played a role (McCutchen, 1988), in that some students noted that they had difficulty understanding and memorizing the components.

Although length was not a focus of the instructional intervention, students' stories in general were longer after SRSD instructional sessions. All students had longer stories on average during post-instruction. Percentage increases for number of words written in stories from baseline to post-instruction each were over 100 % for Tanner, Camden, and Cassie. Camden had the most impressive changes with a percentage increase of 309 % for his stories written before and after instruction. Nathan and Lindsey showed less pronounced percentage increases of 47 and 30 % from baseline to post-instruction; however, ceiling effects again may have played a role in these students' limited progress. Both Nathan and Lindsey wrote stories that were on average longer than the stories of their peers at baseline and thus had arguably fewer improvements to make. The average number of words Nathan and Lindsey included in their stories at post-instruction was in line with the other participants whom made greater gains. Seth's stories increased by 18 % on average from baseline to post-instruction. It is possible that his mind was focused more on other issues rather than writing. For example, he often revealed an eagerness to return to his classroom, noting that his teacher generally read "a really good book" to the class during the time that our writing group met for each session. Seth also mentioned that his parents recently had separated and he had moved with his mother during this study.

Maintenance effects for number of words written were inconsistent. Saddler, et al., (2004) found similar results with struggling second grade writers. In the present study, Tanner, Camden, Lindsey, and Cassie averaged more words written in their stories from baseline to maintenance, but these averages dropped slightly from independent to maintenance. Nathan had an average of 10 % fewer words in his stories from baseline to maintenance; however, similar to his writing at post-instruction, the average number of words included in his stories at maintenance was again in line with his peers. Seth did not make gains in the average number of words included in his stories from baseline to maintenance and his stories averaged the least amount of words compared to the other participants. Again, it should be noted that these findings could be the result of his hesitancy to participate in the intervention, his issues at home, or a combination of both.

On average, students made gains in the quality of their writing after SRSD instruction. Similar results have been found in other studies examining the effects of SRSD instruction with older students (e.g., Graham, et al., 2005; Saddler, 2006; Saddler, et al., 2004). In this study, quality scores were based on anchor paper ratings of 1 (low quality) to 7 (high quality). Camden made the greatest gains in the quality of his stories. Each of his stories was scored as low in quality at baseline,



but improved to consistent, average quality post-instruction. The average quality of Tanner and Seth's stories at baseline was low to average. Tanner made significant improvement from baseline to post-instruction with high quality scores for stories written after instruction. Seth's gains were inconsistent, however. His stories received quality ratings ranging from low to average during baseline and from low to high quality at post-instruction. The quality of Nathan's stories was average during baseline, but improved to high-average quality at post-instruction. Mean quality scores for the stories written during baseline also were average for both Lindsey and Cassie, but improved to the high range following instruction. At maintenance, improvements in quality were not as marked, but were maintained for all students except Seth.

Average quality scores for students' stories seemed to correlate with the average number of words included in each story at each phase. For example, with few exceptions, students with shorter stories (31 words or fewer) typically averaged low quality scores, whereas students with stories medium (32–48 words) to long (60 words or more) in length generally had mean quality scores of average to high, respectively.

In addition to writing performance improvement, this study also examined the effects of SRSD instruction on students' writing knowledge. All participants revealed that they had gained knowledge about writing and specific writing strategies as a result of SRSD instruction. This was illustrated by their more complete and detailed interview responses post-instruction. In particular, students mentioned including all seven essential story components, MDWs, and monitoring and managing their writing and negative affective responses during the writing process. These results are consistent with findings from other studies that have examined the effects of SRSD instruction on older students' writing knowledge (Graham & Harris, 2003; Graham, et al., 2005, Harris, et al., 2006; Saddler & Graham, 2007).

Although this study shows promise in that it was the first to empirically test the effectiveness of SRSD instruction with first grade students and produced positive effects in that group, some limitations should be acknowledged. First, only students identified as typically-achieving writers were included as participants. Compared to many of their peers, these students were relatively good writers. The writing performance of young, struggling writers of the same age are likely to differ considerably. It is unknown whether or not young struggling writers would benefit from the instruction, given the likelihood of the more limited metacognitive and strategic skills of students in this population (Bangert-Drowns, et al., 2004; McCutchen, 1988). Future research is needed to determine the effectiveness of SRSD instruction with struggling writers in the first grade. Modifying the SRSD instructional model for this population could perhaps be effective in scaffolding the writing development of more emergent writers or struggling writers of the same age. Modifications might include teaching only a few components of SRSD instruction, such as goal setting or self-statements. Testing the effectiveness of interventions such as SRSD with this population of students is important as preventive measures have the potential to help struggling writers early in their development, before their struggles become more pronounced (Graham, Harris, & Larsen, 2001).

It also should be noted that participants of this study received general instruction from a first grade classroom teacher for whom writing seemed to be a priority. She taught and modeled writing daily and stressed the importance of students' writing by often conferencing with them about their progress and celebrating their successes. Not every writing classroom has such an enthusiastic teacher or supportive environment (e.g., Pressley, et al., 2001). It is possible that without such an environment, students might not have responded as positively to SRSD instruction. Future research is needed to study the effectiveness of SRSD with students in classrooms where writing is less prioritized.

This study focused on a single writing genre, story writing. Although this type of writing is frequently taught in the primary grades (Cutler & Graham, 2008), other genres such as expository writing also are important (Duke, 2000). Future research is needed to determine the effectiveness of SRSD instruction in other genres with first grade students. Finally, maintenance data were limited in this study, with maintenance probes only taken 2 and 4 weeks after students received SRSD instruction. Future research including more maintenance probes over a longer period of time is necessary to determine first grade students' maintenance of SRSD strategies.

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