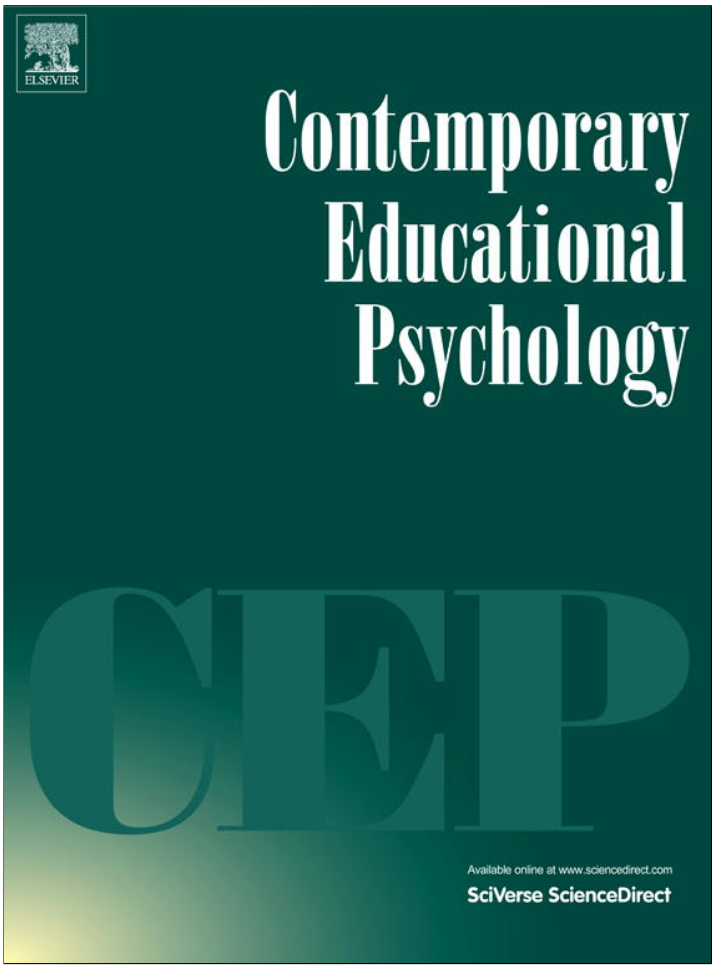
Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

http://www.elsevier.com/authorsrights

Author's personal copy

Contemporary Educational Psychology 38 (2013) 236–246

Contents lists available at SciVerse ScienceDirect

Contemporary Educational Psychology

journal homepage: www.elsevier.com/locate/cedpsych

Improving quick writing performance of middle-school struggling learners

Linda H. Mason [a,*], Richard M. Kubina Jr. [b], Douglas E. Kostewicz [c], Anne Mong Cramer [d], Shawn Datchuk [e]

[a] The University of North Carolina at Chapel Hill, United States
[b] The Pennsylvania State University, United States
[c] University of Pittsburgh, United States
[d] Indiana University of Pennsylvania, United States
[e] University of Vermont, United States

ARTICLE INFO

Article history:
Available online 22 April 2013

Keywords:
Writing instruction
Low-achieving students
Self-regulation

ABSTRACT

Writing performanceperformance of 279 seventh- and eighth-grade students in four urban charter schools was evaluated in comparison group pretest/posttest quasi-experimental study. Thirty-three students, identified by cut scores on a standardized fluency measure, received supplemental one-to-one Self-Regulated Strategy Development (SRSD) instruction for persuasive quick writing. Fifty-one students with scores below the cut participated as an eligible non-treatment comparison; 195 students with scores above the cut participated as a non-eligible comparison group. All students' written responses were evaluated before and after the intervention. Results of repeated measures analysis indicated that students in treatment (additional instruction time + SRSD + planned practice-testing) significantly improved quick writing performance after instruction when compared to pretest performance, and when compared to eligible comparison, with *large* effect sizes for number of persuasive elements and organizational quality and *medium* effects for persuasive quality. When compared to non-eligible comparison, students in treatment had significantly higher scores for organizational quality (*large* effects) and persuasive quality (*small* effects).
© 2013 Elsevier Inc. All rights reserved.

1. Introduction

Many adolescents struggle to demonstrate achievement gains in writing (Graham & Perin, 2007). For these students, writing within both complex and simple formats is challenging due to a lack of the self-regulation skills and cognition necessary for producing a final written product (Harris, Graham, MacArthur, Reid, & Mason, 2011). The lack of writing skills for expressing ideas and demonstrating knowledge negatively impacts struggling students' ability to maximize content learning opportunities (Mason, Reid, & Hagaman, 2012). In secondary classes, for example, teachers often use writing-to-learn techniques such as quick writes to provide students an opportunity to recall, clarify, and question information, and to assess student understanding (Fisher & Frey, 2012; Green, Smith, & Brown, 2007). With the focus on writing across the curriculum as stated in the Common Core State Standards Initiatives (CCSS, 2012), students' ability to express ideas in a variety of writing formats is critical. Evidence-based writing instruction with additional individualized support would be expected for low-achieving adolescent writers (Graham & Harris, 2013).

Instruction for struggling adolescent writers, therefore, should direct students in "how" to think about the learning process as well as "what" to think so that expression of knowledge and opinions is effectively facilitated (Schmidt, Deshler, Schumaker, & Alley, 1988). Fortunately, programs of research in interventions for struggling adolescent writers have provided frameworks for effective instruction (Graham & Perin, 2007; Mason & Graham, 2008). Strategy instruction in writing, for instance, can assist students by teaching them to break writing tasks into manageable subtasks. Instruction that includes an emphasis on teaching and developing skills in self-regulation improves students' self-awareness and control (Harris et al., 2011; Wong, 1980). Best practice includes scaffolded instructional sessions with planned guided and independent practice to support students' independence over time and to foster generalization (Harris, Graham, Brindle, & Sandmel, 2009). Self-Regulated Strategy Development (SRSD) instruction is one established approach for teaching writing that explicitly focuses on teaching strategies across the writing genres and tasks commonly used in the secondary classroom (Baker, Chard, Ketterlin-Geller, Apichatabutra, & Doabler, 2009; Graham, Harris, & McKeown, in press; Graham & Perin, 2007).

1.1. SRSD

SRSD was designed to promote independent use of task specific writing strategies by teaching students cognitive and self-regulation strategies so they can better understand and regulate the writing process (Harris, 1982). Theories supporting effective strategy instruction (Baker, Gertsen, & Scanlon, 2002; Pressley & Harris,

* Corresponding author. Address: CB 3500 Peabody Hall / Chapel Hill, NC / 27599-3500, United States.
E-mail address: lhm12@psu.edu (L.H. Mason).

0361-476X/$ - see front matter © 2013 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.cedpsych.2013.04.002

Author's personal copy

2006), meta-cognition (Harris et al., 2009), cognitive-behavior modification (Meichenbaum, 1977), self-regulation (Harris et al., 2011), motivation (Boscolo & Gelati, 2007), and Vygotsky's (1986) social origin of self-control and zone of proximal development influence SRSD instructional procedures. Flower and Hayes' (1980) iterative writing process model establishes the foundation for addressing students' deficits in planning and organizing, drafting, revising, and editing.

To facilitate low-achieving students strategy acquisition, six instructional stages are implemented throughout SRSD instruction: (1) develop background knowledge; (2) discuss it; (3) model it; (4) memorize it; (5) provide guided practice; and, (6) independent practice (Harris, Graham, & Mason, 2003). In SRSD, responsibility for strategy use and self-regulation of the writing process is gradually shifted from the teacher to the student by scaffolding instruction (Vygotsky, 1986). Instruction is criterion-based rather than time-based; students must demonstrate they have mastered a particular stage or procedure before they are allowed to move to the next phase of instruction. Students' independent strategy use is supported over time and context, booster sessions are provided as needed (Graham & Harris, 2003). SRSD fosters teacher–student dialoguing throughout the writing process and for evaluating written performance (Englert et al., 1991; Wong, Butler, Ficzere, & Kuperis, 1996). SRSD supports the self-regulated and motivational processes required to develop effective written text (Boscolo & Gelati, 2007).

In SRSD instruction four self-regulation processes – goal setting, self-monitoring, self-instruction, and self-reinforcement – are explicitly taught and supported to meet students' individual needs (Mason, Harris, & Graham, 2013). Self-regulation that addresses a writer's environment and behavior, and is personalized, is fundamental to the writing process (Zimmerman & Reisemberg, 1997). Effective goals, such as goals with specificity, proximity, and challenge, are established with students to assist them in understanding the genre specific task to be completed and to foster effort and motivation (Flower & Hayes, 1980; Harris et al., 2011). Self-monitoring works in hand with goal setting and occurs when a student assesses whether or not the goal has been achieved and then records the result (Reid, 1996). Six basic self-instructions are used to support writing: (1) problem definition; (2) focus of attention and planning; (3) strategy use; (4) self-evaluation and error correcting; (5) coping and self-control; and, (6) self-reinforcement (Meichenbaum, 1977). Personalized self-instruction helps students regulate performance throughout the writing process. Self-reinforcement occurs when a writer selects a reinforcer or covertly self-rewards for meeting goals.

The processes for teaching strategy acquisition and self-regulation in SRSD are flexible and can be adapted to target specific writing tasks and genres (Graham & Harris, 2003). As an example, SRSD for POW (Pick my ideas, Organize my notes, Write and say more) + TREE (Topic sentence, Reasons – three or more, Examine, Ending) was designed to provide two strategies to facilitate student learning of skills required to write persuasively (Harris, Graham, Mason, & Friedlander, 2008; Mason et al., 2012). The first strategy, POW, is a general three-step planning strategy: Pick an idea or side of a topic, Organize ideas, and Write and say more by modifying and improving the original plan. TREE helps students formulate basic elements of persuasion: (1) write a convincing Topic sentence; (2) write at least three Reasons why you believe; (3) write Explanations to support each reason; and, (4) wrap it up with a good Ending sentence. The strategy has been adapted for young developing writers in second and third grade (Graham, Harris, & Mason, 2005; Harris, Graham, & Mason, 2006) and for adult writers studying for a high school equivalency exam (Berry & Mason, 2012).

Results of meta-analysis indicate that SRSD significantly improves writing quality when compared with control conditions (Graham, 2006; Graham et al., in press; Graham & Perin, 2007). Studies in this review focused on writing in an untimed context. Recent initiatives (CCSS, 2012) state that students should be taught to write in both short and extended time frames. To address this need, and a need expressed by special education teachers for improving students' writing performance for the inclusive content classroom, researchers sought to develop SRSD instruction with a focus on timed writing. It was hypothesized that students would learn to write within a specified time frame when (a) taught to apply a strategy to a writing task; (b) taught to use self-regulated learning procedures such as setting a goal to attend to writing a paper with genre elements within a specific time frame and to self-monitor performance in meeting that goal; and (c) provided practice for independent writing (i.e., testing performance, self-evaluating performance, teacher–student dialoguing) over time (Mason, Kubina, & Taft, 2011).

1.2. SRSD for quick writes

Quick writes are 10-min short constructed responses to a question related to a specific topic. Quick writes support content learning by presenting a non-threatening, informal, and brief writing activity for students (Fisher & Frey, 2012). To encourage free expression, writing mechanics are not taken into account (Harvey & Bizar, 2005). Quick writes require students to think about and explain what they know through written reflection (Mitchell, 1996; Wood & Harmon, 2001) and can be implemented for a variety of purposes. In a Health lesson on safety, for example, students may write: (a) an informative response to "Describe Important Skateboarding Safety Rules"; (b) a narrative response to "Tell about a time when you or someone you knew had an accident on a skateboard"; or, (c) a persuasive response to "Should students your age wear helmets when riding a skateboard?". Quick writes benefit students' comprehension and vocabulary by encouraging students to make connections through the writing process and can help with assessment of student learning at the beginning, middle, or end of a lesson (Mason, Benedek-Wood, & Valasa, 2009).

Researchers have documented that persuasive quick writes, in particular, present a number of problems for struggling adolescent writers (Mason, Kubina, & Taft, 2011). This is not surprising, given that students' persuasive writing skills develop slowly compared to writing skills related to other genre structures (Applebee & Langer, 1983). When presented with a persuasive quick write, for example, many students will write with minimal attention to developing a thesis statement (Mason, Kubina, Valasa, & Cramer, 2010). These struggling writers pay little attention to supporting their positions with detail or effective reasons. They do not elaborate or explain; therefore, their writing lacks substance. When asked to state an opinion, struggling writers often state both sides of the argument, demonstrating no clear stance (Mason, Kubina, & Hoover, 2011; Mason, Kubina, & Taft, 2011). However, positive effects on writing performance have been noted when students with high incident disabilities such as learning disabilities (LD), attention deficit hyperactivity disorder (ADHD), and emotional/behavioral disorders (EBD) are provided explicit instruction and an instructional context that supports quick writing development (Mason & Kubina, 2011).

SRSD for persuasive quick writing, as a supplemental intervention (i.e., writing instruction that is in addition to students' regular writing instruction), was developed and tested in five multiple-baseline single-case design studies with middle and high school students with disabilities (Hoover, Kubina, & Mason, 2012; Mason, Kubina, & Hoover, 2011; Mason, Kubina, & Taft, 2011; Mason et al., 2010). In each study, instruction ranged from five to seven 30-min lessons for strategy acquisition plus one to five 10-min lessons for independent practice in using the POW + TREE strategy for a

Author's personal copy

10-min quick write. Students evaluate their performance after each writing session, followed by student and teacher dialoguing. Students' writing performance was measured by (a) counting the number of persuasive elements in the students' quick write, (b) examining quality using a 0- to 7-point holistic scale based on anchor points (2 = low, 4 = medium, 6 = high), and (c) counting the number of words written.

In the first of two single subject studies in Mason, Kubina, and Taft (2011), a graduate assistant taught inclusive middle school students to write a persuasive response with a minimum of eight persuasive elements in TREE, one point each for a topic and ending sentence, and one point for each reason and explanation written. In the second Mason et al. study, special education teachers taught students to include opposing views in persuasive writing. TREE persuasive elements were expanded by adding an effective counter reason (1 element) and a counterargument refute (1 element) for a total of 10 elements in the response. Results of these two studies (16 students with high incidence disabilities) indicated that students gained in level and trend (i.e., positive linear trend data over a minimum of 5 data points), with reduced variability, across measures of element and word count, and in quality.

TREE with 10 elements was subsequently used in single subject study in a middle school alternative setting for students with EBD (Mason et al., 2010) and in an inclusive high school (Hoover et al., 2012; Mason, Kubina, & Hoover, 2011). The middle school alternative study replicated the effectiveness of SRSD instruction for TREE quick writing with level and trend gains and reduced variability, across element count and quality. The number of words written, however, decreased in count but variability was reduced. In the two high school studies, positive gains were noted for all pretest to posttest measures of quick write quality and number of elements written; variability was reduced.

These five studies, the first to examine SRSD instruction for a timed response, indicated that providing students with high-incidence disabilities supplemental instruction for writing persuasively in a 10-min timed response has promise (Mason & Kubina, 2011). These studies partially fulfill the minimum required for meeting evidence-based standards as outlined in the *What Works Clearinghouse* guidelines for single subject research by replicating study in five published studies (Kratochwill et al., 2010). However, this line of research has limited generalizability. First, a team of researchers in a small city university community developed the intervention and conducted the research. Instructional delivery by those not associated with the university (i.e., research graduate assistants or teachers who received special education degrees from the university) or in an urban setting had not been tested. In addition, the effects of the SRSD intervention for struggling writers without disabilities and for the transfer of learning to the general education classroom had not been tested.

1.3. Current study

Based on the positive effects of SRSD for quick writing for students with disabilities in the context of prior research (Mason & Kubina, 2011), we hypothesized that urban middle-school low-achieving writers, with and without disabilities, would benefit from the supplemental explicit instruction in both strategy acquisition and self-regulated learning in SRSD. In developing the intervention for the current context, we followed recommended practice for targeted supplemental evidence-based instruction for struggling adolescent learners (Deshler et al., 2001) by providing intense individualized scaffolded instruction (Graham & Harris, 2003) and by providing repeated guided and independent practice as noted in recommended SRSD procedures and our prior research (Harris et al., 2011; Mason, Kubina, & Taft, 2011). In other words, we predicted that the relatively short intense instructional period would be effective in improving performance; however, predicted that repeated practice and testing over time in the one-to-one setting would further support skills needed for transfer (Butler, 2010; Swanson & Deshler, 2003). We predicted that given the effectiveness of SRSD across developmental, grade, and setting contexts (Mason et al., 2013), instruction would be appropriate for the diverse range of struggling learners in the current study. Finally, the self-regulated learning procedures, such as goal setting and self-monitoring, inherent in SRSD would support student motivation and transfer of learning (Harris et al., 2006).

In the current comparison group pretest/posttest quasi-experimental study, SRSD for persuasive quick writing instructional procedures was replicated and research extended to include all struggling middle school students in four urban charter schools. Masters-level special education graduate assistants, attending a university in the urban setting, delivered instruction. We asked the following questions:

1. What are the effects of supplemental SRSD instruction for quick writing on (a) the number of persuasive elements included in a quick write, (b) organizational quality, (c) persuasive quality, and (d) the number of words written during classroom assessment?
2. What are the effects of supplemental SRSD instruction for quick writing on (a) the number of persuasive elements included in a quick write, (b) organizational quality, (c) persuasive quality, and (d) the number of words written during one-to-one independent practice testing?
3. Do the treatment participants perceive the intervention effective for improving writing performance?

2. Methods

2.1. Setting and participants

The study was conducted in four schools in a charter school district in a large urban city in the Northeast during the fall semester. Seventy-five percent of the district's students were eligible for free or reduced-priced lunch, 65% were minorities, and 15% had special education needs. The four schools each contained two classes of 25 students per grade level, a total of 400 students in 16 classes. All seventh and eighth grade students were eligible to participate in the study and were screened for the study by the classroom teacher and the research team.

Two forms of consent, approved by two research university human subject review boards, were implemented. The charters' administrative offices, according to schools' policies, mailed an opt-out-consent to parents/guardians for permission to use data collected in classroom for two purposes: (1) to provide the school with researcher-scored writing data and (2) for the purpose of the research (e.g., screening; pre- and post-intervention classroom data). All parents/guardians agreed that the data could be used for school purposes; however, only 281 parents/guardians agreed that data could be used for the purpose of research. The second form of consent was obtained after screening for identified eligible students (see procedures and screening measures). Consent to participate in the supplemental SRSD for quick writing intervention was obtained from parents/guardians and from each student. Of the 85 eligible students, 33 students, 12 with disabilities, consented to participate in treatment. Interestingly, consent was obtained to use classroom data for research purposes from the 52 eligible participants (eligible comparison) who did not consent for treatment. The response rate was disappointing; however, we were told that the rate was typical for secondary students in this urban charter school system. Two students were eliminated from the study due to having absences in excess of 30 days during the

Author's personal copy

Table 1
Student demographics.

Group	Sex		Mean age	Race			Low SES	IEP	Behavior plan	Mean days absent	Mean days suspended
	Male	Female		White	African American	Other					
Treatment $n = 33$	22	11	13.46	4	27	3	28	12	3	2.91	1.27
Eligible comparison $n = 51$	29	22	13.40	28	23	0	27	18	3	4.38	1.07
Comparison $n = 195$	94	118	13.23	78	111	22	169	25	3	5.71	.44
Total $n = 279$	145	151	13.28	110	161	25	224	55	9	5.15	.55

SES = Socio-economic status, *IEP* = individualized education plan.

course of the experiment. The study's final sample included 33 treatment students, 51 eligible comparison students, and 195 non-eligible comparison (comparison) students. See Table 1 for student demographics.

2.2. Procedures

Initial consent procedures for classroom testing were conducted in the beginning of the school semester in late August, followed immediately by screening assessment in mid-September. After scoring screening materials, consent for treatment was initiated. During this time, tutors received instructional procedure training.

SRSD for quick writing instruction began in mid-October. All students in treatment, eligible comparison, and comparison received the *Landmark Writing Curriculum* (2010) for writing instruction in their general education language arts classroom. The focus of classroom writing instruction was on sentence development. Treatment was supplemental instruction and was provided during a non-language arts time block. During the one-to-one treatment, the 33 students were taught to plan and write a 10-min persuasive quick write response. Although lessons were designed for repetition and revisiting, no student needed more than four 30-min instructional lessons to acquire mastery in writing a persuasive quick write with all 10 persuasive elements (see lessons). In addition, all students, but one, were able to write a 10-min persuasive quick write with 10 elements after three 10-min guided practice lessons. The one student needed four 10-min guided practice lessons. Instruction for all treatment students was concluded in mid-November, with booster instruction planned as needed during future planned independent practice-testing sessions. Although the number of lessons did not vary, delivery time varied from 4 to 5 weeks due to a significant flu outbreak.

Tutors tested treatment students' independent quick writing (i.e., writing without instructor support) in four one-to-one practice-testing sessions (prior to instruction, immediately after instruction, 2 weeks after instruction – the week following the Thanksgiving break, and 4 weeks after instruction – prior to the winter holiday). Students charted performance in writing a 10-element persuasive quick write after testing (for the pretest, this was completed after SRSD Lesson 1); the tutor and student then discussed performance and methods for improving the quick write next time. Revisiting instruction, although planned if needed, was not deemed needed by the tutors or students. The classroom posttest assessments were given prior to the winter holiday break. Time between classroom pretest and posttest was approximately 12 weeks. See Fig. 1 for study timeline.

2.3. Screening measures

Participants were initially assigned to a treatment or a non-eligible comparison condition based on their individual performance in a preprogram measure as described by Trochim (2006). To determine this assignment, all students were given a group administered *Woodcock Johnson-III Writing Fluency* (*WJ-III Fluency*; Woodcock, McGrew, & Mather, 2007) subtest and a 10-min researcher developed quick write assessment in their language arts classroom. The authors trained teachers in assessment delivery during a 30-min one-on-one training session. In addition, all assessment sessions were observed by a research team member to ensure the fidelity of delivery. The *WJ-Fluency III* was selected because: (a) constructs for the assessment (e.g., sentence writing) closely aligned to the fall semester curriculum, (b) the assessment time was limited to 7-min, (c) the assessment was one familiar to school administration and faculty, and (d) the assessment had been used successfully in prior writing research (e.g., Mastropieri et al., 2010). To be eligible for treatment, a student had to have a score on the *WJ-Fluency III* that fell 1.5 standard deviations below the mean for the normative sample.

Using procedures in the testing manual, the first author trained advanced graduate assistants to score the *WJ-Fluency III*. Students' individual tests were scored twice. Interrater agreement was 100%. The quick write assessment was given in the classroom to verify the students' ability to write to a prompt. Due to time constraints, graduate students did not score the quick write. The first author visually examined all potential treatment students' quick writes for suitability. If a student demonstrated the ability to include eight or more persuasive elements in a 10-min quick write, they would be eliminated from the treatment pool. No student was eliminated due to a score below criteria for the *WJ-Fluency III* or above criteria for the quick write. Eighty-five students, 30% of the total consenting participants, met the eligibility criteria for participation in treatment.

2.4. Instruction

Seven graduate research assistants (tutors) delivered one-to-one instruction in a quiet place in the school in five 30-min sessions plus up to five 10-min sessions over a month time period. Tutor training included: (a) participation in on-line training for using the POW + TREE strategy – *Improving Writing Performance: A Strategy for Writing Expository Essays* (http://iris.peabody.vanderbilt.edu/pow/chalcycle.htm), (b) review and assignment completion of introductory and POW + TREE chapters in *Powerful Writing Strategies for All Students* (Harris et al., 2008), (c) participation in a 5-h training seminar conducted at the site university, and (d) review and modeling of SRSD for quick writing lesson plans with the first or third author.

All six stages of strategy acquisition and four self-regulation procedures in the SRSD instructional delivery model were employed throughout the lessons (Harris et al., 2008). Prior to instruction, the student and tutor collaboratively determined writing goals, such as learning and using the strategy mnemonic and steps,

Author's personal copy

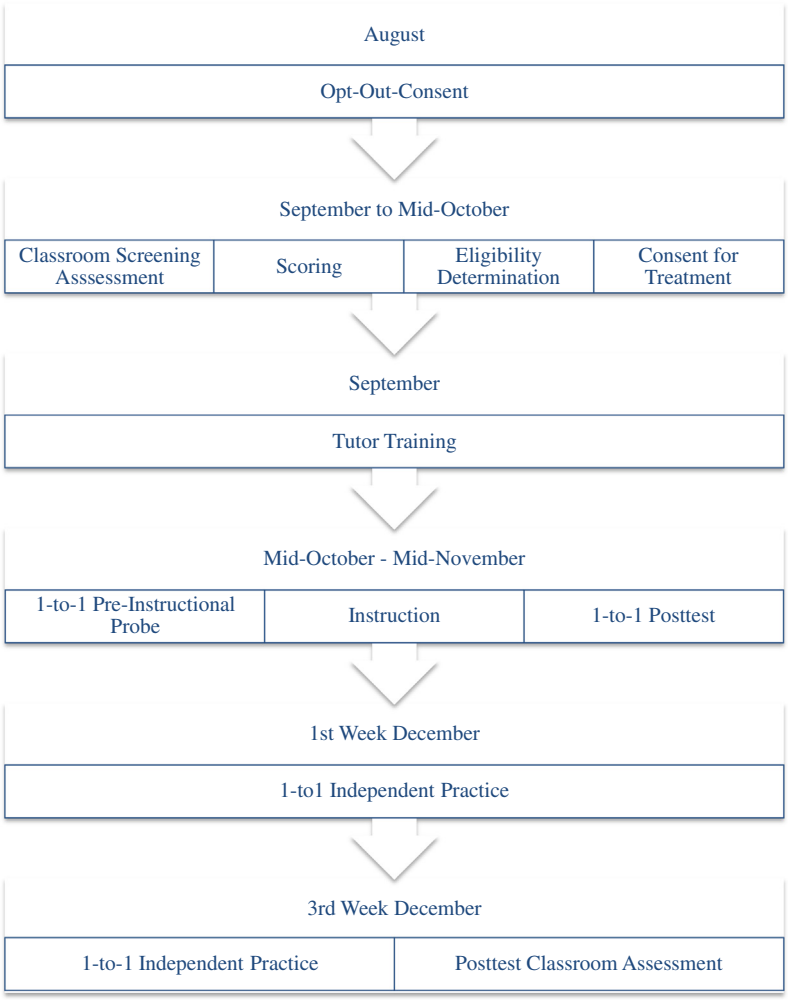


Fig. 1. Study timeline for consent, screening, tutor training, treatment, classroom screening assessment (*WJ-Fluency III* and quick write), 1-to-1independent practice (quick write), and posttest classroom assessment (quick write).

by signing a learning contract. All lessons began with memory practice of the steps in the POW + TREE strategy. In order to enhance motivation, verbal praise was given frequently; students provided self-reinforcement by graphing their own performance. All lesson plans were written by the first author and used in prior SRSD for quick writing studies (Mason et al., 2012). Lessons 1 through 4 focused instruction on strategy and self-regulation acquisition and mastery in writing a persuasive quick write with ten elements. Lesson 5 focused instruction on students' guided practice in writing a quick write, with 10 elements, in a 10-min time frame.

2.4.1. Lesson 1

The students' background knowledge for persuasive quick writing and strategy use was developed in the first lesson. The tutors reviewed key terminology (e.g., "persuasive," "quick write") and then prompted the students to note times when a quickly written response was required in class. The students were then given the POW + TREE mnemonic chart and each strategy step was reviewed and described. A transition word list (i.e., a list of words used to introduce an idea) and a chart for self-graphing the number of parts written were also given to the students. Anchor/model quick writes were evaluated for number of TREE parts. The students then reviewed their quick write previously written during pretesting. The number of parts and transition words written were noted and recorded on a TREE graphic organizer – planning sheet. The tutors and students discussed ways for improving the pretest quick write (e.g., give more reasons, explain reasons, use a counter reason, use good word choice, use an interesting first sentence, use an interesting ending sentence). In closing the lesson, the tutors reminded the students of the goal – writing better persuasive quick writes.

2.4.2. Lesson 2

In order to establish the context, in this lesson and all future lessons, the tutors first tested the students for memorization of POW + TREE strategy steps, and then discussed how the strategy could be generalized to other classes. The tutors then orally read a writing prompt and cognitively modeled (i.e., modeled by think aloud, using self-instruction to direct writing behavior) how to use POW + TREE for writing a persuasive quick write. A tutor might state, for example, "Remember that the first letter in TREE is T – Topic sentence. To do this, I need to think about what I believe and state this is a good first sentence." After modeling, the tutors asked the students to write out personal self-instructions to use before, during, and after writing. Next, the students, collaboratively with the tutors, added to the students' graphic organizer that was completed with information from the students' pretest in the first lesson. The students then revised and rewrote the pretest response, counted the number of parts in the revised response, and graphed

Author's personal copy

the number of parts on the graphing sheet. Lesson 2, and all subsequent lessons, concluded with tutors delivering verbal praise and a reminder about the memory test for the next lesson.

2.4.3. Lesson 3

After memorization practice and discussion, the tutors and students collaboratively wrote a persuasive quick write with POW + - TREE. The students were given a blank graphic organizer, a transition word chart, their personal self-instructions sheet, and a choice of two practice prompts. Students were encouraged to use personal self-instructions throughout the writing process. After writing, the students counted and self-graphed the number of response parts written. Tutors could repeat the lesson if needed for individual students; no student required the repetition.

2.4.4. Lesson 4

The students were weaned off the graphic organizer and transition word list in this lesson. The tutors explained to the students that a graphic organizer or a transition word sheet is not normally available for writing a persuasive quick write. The tutors discussed and modeled how to write a POW + TREE reminder at the top of the paper and how to write notes for each part. The students were then given a choice of two prompts and were encouraged to think of good ideas for parts and to use self-instructions while writing. The students counted and graphed the number of parts in the quick write. Tutors could repeat the lesson if needed for individual students; no student required the repetition.

2.4.5. Lesson 5

During lesson five, the tutors modeled writing a persuasive response in 10-min. Following modeling, the students, with instructor guidance and prompting, wrote a 10-min response. The students counted and graphed the number of response parts. Lesson five was repeated until the students could proficiently write a 10-min persuasive quick write with ten or more TREE parts without instructor support. One student required four lessons; all other students required three lessons.

2.5. Instructional treatment fidelity

Three steps were taken to ensure treatment fidelity. First, the seven graduate assistant tutors communicated with the research team daily via a web-based discussion board and/or personal communication. Next, the tutors used a checklist for the step-by-step instructions in each lesson. As each step was completed during the lesson, the tutors checked the step. Finally, tutors digitally recorded all instruction. The authors evaluated all lessons by listening to the recordings and marking steps completed on a checklist. Dividing the number of lesson steps taught by the total number of steps and multiplying by 100 computed total session integrity. Treatment fidelity was 100% for both the instructor check sheet and the recording author's checked lists.

2.6. Data sources

In 2 days of assessment prior to the start of the intervention, all students, in their language arts classrooms, were given a 10-min persuasive writing assessment and in a second day, the *WJ-Fluency III*. Language arts classroom teachers delivered the assessments; authors and advanced research graduate assistants (not tutors) were in each classroom to ensure the integrity of assessment delivery. For students in treatment, additional individually administered 10-min persuasive writing performance data were collected prior to instruction, immediately following instruction, and at two time points (2 and 4 weeks following post-instruction testing). After treatment, instructors asked students questions regarding their perceptions about the effects of the intervention.

2.6.1. WJ-Fluency III

The *WJ-Fluency III* test was given in September for screening purposes. Standardized test administration, adapted for whole class administration, and scoring procedures in the *WJ-Fluency III* testing manual were followed. In this test, students were asked to write a complete sentence using three provided words and a picture cue. The test included 40 questions; students were given 7 min to answer questions. Reported alternate forms reliability is .88; test-retest reliability for seventh- through eighth-grade students is .59 (Woodcock et al., 2007).

2.6.2. Writing assessment

In developing prompts, the researchers considered the importance of confounding effects of students' content knowledge and the accessibility to students with diverse experiences and background knowledge. Therefore, topics familiar to students and similar to those used to foster class discussion (e.g., "Should students be allowed to chew gum in school?"), as opposed to topics for evaluating students' knowledge or learning, were used for prompts. All prompts were reviewed by a middle school special education teacher and a content area teacher for appropriateness, and used in the prior SRSD for quick writing studies (e.g., Mason, Kubina, & Taft, 2011). To provide student choice, prompt sets containing two prompts in each set were created. Prompt sets were counterbalanced across classrooms and testing time. Two advanced graduate assistants typed all student handwritten quick writing assessments for scoring; spelling was corrected to eliminate bias in scoring (Graham, Harris, & Heibert, 2011). The quick write was measured by examining (a) the number of TREE parts, (b) the organization quality, (c) the argument quality, and (d) the number of words.

2.6.3. Quick-write elements

Writing prompts were scored for basic quick write elements: topic sentence, reasons, explanations, counter reason with refute, and ending sentence. Students earned one point for each quick write element included in the quick write. In other words, one point was earned for a topic sentence, one point was earned for each reason, one point for each explanation, one point for a counter reason, one point for refuting the counter reason, and one point for the ending sentence. Given that students could write multiple reasons and explanations, the quick write elements measure had no ceiling.

2.6.4. Organizational quality

Overall quick write organizational quality was scored using a seven point holistic measure. Quality scores were based on quick write elements and quick write organization. As an example, to earn a score of (a) 7 points – the quick write included a belief/topic sentence, three or more reasons, an explanation for at least 3 reasons, a counter reason, and an ending sentence, and organized into a paragraph(s) with sentences; (b) 4 points – the quick write included a belief/topic sentence, 2 or more reasons, and 2 or more elements of a persuasive quick write (i.e. explanation(s), counter reason, ending), and organized into a paragraph(s) with sentences; and (c) 1 point – the quick write included a belief/topic sentence with no other persuasive elements, or included a belief/topic sentence but then argued both sides of the argument (i.e. student's position is not clear). Raters were given anchor papers representing each score level. The use of holistic scoring, with anchor points, was developed and validated in previous research (Graham et al., 2005; Harris et al., 2006; Mason & Shriner, 2007). The anchor

Author's personal copy

papers used for scoring in this study were developed and used in the prior SRSD for quick writing studies (Author).

2.6.5. Argument quality

A recent researcher-developed measure for evaluating the argument's strength – in other words, the convincingness of the argument – was used for the quick write. Argument quality was rated on a three point scale: (a) score of 2 – the argument convinced me, (b) score of 1 – I see the writer's side; and (c) score of 0 – the writer wrote nothing or argued both sides. Argument quality was used in one prior study, to evaluate 2000 middle school student quick writes (Mason, Hamm, Benedek-Wood, & Farmer, in preparation).

2.6.6. Number of words

The number of words written was determined using the word count function of the Word processing program. To eliminate potential error, scorers independently verified this word count by reading each quick write for typographical errors.

2.6.7. Treatment acceptability

Following instruction and post-testing, intervention students were asked six questions regarding the acceptability of the POW + TREE strategy and the SRSD instruction: (1) Has using the POW + TREE strategy helped you become a better writer? How? (2) What did you learn when working with me? (3) How do you think POW + TREE could help other students? (4) If you were the teacher, would you add anything to help students learn to write? (5) If you were the teacher, what would you change in the POW + - TREE lessons? Why? (6) From the POW + TREE lessons, what things have most helped you become a better writer? The tutor transcribed responses while the student orally gave their response. Sessions were audiotaped for later transcription. Treatment acceptability questions were developed and used in prior research (Graham et al., 2005; Harris et al., 2006).

2.6.8. Scoring

Three advanced graduate student scorers rated all measures. Papers were coded so that scorers were blind to students' identity and testing time. The first and fourth author conducted a 2-h scorer-training session for each measure that included (a) reviewing scoring rubrics for each measure, (b) reviewing and scoring example and non-example sample quick writes, and (c) providing practice in scoring example and non-example sample quick writes. During scoring training, scorers rated sample persuasive quick writes until they achieved 95% agreement over 10 responses.

For scoring students' quick writes, interrater agreement was computed for parts at 73% for exact agreement and 95% for within 1-point agreement. For disagreement, scores were averaged. Interrater agreement for organizational quality was 87% for exact agreement and 93% for within 1-point. Argument quality showed 86% exact agreement with 100% within 1-point. Interrater agreement was computed at 100% for the *WJ-Fluency III*.

2.7. Analysis

Descriptive statistics and a multivariate, repeated-measures 2 (pretest, posttest) × 3 (treatment, eligible comparison, comparison) ANOVA were selected for the classroom assessment measures collected at pretest and posttest (Tabachnick & Fidell, 2006). The results of multivariate repeated measures were interpreted according to traditional ANOVA conventions (i.e., a time effect, a group effect, and a group-by-time interaction) and are robust to violations of the sphericity assumption, which is a major drawback to the univariate, repeated measures ANOVA (Field, 2009; Stevens, 2002). Descriptive statistics and univariate repeated measures ANOVA were selected for the 10-min quick write independent practice tests (pretest, posttest, independent practice 1, independent practice 2) for the 33 treatment students. Effect sizes (*ES*) for mean differences were calculated with Cohen's $d = M_1 - M_2/\sigma_{pooled}$. *ES* were considered to be small (.20), medium (.50), or large (.80), as suggested by Cohen (1988).

3. Results

Analysis confirms that the students receiving the supplemental quick write intervention, when tested individually demonstrated independence in writing a 10-min quick write. When reassessed in the classrooms, students in treatment improved writing performance on the 10-min writing quick-write measure.

3.1. Descriptive statistics

Pearson correlations between four pretest measures (number of elements, organizational quality, persuasive quality, and number of words written) were conducted. Results indicated that significance at $p = .01$ was observed for all measures, indicating that similar behaviors were measured (see Table 2). Strong associations were noted for organizational with persuasive quality, and for the number of words with the number of elements written.

Results of ANOVA for the *WJ-Fluency III* and for the four quick write pre-test measures indicated no significant differences among students' performance based on gender, race, or socio-economic status. There were three groups in each analysis: treatment, eligible comparison, and comparison. Means and standard deviations (*SD*) for measures for groups across time are reported in Table 3 and for one-to-one independent practice tests in Table 4.

3.2. Classroom assessment

Results of ANOVA indicated significant differences at pretest favoring the comparison group when compared to treatment and eligible comparison across five pretest measures. There were no significant differences for treatment compared to eligible comparison, further indicating that these groups had similar writing abilities at pretest. Effect sizes for pretest and posttest group differences are reported in Table 5. Pretest and posttest differences for each group are reported in Table 6.

3.2.1. Number of elements

Results from the repeated measures ANOVA for number of elements written in the timed quick write revealed a significant main effect for (a) time ($F = 13.15$, *df* [1,276], $p < .001$), (b) group-by-time interaction ($F = 8.44$, *df* [2,276], $p < .001$), and (c) condition main effect ($F = 7.37$, *df* [2,276], $p = .001$). Follow-up, univariate ANOVAs were completed with significant effects for time ($F = 13.151$, *df* [1,276], $p < .001$). Results revealed a significant higher score difference, $p < .001$, for treatment at posttest when compared to eligible comparison ($p < .001$, $ES = .81$) as well as a higher score for comparison when compared to eligible comparison ($p = .002$, $ES = .45$). There was no significance for treatment

Table 2
Correlations between quick write pretest measures.

Measure	1	2	3	4
1. Number of elements	–			
2. Organizational quality	.590*	–		
3. Persuasive quality	.520*	.689*	–	
4. Number of words	.647*	.477*	.303*	–

* $p < .01$.

Author's personal copy

Table 3
Treatment, eligible comparison, and comparison group testing – group means and standard deviations.

	Treatment $n = 33$		Eligible comparison $n = 51$		Comparison $n = 195$	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Woodcock-Johnson Fluency III	12.36		13.35		23.09	
	(2.18)	-	(2.91)	-	(4.68)	-
10-min Quick write	6.27	9.15	6.29	6.45	7.91	7.99
Number of elements	(2.63)	(2.88)	(3.18)	(3.73)	(3.28)	(3.09)
Organizational quality	3.03	5.55	3.16	3.55	3.91	4.05
	(1.21)	(1.94)	(1.35)	(1.64)	(1.52)	(1.45)
Persuasive quality	.91	1.45	1.04	1.10	1.23	1.16
	(.46)	(.51)	(.45)	(.36)	(.57)	(.53)
Number of words	89.24	105.18	82.75	90.29	110.09	117.75
	(44.13)	(37.15)	(40.87)	(46.25)	(44.74)	(39.13)

Table 4
One-to-one treatment group means and standard deviations for quick write testing.

	Pretest	Posttest	Independent practice 1	Independent practice 2
Number of parts	6.73	9.78	9.00	9.76
	(2.23)	(2.20)	(1.54)	(2.30)
Organizational quality	3.54	5.73	5.35	5.86
	(.96)	(1.85)	(1.90)	(1.78)
Persuasive quality	1.03	1.35	1.11	1.59
	(.29)	(.54)	(.31)	(.50)
Number of words	110	97.47	97.16	99.40
	(53.72)	(32.61)	(29.81)	(30.33)

Table 5
Pretest and posttest effect size differences.

	Treatment to eligible comparison	Comparison to treatment	Comparison to eligible comparison
Pretest			
WJ-Fluency III	ns	2.94	2.53
10-min Quick write			
Number of elements	ns	.55	.50
Organizational quality	ns	.64	.52
Persuasive quality	ns	.61	ns
Number of words	ns	.46	.64
Posttest			
10-min Quick write			
Number of elements	.81	ns	.45
Organizational quality	1.11	−.88	ns
Persuasive quality	.79	−.58	ns
Number of words	ns	ns	.64

ns = Not significant.

compared to comparison at posttest ($p = 1.00$, $ES = .39$). Results from pretest to posttest indicated large effect size gains for treatment ($p < .001$, $ES = 1.04$).

3.2.2. Organizational quality

The repeated measures ANOVA for written organizational quality indicated that the main effect for time ($F = 50.74$, df [1,276], $p < .001$) and for group ($F = 7.48$, df [2,276], $p = .001$) was statistically significant. Statistical significance for a group-by-time interaction was also noted ($F = 23.86$, df [2,276], $p < .001$). Follow-up, univariate ANOVAs were completed with significant effects for time ($F = 84.58$, df [1,276], $p < .001$). Follow-up analysis and post hoc comparison revealed that at posttest, treatment obtained significantly higher organizational quality scores, $p < .001$, than eligible comparison ($ES = 1.11$) and comparison ($ES = .88$). Results from pretest to posttest indicated large effect size gains only for the treatment group ($p < .001$, $ES = 1.55$).

3.2.3. Persuasive quality

Results for persuasive quality revealed that the main effect for time was statistically significant ($F = 11.22$, df [1,276], $p = .001$) as was the group-by-time interaction ($F = 11.36$, df [2,276], $p < .001$). The main effect for group was not significant. Follow-up, univariate ANOVAs were completed with significant effects for time ($F = 11.22$, df [1,276], $p = .001$). Follow-up analyses and post hoc comparisons indicated that treatment had significantly higher persuasive quality scores than eligible comparison ($p = .002$, $ES = .79$) and comparison ($p = .007$, $ES = .58$). Results from pretest to posttest indicated effect size gains for treatment ($p < .001$, $ES = 1.11$).

3.2.4. Number of words written

Results for the number of words written revealed that the main effect for time ($F = 10.07$, df [1,276], $p = .002$) and the main effect for group ($F = 12.57$, df [2,276], $p < .001$) were statistically significant. The group-by-time interaction was not significant. Follow-up, univariate ANOVAs were completed with significant effects for time ($F = 10/07$, df [1,276], $p = .002$). Follow-up analyses and post hoc comparisons indicated that at posttest, students in comparison significantly wrote more words than eligible comparison ($p = .000$, $ES = .64$). Although not significant, students in treatment wrote more words than eligible comparison at posttest ($p = .58$, $ES = .36$); however, wrote less than comparison ($p = .05$, $ES = .33$). Results from pretest to posttest indicated small effect size gains for treatment ($p = .05$, $ES = .39$).

3.3. Independent practice-testing

Individualized testing for the 10-min quick writes indicated significant growth for the treatment participants after instruction for all measures, with the exception of number of words written (see Table 6 for effect sizes). Mauchly's test indicated that all measures except number of words met assumption of sphericity (Mauchly, 1940). We used repeated measure ANOVAs to detect significant differences across time (pretest, posttest, independent practice 1, independent practice 2), and then analyzed mean differences using Bonferroni adjustment.

The number of elements written differed significantly across time ($F = 20.96$, df [3,95], $p = .001$). Comparisons were significant, indicating improved performance, from pretest to posttest ($p < .001$, $ES = 1.38$). The *large* effects maintained across testing conditions: $p < .001$, $ES = 1.18$ for pretest to independent practice 1 testing, and $p < .001$, $ES = 1.34$ for pretest to independent practice 2 testing. No significant differences were found posttest to

Author's personal copy

Table 6
Pretest to posttest and pretest to maintenance effect sizes for quick write differences.

	Treatment pretest/posttest[a]	Eligible comparison pretest/posttest[a]	Comparison pretest/posttest[a]	Treatment 1-to-1 pretest/posttest	Treatment 1-to-1 pretest/IP 1	Treatment 1-to-1 pretest/IP 2
Number of elements	1.04	ns	ns	1.38	1.18	1.34
Organizational quality	1.55	ns	ns	1.49	1.20	1.62
Persuasive quality	1.11	ns	ns	.74	ns	1.38
Number of words	.39	ns	ns	ns	ns	ns

[a] Classroom assessment; IP = Independent practice; ns = not significant.

independent practice 1 for number of elements ($p = .34$, $ES = -.42$) or maintenance 1 to maintenance 2 ($p = .45$, $ES = .40$).

Organizational quality measures also differed significantly noting improved performance across time ($F = 42.86$, df [3,95], $p = .001$). The pretest differed significantly from posttest ($p < .001$, $ES = 1.49$). The effect maintained from pretest to independent practice 1 ($p < .001$, $ES = 1.20$) and pretest to independent practice 2 ($p < .001$, $ES = 1.62$). No significant differences were found posttest to independent practice 1 for organizational quality ($p = 1.00$, $ES = -.20$) or independent practice 1 to independent practice 2 ($p = .80$, $ES = .28$).

Argument quality measures differed significantly across time ($F = 15.73$, df [3,95], $p = .001$. Results were significant from pretest to posttest ($p = .004$, $ES = .74$). Effects varied following intervention, with a non-significant effect from pretest to independent practice 1 ($p = 1.00$, $ES = .19$), and a significance effect from pretest to independent practice 2 ($p < .001$, $ES = 1.38$). No significant differences were found posttest to independent practice 1 for argument quality ($p = .11$, $ES = -.57$). Significance was noted independent practice 1 to independent practice 2 ($p < .001$, $ES = 1.19$).

To adjust for the assumption of sphericity violation, Greenhouse and Geisser (1959) estimates were used to detect differences across time for number of words. Measures did not significantly differ across time ($F = 1.08$, df [3,95], $p = .329$).

3.4. Treatment acceptability

The 33 students in treatment answered social validity questions. All students replied that the POW + TREE strategy had helped them become better writers, for example, one student stated, "Yes, it improved how I write an essay by using reason and explanation and I don't mix up the words anymore when I write." Five students noted generalizing the strategies to other tasks (e.g., "Yes, because I use it in class and get better grades." "Yes, because I used it in my paragraphs and I got a 100% on it when I wrote a paragraph for 4Sight testing."). Students also noted that the strategies had helped by improving fluency and organization, for example, by stating, "That it can be easy and fast to write a response with all the parts you need in it," "You need to organize thoughts before you start writing and take your time." All students noted that the strategies would help other students – "It could help them the same way it helped me become organized," "Help them put their ideas down so they are not confused and they know what to do," "Help them become a great writer." The majority of students provided no suggestions for adding to instruction. Those that did provide comments suggested teaching quick writing for other genres, putting a POW + TREE poster in the classroom, and providing daily practice. Most students recommended no changes to instruction. One student suggested, "More opportunities to write because one day someone could become a famous writer." Finally, when asked what things were most helpful, students had a variety of responses – POW + TREE, organizing, the graphic organizer, transition words, adding more/writing more, counter reasons, and writing faster.

4. Discussion

The findings of the present study demonstrate the effectiveness of individualized, supplemental explicit SRSD instruction for persuasive quick writes with low-achieving urban middle-school students. Students in treatment demonstrated significant gains during one-to-one practice testing and transferred learning to the general education language arts classroom. Without component analysis, however, the primary factor influencing student change is not known. The combination of additional time for writing, SRSD instruction, and writing practice was effective because it was supported by the following key elements: (a) best practice for scaling instruction to close achievement gaps for adolescent learners (Deshler et al., 2001), and (b) best practice in SRSD for improving writing for the lowest-performing students (Graham & Harris, 2003).

Results for quick write performance varied across measures for students in treatment. *Large* effects were obtained from pretest to posttest in the classroom for the number of elements written, organizational quality, and persuasive quality. These measures most directly assess what was taught in SRSD for quick writing and replicate what has been noted in SRSD research (Graham, 2006; Graham & Perin, 2007; Graham et al., in press). A small effect for the number of words written was noted at classroom posttest. The lack of growth in number of words written parallels what has been noted in prior research – quality and number of words written are not always related (Graham et al., 2005; Harris et al., 2006; Mason et al., 2010).

For students in the eligible comparison group and comparison group, results indicated no growth for writing a persuasive quick write over the 12 week period between classroom pretest and posttest. At posttest, students in treatment scored higher than eligible comparison with *large* effects for the number of elements written and organizational quality, and *medium* effects for persuasive quality. Students in comparison maintained higher scores with *small* effects for the number of elements and *medium* effects for number of words written when compared to eligible comparison. Students in treatment, however, outperformed students in comparison with *large* effect mean differences for organization quality and *small* effects for persuasive quality. These results indicated that the intervention for quick writing was effective in improving students' performance in writing an effective quick write to a level higher than that of non-eligible peers.

Results for persuasive quality, however, were weaker in comparison with number of elements written and organizational quality. There are two potential reasons for the smaller gains, both considerations for intervention improvement. First, effective argumentation requires development over time (Crowhurst, 1991).

Author's personal copy

Given the relatively short instructional time period, argumentation may not have been supported to full advantage. Extended time for supporting argumentation should be considered. More importantly, instruction did not include procedures, such as discourse, to support higher-level argumentation development (Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009). Methods for instruction and evaluation for argumentation have been included effectively for extended writing tasks (e.g., De La Paz & Felton, 2010) and should be taken into account in SRSD for quick writing.

The current study with struggling writers is the first to demonstrate effects of SRSD instruction for quick writing in the general education classroom. Maintenance and transfer of knowledge, however, has been tested in prior SRSD study. In the Graham et al. (2005) and Harris et al. (2006) studies with second and third grade students, transfer of strategy use was explicitly supported by charting the students' transfer efforts and discussion of what could be done "next time" (e.g., when writing in class). In both studies, explicit support for transfer resulted in improved writing in the general education classroom. The importance of explicit instruction to foster knowledge transfer was highlighted in these two studies.

Transfer of learning has been tested in quick write study. In the first quick write study for middle school students with disabilities (Mason, Kubina, & Taft, 2011), after independent practice with the tutor, the special education teacher delivered post-instruction and maintenance assessment. Although results in this study were positive for number of persuasive elements written, quick write quality was not stable across time. Mason and colleagues noted that Graham and Harris' (2003) recommendation for revisiting strategy acquisition when introducing new skills to students was not fully implemented in the quick write intervention. In subsequent study (Hoover et al., 2012; Mason, Kubina, & Hoover, 2011; Mason et al., 2009), independent practice-testing sessions included student evaluation of performance and tutor–student dialoguing. In other words, throughout the iterative development of SRSD for quick writing, and as completed in the current study, the tutoring intervention was built to include components of supported guidance for strategy application after instruction. The need for additional support in weeks following instruction was noted in the current study. Although not statistically significant, students' writing performance decreased during independent practice 1.

As in prior SRSD for quick write research (Mason & Kubina, 2011), organizational quality appears to be the strongest and most stable measure of performance after instruction. As noted in prior SRSD research, the structure of the TREE strategy and the use of transition words more than likely contribute to this result (e.g. Harris et al., 2006). It is also likely, for struggling adolescents, procedures taught for self-regulating the writing process contribute to more thoughtful writing (Harris et al., 2011). Results of screening verified that students, including students eligible for treatment, had some basic skills for writing; however, they did not apply the skills they had to write a timed persuasive response.

4.1. Limitations

Due to the lack of a control group in the quasi-experimental study design, as noted previously, the agent of change in treatment (extra writing time, SRSD, and independent practice-testing) cannot be substantiated. In addition, a large number of parents/guardians did not provide consent for participation in the research study, limiting the findings. Given that the skills of the non-consenting sample (approximately 30% of total students in grades seven and eight) are unknown, results should not be overstated. More troubling was the lack of consent for the 51 students in need of treatment. When responding to the treatment acceptability questions, students' responses were generally favorable when asked about the effects of the writing instruction. These results should be tempered by the nature of the questions and the fact that questions were asked by instructors.

4.2. Implications for research and practice

We hoped that our selected design would have a number of benefits for studying the efficacy of the quick write intervention with low-achieving students – for example, (a) not withholding instruction from students who are at the greatest risk for school failure and (b) providing instruction above and beyond classroom instruction. Because assignment of the intervention was at the student level rather than the classroom, school, or district level, the quasi-experimental approaches were feasible when testing intervention effects (Schochet, 2009). Efficacy trial study for struggling learners and/or single-subject study for specific disability populations (conducted by an alternative research team) are warranted to establish the SRSD quick write intervention as an evidence-based practice without reservation.

The quick write intervention as a tutoring intervention, as noted in the current study or small group instructional setting (e.g., Mason, Kubina, & Taft, 2011), has promise for improving students' performance. For students who have the most difficulty with writing, like the students in this study, it is critical that all components of SRSD instruction, six stages of strategy acquisition and the four self-regulation procedures, are utilized with fidelity (Graham & Harris, 2003). Instructional time in the current one-to-one intervention included only five 30-min lessons plus three to four 10-min quick write practices, followed by three independent practice-testing sessions. The instructional time required in the current study is similar to what has been noted in previous research for one-to-one instruction (Mason, Kubina, & Hoover, 2011; Mason, Kubina, & Taft, 2011; Mason et al., 2010). Given this, the feasibility of implementation for schools as supplemental instruction or as a Tier III intervention is excellent. For small or whole group instruction, it is important to note that lessons may need to be repeated to meet individual student needs, to refresh knowledge, and to develop generalization across settings. In other words, instruction may take more time as the group size is increased. In addition, we found that modeling often needs to be repeated for demonstrating how to write within a limited time frame and students require three to five repeated practice sessions. Interestingly, the students in this study also had recommendations for practice – provide time for practice and opportunities to write more.

Acknowledgments

Support for this research was provided by Grant No. R324A070199-07 of the U.S. Department of Education, Institute of Educational Sciences, awarded to The Pennsylvania State University.

References

Applebee, A. N., & Langer, J. A. (1983). Instructional scaffolding: Reading and writing as natural language activities. *Language Arts, 60*, 168–175.

Baker, S. K., Chard, D. J., Ketterlin-Geller, L. R., Apichatabutra, C., & Doabler, C. (2009). Teaching writing to at-risk students: The quality of evidence for self-regulated strategy development. *Exceptional Children, 75*, 303–318.

Baker, S., Gertsen, R., & Scanlon, D. (2002). Procedural facilitators and cognitive strategies: Tools for unraveling the mysteries of comprehension and the writing process, and for providing meaningful access to the general curriculum. *Learning Disabilities Research and Practice, 17*, 65–77.

Berry, A., & Mason, L. H. (2012). The effects of self-regulated strategy development on the writing of expository essays for adults with written expression difficulties: Preparing for the GED. *Remedial and Special Education, 33*, 124–136.

Boscolo, P., & Gelati, C. (2007). Best practices for promoting motivation in writing. In S. Graham, C. A. MacArthur, & J. Fitzgerald (Eds.), *Best practice in writing instruction* (pp. 202–221). New York: The Guilford Press.

Author's personal copy

Butler, A. C. (2010). Repeated testing produces superior transfer of learning relative to repeated studying. *Journal of Experimental Psychology, 36*, 1118–1133.

Common Core State Standards Initiative (2012). <http://www.corestandards.org>.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Crowhurst, M. (1991). Interrelationships between reading and writing persuasive discourse. *Research in the Teaching of English, 25*, 314–338.

De La Paz, S., & Felton, M. K. (2010). Reading and writing from multiple source documents in history: Effects of strategy instruction with low to average high school writers. *Contemporary Educational Psychology, 35*, 174–192.

Deshler, D. D., Schumaker, J. B., Lenz, K., Bulgren, J. A., Hock, M. F., Knight, J., et al. (2001). Ensuring content-area learning by secondary students with learning disabilities. *Learning Disabilities Research and Practice, 16*, 96–108.

Englert, C. S., Raphael, T. E., Anderson, L. M., Anthony, H. M., Stevens, D. D., & Fear, K. L. (1991). Making writing strategies and self-talk visible: Cognitive strategy instruction in writing in regular and special education classrooms. *American Educational Research Journal, 28*, 337–372.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London, United Kingdom: Sage.

Fisher, D., & Frey, N. (2012). *Improving adolescent literacy: Content area strategies at work* (3rd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Flower, L., & Hayes, J. (1980). The dynamics of composing: Making plans and juggling constraints. In L. Gregg & E. Steinberg (Eds.), *Cognitive processes in writing* (pp. 31–50). Hillsdale, NJ: Erlbaum.

Graham, S., Harris, K. R., McKeown, D. (in press). The writing of students with LD, Meta-analysis of SRSD writing intervention studies, and future directions: Redux. In L. Swanson, K. R. Harris, & S. Graham (Eds.), *Handbook of learning disabilities.*

Graham, S., & Harris, K. R. (2013). Common Core State Standards, writing, and students with LD: Recommendations. *Learning Disabilities Research and Practice, 28*, 28–37.

Graham, S., Harris, K. R., & Heibert, M. (2011). *Informing writing: The benefits of formative assessment. A report from the Carnegie Corporation of New York*. New York: Alliance for Excellent Education.

Graham, S., Harris, K. R., & Mason, L. H. (2005). Improving the writing performance, knowledge, and self-efficacy of struggling young writers: The effects of self-regulated strategy development. *Contemporary Educational Psychology, 30*, 207–241.

Graham, S., & Harris, K. R. (2003). Students with learning disabilities and the process of writing: A meta-analysis of SRSD studies. In L. Swanson, K. R. Harris, & S. Graham (Eds.), *Handbook of learning disabilities* (pp. 383–402). New York: Guilford.

Graham, S. (2006). Strategy instruction and the teaching of writing: A meta-analysis. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 187–207). New York: Guilford.

Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology, 99*, 445–476.

Green, S. K., Smith, J., & Brown, E. K. (2007). Using quick writes as a classroom assessment tool: Prospects and problems. *Journal of Educational Research, 7*, 38–52.

Greenhouse, S. W., & Geisser, S. (1959). On methods in the analysis of profile data. *Psychometrika, 24*, 95–112.

Harris, K. R. (1982). Cognitive-behavior modification: Application with exceptional students. *Focus on Exceptional Children, 15*, 1–16.

Harris, K. R., Graham, S., Brindle, M., & Sandmel, K. (2009). Metacognition and children's writing. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Handbook of metacognition in education* (pp. 131–153). New York: Routledge.

Harris, K. R., Graham, S., MacArthur, C., Reid, R., & Mason, L. H. (2011). Self regulated learning processes and children's writing. In B. Zimmerman & D. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 187–2010). Danvers, MA: Routledge.

Harris, K. R., Graham, S., & Mason, L. H. (2006). Improving the writing performance, knowledge, and motivation of struggling writers in second grade: The effects of self-regulated strategy development. *American Educational Research Journal, 42*, 295–340.

Harris, K. R., Graham, S., Mason, L. H., & Friedlander, B. (2008). *Powerful writing strategies for all students*. Baltimore, MD: Paul H. Brookes.

Harvey, D., & Bizar, M. (2005). *Teaching the best practice way*. York, ME: Stenhouse Publishers.

Hoover, T., Kubina, R., & Mason, L. H. (2012). Effects of quick writing instruction for high school students with emotional and behavioral disabilities. *Exceptionality, 20*, 20–38.

Improving writing performance: A strategy for writing expository essays. <http://iris.peabody.vanderbilt.edu/pow/chalcycle.htm> Retrieved 01.01.10.

Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., et al. (2010). *Single-case designs technical documentation*. Retrieved from What Works Clearinghouse website. <http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf>.

Landmark School Outreach Program. <http://www.landmarkoutreach.org/LandmarkSchool.htm> Retrieved 01.01.10.

Mason, L. H., Benedek-Wood, E., & Valasa, L. (2009). Quick writing for students who struggle with writing. *Journal of Adolescent and Adult Literacy, 53*, 313–322.

Mason, L. H., Kubina, R., & Hoover, T. (2011). Effects of quick writing instruction for high school students with emotional and behavioral disabilities. *Journal of Emotional and Behavioral Disorders*. http://dx.doi.org/10.1177/1063426611410429 (JEBD Online First, 07.07.11).

Mason, L. H., Hamm, J., Benedek-Wood, E., & Farmer, T. E. (in preparation). Effects of self-regulated strategy development for rural schools in twelve U.S. states.

Mason, L. H., & Graham, S. (2008). Writing instruction for adolescents with learning disabilities: Programs of intervention research. *Learning Disabilities Research and Practice, 23*, 102–112.

Mason, L. H., Harris, K. R., & Graham, S. (2013). Strategies for improving student outcomes in written expression. In M. Tankersley & B. Cook (Eds.), *Effective practices in special education* (pp. 86–97). Upper Saddle River, NJ: Pearson.

Mason, L. H., & Kubina, R. M. (2011). Developing writing fluency for adolescents with disabilities. In T. E. Scruggs & M. A. Mastropieri (Eds.). *Intervention and assessment: Advances in learning and behavioral disabilities* (Vol. 2, pp. 296–319). Bingley, UK: Emerald.

Mason, L. H., Kubina, R., & Taft, R. (2011). Developing quick writing skills of middle school students with disabilities. *Journal of Special Education, 44*, 205–220.

Mason, L. H., Kubina, R., Valasa, L. L., & Cramer, A. (2010). Evaluating effective writing instruction of adolescent students in an emotional and/or behavioral support setting. *Behavioral Disorders, 35*, 140–156.

Mason, L. H., Reid, R., & Hagaman, J. (2012). *Building comprehension in adolescents: Powerful strategies for improving reading and writing in content areas*. Baltimore: Brooks Publishing Co. Inc.

Mason, L. H., & Shriner, J. G. (2007). Self-regulated strategy development instruction for writing an opinion essay: Effects for six students with emotional/behavioral disorders. *Reading and Writing: An Interdisciplinary Journal, 21*, 71–93.

Mastropieri, M. A., Scruggs, T. E., Cuenca-Sanchez, Y., Irby, N., Mills, S., Mason, L. H., et al. (2010). Persuading students with emotional disabilities to write: Findings from a design experiment. In T. E. Scruggs & M. A. Mastropieri (Eds.). *Literacy and learning: Advances in learning and behavioral disabilities* (Vol. 23). Bingley, UK: Emerald.

Mauchly, J. W. (1940). Significance test for sphericity of a normal *n*-variate distribution. *The Annals of Mathematical Statistics, 11*, 204–209.

Meichenbaum, D. (1977). *Cognitive behavior modification: An integrative approach*. NY: Plenum Press.

Mitchell, D. (1996). Writing to learn across the curriculum and the English teacher. *English Journal, 85*(September), 93–97.

Murphy, P. K., Wilkinson, I. A. G., Soter, A. O., Hennessey, M. N., & Alexander, J. F. (2009). Examining the effects of classroom discussion on students' comprehension of text: A meta-analysis. *Journal of Educational Psychology, 101*, 740–764.

Pressley, M., & Harris, K. (2006). Cognitive strategies instruction: From basic research to classroom instruction. In P. Alexander & P. Winne (Eds.), *Handbook of educational psychology* (2nd ed., pp. 265–286). Mahwah, NJ: Erlbaum.

Reid, R. (1996). Self-monitoring for students with learning disabilities: The present, the prospects, the pitfalls. *Journal of Learning Disabilities, 29*, 317–331.

Schmidt, J. L., Deshler, D. D., Schumaker, J. B., & Alley, G. R. (1988). Effects of generalization instruction on the written language performance of adolescents with learning disabilities in the mainstream classroom. *Reading, Writing, and Learning Disabilities, 4*, 291–309.

Schochet, P. Z. (2009). Statistical power for regression discontinuity designs in education evaluations. *Journal of Educational and Behavioral Statistics, 34*, 238–266.

Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). Mahwah, NJ: Lawrence Erlbaum.

Swanson, H. L., & Deshler, D. (2003). Instructing adolescents with learning disabilities: Converting a meta-analysis to practice. *Journal of Learning Disabilities, 36*, 124–135.

Tabachnick, B. G., & Fidell, L. S. (2006). *Using multivariate statistics* (5th ed.). New York, NY: Pearson.

Trochim, W. M. K. (2006). The regression-discontinuity design. <http://socialresearchmethods.Net/kb.quasird.htm> Retrieved 15.03.11.

Vygotsky, L. (1986). *Thought and language*. Cambridge: MIT Press.

Wong, B. Y. L. (1980). Activating the inactive learner: Use of questions/prompts to enhance comprehension and retention of implied information in learning disabled children. *Learning Disability Quarterly, 3*, 29–37.

Wong, B. Y. L., Butler, D. L., Ficzere, S. A., & Kuperis, S. (1996). Teaching low achievers and students with learning disabilities to plan, write, and revise opinion essays. *Journal of Learning Disabilities, 29*, 197–212.

Wood, K., & Harmon, M. (2001). *Strategies for integrating reading & writing in middle and high school classrooms*. Newark, DE: The International Reading Association.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2007). *Woodcock-Johnson III normative update, tests of achievement*. Chicago: Riverside.

Zimmerman, B., & Reisemberg, R. (1997). Becoming a self-regulated writer: A social cognitive perspective. *Contemporary Educational Psychology, 22*, 73–101.