A College Entrance Essay Exam Intervention for Students with Disabilities and Struggling Writers: A Randomized Control Trial

by

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ABSTRACT

High school students with high-incidence disabilities and struggling writers face considerable challenges when taking high-stakes writing assessments designed to examine their suitability for entrance to college. I examined the effectiveness of a writing intervention for improving these students' performance on a popular college entrance exam, the writing assessment for the ACT. Students were taught a planning and composing strategy for successfully taking this test using the Self-Regulated Strategy Development (SRSD) model. A randomized control trial was conducted where 20 high school students were randomly assigned to a treatment (N = 10) or control (N = 10) condition. Control students received ACT math preparation. SRSD instruction statistically enhanced students' planning, the quality of their written text (including ideas and analysis, development and support, organization, and language use), the inclusion of argumentative elements in their compositions, and the use of transition words in written text. Limitations of the study, future research, and implications for practice are discussed.

To My Family,

For their generous support and unconditional love.

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Introduction

There are many benefits to earning a college degree. In comparison to a high school graduate, college graduates obtain better jobs; earn more money; and are more likely to be employed, enjoy better health, and evidence more community involvement (Rose, 2013). While college applications include many pieces of information about students, high-stakes college entrance exams (i.e., the ACT and SAT), including writing assessments on such tests, are identified by admission offices as one of the top factors for admissions decisions (Clinedinst, Koranteng, & Nicola, 2015).

One of the most popular college entrance exams is the ACT, which tests five subject areas: English, math, reading, science, and writing. Entrance into one's college of choice can be jeopardized by poor performance on assessments like the ACT. Many universities require students to achieve a minimum score on these tests, and the obtained score may be used to make decisions on course placements. Even though the writing assessment is optional, 633 schools currently require and hundreds more recommend that students take the writing portion of college entrance exams as part of the college admission process (Barge, 2015).

The writing assessment on the ACT analyzes students' abilities to develop ideas around a specific topic and write in a coherent manner using logic and reasoning (ACT, Inc., 2016). This assessment is designed to "measure core competencies that are linked to college and career success" (ACT, Inc., 2016, "Enhancements to the ACT Writing Test," para. 2). Even for students with high-incidence disabilities, including attention deficit hyperactivity disorder (ADHD), learning disabilities (LD), speech and language impairments (SLI), and mild emotional and behavioral disorders (EBD), the score from

these writing assessments are often used as one of the factors to determine whether or not a student will be admitted into a college or university and what courses they must initially take. Furthermore, some states are now considering using the ACT as high school outcome exams for students with and without disabilities (Gewertz, 2017).

The current study evaluates a strategies instruction approach that developed planning, composing, and self-regulation strategies to help students with high-incidence disabilities and struggling writers improve their performance on the writing assessment of the ACT. Many students with high-incidence disabilities as well as struggling writers apply for college (U.S. Bureau of Labor Statistics, 2016), so it is critical that their performance on this test is as strong as possible.

ACT Writing Exam

Since 2006, when the ACT writing test was released, to 2014, students' average writing scores across the United States have declined from a 7.7 to 7.1 on a 12-point scale (ACT, Inc., 2015). Similar results occurred on another common college entrance exam, the SAT writing test, with scores from 2005 to 2013 decreasing from 497 to 488 on an 800-point scale (U.S. Department of Education, 2015b). These average scores basically correspond to a high school student being able to take a position on a topic and briefly addressing a counter-argument. Development of ideas in such an essay is limited with few examples and details, restricted word choice, and distracting errors. In addition, the introduction and conclusion to such a paper is likely underdeveloped (ACT, Inc., 2016). Many students with high-incidence disabilities are likely to produce test responses that are even more impoverished, given their documented difficulties with writing (Graham, Fishman, Reid, & Hebert, 2016; Graham, Collins, & Rigby-Wills, 2017).

In 2015, the ACT introduced a new and enhanced writing assessment. While the test still focused on argumentative writing, the new version requires students to analyze multiple perspectives on contemporary issues. This writing task is more difficult than the previous one. The previous task provided students with a few sentences about a topic and asked them to write an argumentative essay based on what they believe. The revised ACT writing assessment asks students to develop an argument on a topic, but further asks them to evaluate different given perspectives on it as well as provide a rationale for why perspectives support or are counter to their thesis.

This new assessment is particularly challenging as it requires students to engage in several demanding tasks within a time-limited situation (i.e., 40 minutes). First, students must be knowledgeable about writing and how to write an argument. Second, they must be able to analyze the prompt and activate their knowledge about the topic. Third, students must be able to carry out whatever planning they do quickly so they have enough time to write their response. Fourth, they must be able to write an argument that responds to all aspects of the task, including analyzing multiple perspectives and writing a complete paper with all the basic structural elements. Fifth, students must quickly evaluate the contents of their essay while writing. Sixth, students must sustain their effort at a high level of focus due to the timed nature of the test. Seventh, to be successful, students must regulate the writing process and monitor their success in meeting the demands of the writing prompt.

Students with High-Incidence Disabilities and Struggling Writers

Students with high-incidence disabilities and struggling writers are at a disadvantage on complex writing assessments such as the ACT, because they typically

experience difficulties with the challenges presented by the test. Graham, Harris, and McKeown (2013) summarize seven challenges these students experience with writing. First, they often bring limited knowledge about writing and how to write argumentative text to the testing situation. They further experience challenges understanding what they are asked to do on demanding writing prompts such as those on the ACT and accessing their knowledge about the topic they are to address. Additionally, these students commonly do not plan in advance and reduce writing to a process of content generation. Even so, the text they generate is often impoverished in terms of ideas, poorly organized, and incomplete in terms of basic structural argumentative elements. Also, when evaluating and revising text, they typically restrict changes to surface level features such as fixing capitalization or punctuation. These students generally experience difficulty sustaining writing effort, terminating their response before they have adequately addressed the topic. Lastly, they have trouble managing or regulating the processes underlying writing, including processes such as goal setting, monitoring, and evaluating.

Currently, 11% of undergraduate students report having a disability (U.S. Department of Education, 2015a). While students with disabilities can submit disability documentation to request extended time on the ACT (ACT, Inc., 2017b), many still struggle with completing the required writing assessment (ACT, Inc., 2016). There is some evidence that the accommodation of extra time results in no differences in scores for adolescents with disabilities (Crawford, Helwig, & Tindal, 2004). Furthermore, the accommodation of time does not address the underlying problem of a lack writing strategies and skills. At this point in time there are no studies that examine the effectiveness of an intervention for the essay composition portion of the college entrance

exam. Additionally, test preparation is a multi-billion dollar a year industry (Seltzer, 2016), even though the results of a study by Donaldson (2013) indicated that various forms of preparation for the college entrance exams (e.g., self-paced manuals, online preparation courses, school sponsored test courses, and private tutoring) did not improve students' scores As a result, the development and scientific testing of instructional procedures and strategies to help students with high-incidence disabilities and struggling writers maximize their performance on the ACT writing assessment is needed.

Self-Regulated Strategy Development

In the current study, students were taught planning, composing, and self-regulation strategies for successfully completing the ACT writing assessment using the Self-Regulated Strategy Development (SRSD) model. SRSD provides students with explicit, scaffolded instruction for learning task-specific strategies, the knowledge needed to use the target strategies, feedback on their progress and success in using the strategy, and self-regulation procedures for managing the strategy, the writing process, and their writing behavior. Instruction is discourse rich, mastery-based, and responsive to students' needs. SRSD has been tested in over 100 studies involving students in first grade through adulthood (Graham et al., 2013; MacArthur & Lembo, 2009). Students who are taught a writing intervention using SRSD make greater gains in writing than other forms of strategy instruction (Graham et al., 2013). SRSD has produced average effect sizes greater than 1.00 for quality of written text, and it has been effective with a broad range of writers including struggling writers and students with disabilities. Even more important to this investigation, multiple studies have shown that SRSD instruction enhances the writing of such high school students (Chalk, Hagan-Burke, & Burke,

2005; Eissa, 2009; Hoover, Kubina, & Mason, 2012; Jacobson & Reid, 2010, 2012; Kiuhara, O'Neile, Hawken, & Graham, 2012; Mason, Kubina, & Hoover, 2013; Ray, Graham, & Liu, 2017).

SRSD instruction provided in this study was responsive to the demands of the ACT writing assessment and the challenges faced by students with high-incidence disabilities and struggling writers. Instruction included teaching them the basic structure and elements of an argumentative essay as well as how to analyze and understand the demands of the writing prompt. They were taught a strategy for planning their essay, and learned how to apply it quickly and efficiently. This strategy was designed to help them generate and organize ideas for their essay so it was fully developed in a logical manner and met the demands of the ACT prompt. Students further learned how to self-evaluate their essay so they could monitor their success in meeting the demands of the assessment. They also learned how to use self-regulation procedures to help them manage the strategy taught, the process of writing, and sustain their effort while writing.

More specifically, the genre-specific planning and composing strategy taught in this study provided students with a tool to help them generate and organize their ideas, compose an essay, and revise their text as needed. Using a planning and composing strategy helps students by providing them with a mechanism for organizing their thoughts and ideas before composing an essay, providing structure for the process of writing, and reducing the complexity of writing by dividing it into smaller tasks. Students who are taught strategies for planning show substantive improvements in their writing performance (Graham & Harris, 2014). As part of the instructional process, students learned what constituted good writing and a strong argument by reading and analyzing

sample argumentative essays and discussing the features of such text that created a convincing and well-formulated argument.

The self-regulation strategies students were taught included goal setting, self-instructions, self-monitoring, and self-reinforcement. Students learned to set writing goals for the number of argumentative elements to include in their essays. These goals directed students' attention to the importance of these elements, and served as a mechanism for facilitating students' effort, persistence, and motivation (Locke, Shaw, Saari, & Latham, 1981). Students also developed their own self-instructions for writing to help them direct their attention to the task of writing, perform the steps of the strategy required to complete the writing task, and to deal with challenges such as frustration that may occur when writing. Self-instructions help students stay focused and provide a tool for coping with difficulties that may arise during writing (Harris & Graham, 1996). Students were further taught to self-assess if they met their goals and to record their performance on a graph. These graphs provided a concrete record of students' progress and should lead students to greater effort and higher self-efficacy for writing as students had a visual record of their growth (Harris & Graham, 1992). Finally, students were taught to self-reinforce their efforts through positive statements, which should result in increased motivation and persistence.

While SRSD instruction in this study was designed to improve students' performance on the ACT writing assessment, it is possible the intervention would also enhance students' writing performance on other argumentative writing tasks, as students are taught aspects of good writing such as organization, topic analysis, development of

rich ideas to support their viewpoint, use of transition words, and the importance of choosing the right words when writing.

The current study expanded on an earlier single case design study which served as a pilot study for this dissertation (See Appendix A) using the same ACT writing instruction 10th grade struggling writers were provided (Ray et al., 2017). The students in the previous study were similar to the students in the current study as they all aspired to attend college, but struggled with writing; however, this and the previous study differed in that the current investigation included a variety of high school grade levels as well as students with high incidence disabilities. The instruction in the prior single case design study evidenced large gains in the elaboration of students' plans, quality of their essays, and number of argumentative elements and transition words in their essays. Specifically, students' average ACT scores from baseline ranged from 2.6 to 5.4and improved to an average of 6.7 to 10.0 following instruction. All students benefited from instruction.

Purpose of Study and Research Questions

The purpose of this study was to examine the effectiveness of teaching high school students with high-incidence disabilities and struggling writers a strategy for planning and composing argumentative essays using SRSD instruction. The study was a randomized control trial designed to answer the following six research questions:

1. Does SRSD instruction for the ACT writing assessment enhance the quality of students' advanced plans, overall ACT writing scores, number of argumentative essay elements, and number of transition words?
2. Are the effects of SRSD instruction for the ACT writing assessment maintained over time?

3. What is the effect of SRSD instruction for the ACT writing assessment on students' genre knowledge?
4. What is the effect of SRSD instruction for the ACT writing assessment on students' self-efficacy for writing?
5. Does SRSD instruction for the ACT writing assessment enhance students' performance on a more general argumentative writing task?
6. Do SRSD instructed students view this instruction as valuable?

I hypothesized that SRSD instruction would enhance students' plans, overall ACT writing scores, as well as the number of argumentative essay elements, and transition words included in their ACT writing responses and that these effects would be maintained over time. The strategy students were taught was designed to ensure they met the requirements of the ACT assessment as detailed in the ACT scoring rubric. It also provided students with a planning mechanism for generating and organizing their writing ideas in an efficient manner, increasing the likelihood of producing better essays. In addition, students learned about the basic elements of a good argumentative essay and the role of transition words, and they were taught how to apply this knowledge as part of SRSD instruction.

Additionally, I predicted that students' genre knowledge for the ACT writing test would increase, as students were taught how to analyze the ACT writing prompt as well as identify the key genre components of quality ACT essays. I further hypothesized that students' self-efficacy for writing would increase because SRSD instruction helped them understand the ACT writing task, they were taught the skills necessary for successfully completing it, and they were able to observe their progress as a result of self-monitoring.

Each of these instructional elements should improve students' confidence in their writing abilities.

I also predicted that SRSD instruction would improve students' performance on a second argumentative writing task (i.e., the Essay Composition test on the Wechsler Individual Achievement Test – Third Edition; WIAT-III; Psychological Corporation, 2009). While instruction was specific to the ACT writing assessment, students were taught multiple skills that should enhance their writing more broadly, such as how to generate ideas, analyze perspectives, support claims, organize their ideas, use transition words, and make good word choices when writing. Evidence that instructional effects generalized to a different writing task would increase the value of the instruction provided here, as it would demonstrate it is possible to improve writing more broadly even when instruction is focused on a high-stakes assessment. My prediction that generalization would be obtained is consistent with prior SRSD research where generalization effects were demonstrated (Graham et al., 2013).

Finally, I anticipated SRSD instructed students would find the instruction to be acceptable and effective, as it provided them with the knowledge and skills needed to write a strong essay for the ACT, mechanisms for viewing their success, and scaffolded-support until they could perform the taught strategy independently. In prior SRSD studies with high school struggling writers, researchers found that students viewed this instructional approach as effective and acceptable (Hoover et al., 2012; Kiuhara et al., 2012; Konrad, Trela, & Test, 2006; Mason et al., 2013; Ray et al., 2017).

Method

Setting

Instruction took place in three public schools and one charter school. The schools included two schools from a nearby district whose principals were interested and willing to participate after district research office approval of the study. Another school was the high school from which I graduated and knew the administrators. The final school was the school my husband taught at which gained me a meeting with the principal. Two of the schools received Title I funding; however, Title 1 schools were not sought out. All of the schools had a teacher to student ratio of 23:1 or less. They all had graduation rates of 78% or higher. School A and B were public schools located in a suburban area of a Southwestern state. Each school was part of a single district. These two schools served students in grades nine through 12 and enrolled approximately 1,880 and 3,100 students, respectively. School A was a Title 1 school; 43% of students were from economically disadvantaged backgrounds. The majority of students were identified either as Hispanic (41%) or Caucasian (36%). The majority of the students in school B were Caucasian (63%) or Hispanic (15%). This school did not receive Title 1 funding.

School C was a public school located in a rural area of a Midwestern state. The school served students in grades nine to 12; enrollment was 1,466 students. The school received Title 1 funding, with 44% of the students coming from economically disadvantaged backgrounds. The school served mostly Caucasian (81%) or Hispanic (15%) students.

School D was a charter school located in a suburban area of a Southwestern state. The school enrollment was 932 students in grades five through 12. The majority of students at the school were Asian (67%) or Caucasian (22%).

At each school, students in the treatment and control conditions were taught in a small group, with no more than five students in each small group. The writing and math instruction occurred in separate classrooms equipped with desks, chairs, and a whiteboard. All procedures were approved through the Institutional Review Board before recruiting or instructing students.

Participants

Inclusion criteria. The participants were ninth through 12th grade students. To be included in the study, students had to meet the following criteria. One, students were identified as having a high-incidence disability as specified on an Individualized Education Plan or 504 Plan or they were a struggling writer as demonstrated by a score at the 33rd percentile or lower on the WIAT-III essay composition test. Two, students were identified by their teacher as a student who would benefit from extra writing instruction. Three, students included less than 10 argumentative elements on their ACT writing pretest. Furthermore, all students were in fully inclusive settings with access to the general curriculum and had a desire to attend college.

Conditions. Students voluntarily registered for the program, and following parent consent were randomly assigned to two instructional groups. Then, each instructional group was randomly assigned to be either the treatment or control group (Roberts, Sawyer, Santoro, & Lewis, 2016). There were two instructional groups at each school. The students who were assigned to the treatment group received SRSD instruction for the

ACT writing test during the first week of the study. The students assigned to the control group received instruction for the ACT math test during this same week. A second week of instruction occurred where students received the opposite subject of instruction (e.g., control students received ACT writing instruction during week two). This second week of instruction was implemented in an effort to increase student registration, as it was believed students were more likely to agree to be in the study if they received both writing and math instruction.

The mean age of the 20 students in the study was 16 years, 2 months (*SD* = 15.33 months). Eight of the students were female, and 12 were male. Forty percent were Caucasian, 15% were Hispanic, 15% were Asian, 10% were African American, 10% were Indian, and 10% were Other. Of the 11 students with a disability, four experienced ADHD, three were classified as having a LD, three received special education services for Autism, and one was diagnosed with a Traumatic Brain Injury. Information on the characteristics of students by condition is in Table 1. Chi-square analyses showed there were no statistically significant differences between the conditions in terms of gender (p = .65) or ethnicity (p = .65). There was also no statistical difference by age (p = .14).

General Instructional Procedures

Instruction was implemented over a continuous two-week period, occurring after school or during the summer in one school. The students attended the two-week after school or summer school session five days a week for three hours a day, totaling 15 hours in the writing setting and 15 hours in the math setting. Writing instruction was conducted by the first author. Math instruction was conducted by three different teachers, due to

location and schedule availability. All math instructors were current or former high school math teachers with a Master's degrees or higher.

ACT Writing Instruction

Argumentative planning and composing strategy. The argumentative strategy taught in this study aided students by providing them with a mechanism for analyzing the ACT writing prompt; creating a quick plan for composing their argument; and using the plan, expanding it, and checking their work as they composed their essay. The argumentative writing strategy was represented by the mnemonic HIT SONGS^3. The first word of the mnemonic, HIT, outlined the essential introduction paragraph elements (a) **H**ook, (b) **I**ntroduce the topic, and (c) **T**hesis. The next part of the mnemonic, SONG, was repeated three times to analyze each of the perspectives stated in the prompt; (a) **S**tate the perspective, (b) **O**utlook on the perspective, (c) **N**eed examples, and (d) **G**ive your opinion. The final portion of the mnemonic, **S^3**, reminded students what needed to be included in the conclusion paragraph; (a) **S**upport your thesis, (b) **S**tate the relationships between your thesis and the perspectives given in the prompt, and (c) **S**ummary. Beyond the specific aspects of the mnemonic, students were taught to include transition words, use good word choice, vary sentence structure, consider the reader, and know how their writing will be assessed.

Self-regulation strategies. Self-regulation strategies were also taught to students as they learned to use the HIT SONGS^3 strategy. This included goal setting, self-instructions, self-monitoring, and self-reinforcement. Students worked with the instructor to set writing goals for each essay. This included creating essays with all the necessary argumentative elements. It also included other goals that were individualized for students

as they progressed through the lessons. For instance, students could set a goal for adding an additional example to support their thesis within their essay or using different transitions words at the beginning and within paragraphs. When working through the writing process, students were taught to use self-instructions to assist them in thinking of good ideas, composing their essay, and checking their work. Students created their own self-instructions based on their personal needs. For example, a student who tended to rush through work, instructed himself to take his time when writing. Moreover, students used self-monitoring by self-evaluating their essays each time they completed writing an essay collaboratively or independently. Students self-assessed whether they analyzed the prompt, planned using the strategy, and wrote a quality essay that made sense and incorporated all the argumentative elements. After students evaluated an essay, they graphed their progress on a chart so they could see if they achieved their goals. Lastly, students were taught how to self-reinforce their work and effort. After completing each step of the writing process, students were encouraged to compliment themselves. They were further taught to celebrate their hard work when they completed an essay.

Six stages of instruction. The argumentative writing and self-regulation strategies were taught using the SRSD instructional model which includes six stages of instruction (Graham & Harris, in press). The instructional stages were applied recursively according to individual student's needs. Moreover, the instruction was highly interactive and discourse rich. For instance, teacher and students discussed the importance of providing examples to convince the reader; then, students generated examples to be incorporated in collaboratively written argumentative essays.

For each instructional stage of SRSD, students did not progress to the next stage until they met criterion. The first stage of SRSD was to *develop and activate background knowledge*. The instructor worked with the students to advance their understanding of argumentative writing elements through a discussion about the elements within argumentative essays and an analysis of a model ACT essay. The instructor also discussed with the students the structure and requirements of the ACT writing test, and they conjointly analyzed an ACT writing prompt. To complete this stage, students had to meet the criterion of stating all the argumentative elements included in an ACT essay (e.g., hook, introduction of the topic, thesis).

Discussing the strategy was the second stage of SRSD instruction. The instructor presented the strategy, HIT SONGS^3, and discussed with the students the importance of each part of the strategy and how to implement it during the writing process. The strategy was further explored by reading and identifying the parts of HIT SONGS^3 in exemplar ACT argumentative essays. Low quality ACT argumentative essays were also analyzed, with the teacher and students working together to improve the poorly written essay by using the strategy to rework it. The criteria for this stage was identifying argumentative elements within a sample essay and discussing the purpose of the planning and composing strategy.

The third stage was teacher *modeling*. The instructor modeled how to use HIT SONGS^3 while analyzing an ACT writing prompt, engaging in planning, writing, and evaluating what was written. To make these processes more visible, the instructor thought aloud, making her thinking visible as she engaged in these activities. While the teacher was modeling the writing process, students participated by generating and sharing ideas

for the teacher to use and providing suggestions for language use, sentence structure, and transition words. While modeling this process, the instructor applied self-regulation strategies involving goal setting, self-instructions, self-monitoring, and self-reinforcement. For instance, when thinking aloud during the writing process, the instructor modeled getting overwhelmed after reading the prompt and used the following self-instruction, "There is a lot I need to do to respond to the prompt, but I know I can use HIT SONGS^3 to help me write a good essay." The instructor also modeled self-evaluation by changing ideas from the notes to make a stronger argument when composing the essay and by rereading the completed essay and correcting any mistakes. When the instructor finished writing, she modeled self-reinforcement by saying, "Wow! When I use the strategy HIT SONGS^3 I write a great essay." After modeling, the teacher discussed and analyzed with students the writing strategy and self-instructions she used. The instructor also discussed setting writing goals with students; the starting goal for each student was to write an essay that included all the parts of HIT SONGS^3. For this stage, students had to meet the criterion of developing their own personalized self-statements that would assist them when using HIT SONGS^3.

Memorizing the strategy was the fourth stage of instruction. However, memorizing the strategy actually began once the strategy was introduced in the discussing the strategy stage. The instructor worked with students to memorize the strategy, and discussed that the students needed to be able to remember the strategy because they cannot bring the strategy page with the meaning of HIT SONGS^3 with them when taking ACT test. To aid students in memorizing the strategy, students quizzed each other, responded chorally to the teacher, used flashcards, and wrote out the meaning of

HIT SONGS^3 on scratch paper. This stage was discontinued when students met the criteria of being able to articulate each step of the strategy and its purpose accurately from memory.

The fifth stage was *support*. The teacher supported student's use of the strategy and self-regulation procedures until they could apply these independently and effectively. During this stage, the instructor and students worked collaboratively using the writing and self-regulation strategies. The instructor and students continued to write together in response to several sample prompts as the instructor gradually shifted control of the process to the students. The students worked toward independence while receiving prompts from the instructor. Students' criteria for this stage was being able to analyze the ACT writing prompt, plan and compose an essay, and self-assess their essay while using HIT SONGS^3 and the self-regulation strategies with minimal assistance from the teacher.

Independent performance was the last stage in SRSD instruction. During this stage the students independently wrote an essay responding to an ACT writing prompt using writing and self-regulation strategies. The criteria for this stage required students to independently utilize HIT SONGS^3 and the self-regulation strategies to compose an essay with at least 18 argumentative elements.

Absences. Day four of instruction consisted of collaborative student writing, independent student writing, and a practice ACT writing test. During this instructional session, students who were absent on previous instructional days received make-up instruction. The teacher worked with the students who had absences and the other students worked in pairs to write an essay during the collaborative writing practice. If

students needed further make-up instruction, they worked with the teacher while the other students completed an independent practice essay.

ACT Math Instruction

The math writing lessons were developed by using the math section of the Kaplan ACT Premier 2016 study book (Kaplan, 2015). This was chosen because Kaplan is a leading company for test preparation and had developed test preparation materials for the revised ACT test. This math instruction first taught students to ask themselves four questions when answering each problem (i.e., What is the question?, What information am I given?, What can I do with the information?, and Am I finished?). The instruction provided an in-depth review of the eight topics covered in the ACT math test including plane geometry; variable manipulation; proportions and probability; coordinate geometry; operations; patterns, logic, and data; number properties; and trigonometry. Each of these topics were reviewed in relation to the top 100 key math concepts which are the most commonly tested math rules on the ACT exam.

During instruction, the teacher worked through practice problems and then had the class complete practice problems related to each topic. When answering the practice problems, the teacher and students asked themselves the four questions to help them work through each problem. Practice problems that students worked through in small groups, pairs, or as individuals were reviewed as a whole class to ensure students knew the correct solution and how to solve the problem. Students also worked through a complete practice ACT math test. The answers and explanations were reviewed as a class.

Fidelity of Instruction

Fidelity of instruction was assessed in two ways. First, all the writing and math lessons were audiotaped. The writing lessons were listened to by a person unfamiliar with the design of the study and the math lessons were listened to by the first author. Using a fidelity checklist that contained the essential components for each lesson, the observer checked any step completed on the list. Second, each instructor, in both the writing and math setting, used an instructional checklist while teaching. As the teacher completed an instructional task, he or she checked the step off the list. The fidelity was 100% for the writing instruction for both the teacher and observer checklists. The fidelity was 100% for the math teacher checklists and 95% for the math instruction observer checklists.

Assessing ACT Writing Performance

Writing prompts. The argumentative writing prompts used during testing (example topics included endangered species and experiential education) and instruction (example topics included intelligent machines and bilingual accreditation) were from practice ACT writing tests and were designed to be relevant for high school students. Each of the writing prompts were formatted and structured in the same way in order to maintain consistency and prepare students for the ACT writing test. Each prompt included a heading which stated the overall topic of the prompt as well as an introductory paragraph that gave a brief overview of the topic and expressed there were various perspectives on the topic. The prompt next provided three perspectives on the topic and students were directed to write an essay that evaluated multiple perspectives, developed their own perspective, and discussed the relationship between their perspective and those

from the prompt. A full example of the Intelligent Machines prompt can be found at http://www.act.org/content/dam/act/unsecured/documents/Sample-Writing-Prompt.pdf.

Administration of writing prompts. Students wrote an argumentative essay in response to practice ACT prompts at pretest and posttest. The students were given the prompts in sample ACT books and provided the same directions used during ACT test administration. Students had 40 minutes to complete the essay test, per ACT test guidelines. The order of prompts for testing were randomly assigned and counterbalanced by student. The tests were administered by a person who was not involved in instruction. This was done so the instructor did not serve as a prompt to use the taught strategy. All ACT writing exam essays were scored for planning, overall ACT writing score, argumentative elements, and number of transition words.

Before students' essays were scored, all identifying information was removed and all essays were typed. This was done to control for presentation effects involving handwriting. Poor handwriting can reduce judgements about the quality of writing by a full standard deviation (see Graham, Harris, & Hebert, 2011). No corrections were made when typing student essays. All essays were scored independently by the first author and a trained rater who was blind to the design and purpose of the study. The scores by the rater blind to the purpose of the study were used in all analyses. Interrater reliability for each measure was determined by calculating the correlation between the scores of the two raters.

Planning. Students were provided a separate page on which to plan their essay. Plans were scored using a 0 to 5 point scale adapted from Harris, Graham, Ray, and Houston (2017) which evaluated the sophistication of students' plans. Students received a

score of 0 if no plan was evident; a score of 1 if they wrote their essay on the planning sheet and then copied it onto the essay paper; a score of 2 if they wrote an essay or words related to their essay on the planning sheet and made changes between their plan and essay; a score of 3 if words were listed related to developing a plan (i.e., HIT SONGS[3]); a score of 4 if a strategy was used but there were no changes between their plan and essay; and a score of 5 if a strategy was used and there was a change between their plan and essay. Interrater reliability was .97.

Overall ACT writing score (quality). The ACT scoring rubric was used to analyze the overall ACT writing score of students' essays. This measure evaluated the holistic quality of students' writing. Students received an overall ACT writing score ranging from 2 to 12. This total score was the combined average of four subscores from the two raters. Interrater reliability for overall quality was .99. The ACT writing rubric subscores categories were: (a) ideas and analysis, (b) development and support, (c) organization, and (d) language use. Each subcategory was scored on a scale ranging from 1 to 6 (with 1 representing a lower score). Ideas and analysis examined if the paper analyzed multiple perspectives and established a clear argument and thesis. Interrater reliability for ideas and analysis was .95. Development and support evaluated use of rationale and examples to support students' claims. Interrater reliability for development and support was .92. Organization assessed arrangement of paragraphs and use of transition words between and within paragraphs. Interrater reliability for organization was .97. Language use addressed word choice, voice, sentence structure, grammar, and spelling within the paper. Interrater reliability for language use was .96.

Argumentative elements. There were 12 essential elements identified for writing an argumentative essay in response to an ACT prompt including: a hook, introducing the topic, stating a thesis, stating the perspectives from the prompt, stating the outlook on each perspective, discussing each perspective using examples, giving an opinion on each perspective, restating the thesis, providing rational for the thesis, stating the relationship between the thesis and perspectives, summarizing key ideas, and leaving the reader thinking. Students received 1 point for each element presented in their essay. Additional points were given when students provided more than one element for a category (e.g., restating all three perspectives from the prompt resulted in 3 points). Interrater reliability was .99.

Number of transition words. Transition words were identified by looking at the first words or phrases at the beginning of each sentence. Words or phrases were considered a transition word if they were on the list of acceptable transition words from the WIAT-III scoring protocol. Each transition word identified received 1 point. Students were not penalized if the transition word was misspelled or if words following the transition were an error such as a run-on sentence or sentence fragment. Interrater reliability was .98.

Genre Knowledge

The genre knowledge measure used in this study was adapted from a genre measure developed by Olinghouse, Graham, and Gillespie (2015). The adapted measure asked students to describe the parts that are included in writing an essay for the ACT assessment. They were given 10 minutes to do so. The genre knowledge measure was

scored by identifying the unique idea units within each student's response. Each unique idea unit counted as 1 point. Interrater reliability for genre knowledge was .99.

Self-Efficacy

The self-efficacy measure was adapted from a scale developed by Bruning, Dempsey, Kauffman, McKim, and Zumbrunn (2012). Students responded to 10 statements, indicating if they could do the writing activity specified in each statement. They responded to each item using a Likert-type scale that ranged from 0 to 100, with a 100 meaning they were absolutely certain they could do the activity and 0 meaning there was no chance they could do the activity. The statements asked students about their efficacy to write an argument that will receive a high score on the ACT writing test and provide a hook, strong introduction, thesis, organized essay, support for thesis, examples, and a concluding paragraph. The remaining two statements asked students about their efficacy to easily get started when writing an argument and to keep writing even when writing is difficult. The score for this measure was the average for all 10 items. Coefficient alpha was .97 at pretest, .98 at posttest, and .97 at maintenance.

Generalization Measure (WIAT-III)

The WIAT-III essay composition test was administered as a generalizability measure. It involved students writing an opinion essay about their favorite game and why they liked it. Administration of the WIAT-III followed the standardized procedures outlined in the testing manual. WIAT-III essays were scored for theme development through an evaluation of the introduction, conclusion, reasons why, and elaborations. The essays were also scored for text organization by looking at the number of paragraphs and

transition words. The reliability of the alternative form for this test for grades six to 12 is 0.85 (Psychological Corporation, 2009). Interrater reliability was .99.

Social Validity

Each group of students in the writing condition was interviewed by the instructor after the completion of the intervention. The instructor audio recorded the interview and took notes as students responded (Mason, Kubina, Kostewicz, Cramer, & Datchuk, 2013). Students were asked how they felt about taking the ACT writing test before and after receiving instruction, how the instruction helped them, what they learned about writing a strong argument, what skills they could use in the future, and anything they would do differently if they were the teacher.

Assessment Procedures

Before and after instruction students completed the genre knowledge, ACT writing exam, self-efficacy for writing, and WIAT-III measures in that order. After instruction, students also completed the social validity measure.

Results

Because students were taught in small groups, the unit of analysis for all statistical tests was the mean performance for each small group in each condition. The statistical tests applied in this study involved ANOVA, which is based on the assumption that all observations are independent (Field, 2000). Thus, *N* for each condition was four. For all measures, however, means, standard deviations, and effect sizes were calculated at both the individual and group level (See Table 2). Hedge's *g* was used to calculate effect size as it controls for small sample size. All effect sizes were first adjusted for pretest

differences by subtracting pretest scores from posttest scores. The resulting difference was then divided by the pooled standard deviation.

All measures were checked to determine if there were scores that fell outside Tukey's definition (1977) of an extreme outlier (i.e., mean performance plus or minus three times the difference of the score between the 25^{th} and 75^{th} percentile). Transition words was the only outcome measure with an outlier score. This score was winsorized to make it equal to the lowest score for an outlier as determined by Tukey. All other assumptions underlying ANOVA were tested and met prior to analysis.

To examine the effects of SRSD instruction, a 2 (condition) X 2 (time of testing) ANOVA with repeated measures was conducted with each variable separately. The independent variable was treatment condition (SRSD versus control) and the dependent variable was pretest and posttest performance. Main effects are not reported when an interaction was present. To examine if students maintained the effects of treatment over time (one week later), a series of one-way ANOVAs with repeated measures were conducted. The repeated measures were treatment students' scores at pretest, posttest, and maintenance. Control students were not included because they had already begun to receive the SRSD writing instruction. To reduce the Type I error rate, tests of the eleven dependent variables were conducted using Bonferroni adjusted alpha levels of .0045 (.05/11).

Does SRSD instruction enhance students' ACT writing?

Planning. Overall, SRSD had a positive impact on planning. The interaction between time of testing and condition was statistically significant, $F(1, 6) = 41.28$, $p <$

.0045, indicating students who received the SRSD treatment engaged in more sophisticated planning after the intervention than the control group. Effect size was 5.54.

Before receiving instruction, a majority of students in both the treatment and control conditions did not plan or only wrote a few planning notes. After instruction, students in the treatment group increased their average planning score from 0.85 to 4.65, which means students developed a graphic organizer using the mnemonic HIT SONGS[3]. They also wrote short notes about what they were going to include in each paragraph and continued to plan throughout the composing process. There was no change in the control students' planning. As was the case at pretest, most control students did not produce any plans at posttest.

Quality. The SRSD intervention had a positive effect on writing quality. There was a statistically significant interaction between condition and time of testing, $F(1, 6) = 157.87$, $p < .0045$, signifying students who received the intervention made more gains in overall writing quality of their ACT essays ($ES = 4.86$).

For ideas and analysis, the interaction between factors was significant, $F(1, 6) = 47.24$, $p < .0045$, with the treatment students making more gains than control students on ideas and analysis in their ACT composition ($ES = 3.71$).

For development and support, the interaction was statistically significant, $F(1, 6) = 46.94$, $p < .0045$, indicating students who received the intervention made greater gains in development and support in their ACT essays than the control group ($ES = 3.75$).

For organization, there was a statistically significant interaction, $F(1, 6) = 291.38$, $p < .0045$, demonstrating students who received the intervention made greater gains in organization in their ACT composition than the control group ($ES = 6.98$).

For language use, there was a statistically significant interaction, $F(1, 6) = 41.59$, $p < .0045$, indicating students who received treatment made more gains in the overall language use in their ACT essays as compared to the control condition ($ES = 2.62$).

As these analyses demonstrated, SRSD instruction had a positive impact on writing quality. At pretest, both treatment and control students typically wrote a summary of the prompt and included their opinion on the topic. However, there was rarely an analysis of the perspectives given, support for any claims made, or adequate use of transition words. At posttest, the control students' essay evidenced little change. SRSD instructed students' posttests, however, improved considerably from an average score of 3.15 to 8.38 and typically included a clear thesis for their argument, analyzed and evaluated the three perspectives from the prompt, and provided rationales and examples to support their claims as well as the issues presented in the prompt. Furthermore, their essays were organized into paragraphs with a logical progression of ideas, used transition words, had a variety of word choice and sentence structure, and had minimal grammatical and mechanical errors.

Argumentative elements. For argumentative elements, the SRSD intervention was effective. The interaction, $F(1, 6) = 108.12$, $p < .0045$, was statistically significant with the treatment group making greater gains in the number of argumentative elements included in their ACT essays. The effect size was 4.20.

At pretest, treatment and control students often included only a few argumentative elements such as a thesis, an introduction of the topic through summarizing the prompt, and their opinion. While the control students' essays did not change at posttest, treatment students' essays improved from an average of 4.95 to 16.63 to include an introduction

paragraph with a hook, introduction to the topic, and a thesis. Their essays also included paragraphs that provided a summary of each perspective from the prompt, their outlook on each perspective, examples to support their claims, and their opinion on each perspective. Students' essays concluded with a paragraph that restated their thesis, provided support for their thesis, stated the relationship between their thesis and the perspectives given, and summarized their main ideas.

Transition words. The SRSD intervention had a positive impact on transition words. There was a statistically significant interaction, $F(1, 6) = 50.77$, $p < .0045$, with the treatment students making greater gains in the number of transition words in their ACT essays from pretest to posttest. Effect size was 1.78.

At pretest, treatment and control students rarely used transition words. This remained true for control students at posttest, but the average number of transition words increased for treatment students from 3.75 to 9.43. This included using transition words at the start of paragraphs and within paragraphs to link ideas.

Are the effects of SRSD maintained over time?

Statistically significant differences were found for treatment students' performance across pretest, posttest, and maintenance for planning, $F(2,6) = 73.96$, $p < .0045$; quality, $F(2, 6) = 106.99$, $p < .0045$; ideas and analysis, $F(2, 6) = 67.88$, $p < .0045$; development and support, $F(2, 6) = 34.36$, $p < .0045$; organization, $F(2, 6) = 124.92$, $p < .0045$; language use, $F(2, 6) = 32.55$, $p < .0045$; argumentative elements, $F(2, 6) = 145.22$, $p < .0045$; and transition words, $F(2, 6) = 41.64$, $p < .0045$. Follow-up analyses using paired samples t-tests revealed maintenance scores were statistically higher than pretest scores for planning ($p = .005$), quality ($p = .001$), ideas and analysis ($p = .001$),

development and support (p = .006), organization (p = .002), language use (p = .012), argumentative elements (p < .001), and transition words (p = .005), but did not differ statistically from posttest scores.

What is the effect of SRSD instruction on students' genre knowledge?

While students who received the SRSD intervention did not differ statistically from the control condition on the genre knowledge measure (p > .0045), they did make meaningful gains (*ES* = 1.66). A majority of treatment and control students at pretest included general elements of good writing as part of their genre knowledge such as having a thesis or organizing a paper with an introduction, body paragraphs, and a conclusion. At posttest, the control students continued to describe the same general writing elements and included very few ideas specifically linked to the ACT writing test (M = 1.45, SD = 0.90). The treatment students included more genre specific ideas that were part of the argumentative writing strategy (M = 12.15, SD = 3.67) such as state the perspective, provide an outlook on the perspective, and support claims with examples.

What is the effect of SRSD instruction on students' self-efficacy for writing?

Even though there were no statistically significant differences between treatment and control students' self-efficacy for writing (p > .0045), treatment students made meaningful gains in their writing confidence (*ES* = 2.18). At pretest, the mean for the self-efficacy average score was 62.10 (SD = 18.79) for treatment students and 51.19 (SD = 17.81) for control students. At posttest, the control students' self-efficacy average score remained relatively constant (M = 63.47, SD = 2.91); whereas, treatment students' mean self-efficacy average score increased to 85.63 (SD = 5.65) and they reported becoming more efficacious about being able to write a hook, strong introduction, thesis, organized

essay, support for thesis, examples, and a concluding paragraph. Furthermore, they reported a higher confidence in being able to get started when writing an argument, keep writing even when writing is difficult, and achieve a high score on the ACT writing test.

Does SRSD instruction enhance students' writing on a generalization measure?

The students who received the SRSD intervention did not differ statistically ($p >$ .0045) on the generalization writing measure (WIAT-III). However, treatment students made meaningful gains in their general writing abilities (*ES* = 1.81). At pretest, both treatment and control students often wrote a descriptive paragraph with minimal support for their claims. The control students continued to create the same type of text at posttest, but many students in the treatment group wrote a more effective composition, providing more details and elaborations to support their thesis as well as a conclusion that summarized their main ideas. In addition, they often wrote multiple paragraphs and used more transition words in their writing.

Do students view SRSD instruction as valuable?

All 10 students in the treatment condition indicated that before they started SRSD instruction they felt nervous or not confident about taking the ACT writing test. Most of the students expressed they were concerned because they felt they were not strong writers and the writing test was very difficult. All students responded they were much more confident, when asked how they felt about taking the ACT writing test after participating in the SRSD intervention. Furthermore, students noted several aspects of instruction helped them become better prepared to take the ACT writing test including understanding how to analyze the prompt, having a strategy to help with planning, and using collaborative writing to learn the strategy. One student shared, "I think it was helpful how

we did it all together and then slowly did more and more of it on our own." Another student expressed, "It was hard at the beginning, it was so hard, but when we worked together as a group it made it understandable and made it easy." As a result of completing the intervention, students shared they learned the importance of planning, having a clear thesis, evaluating the strengths and weaknesses of various perspectives on a topic, and providing examples to support their claims when writing a strong argument. They thought they could use many of these skills in the future such as writing an introduction paragraph with a hook, introducing the topic, and a thesis; organizing their paper in a logical manner; using transition words at the beginning and within paragraphs; and ending an essay with a review of their key points.

Most students recommended there be no changes to the instruction. One suggestion by a student was to start with easier topics to write about and then move to more challenging ACT test prompts. When asked to share any other thoughts about the instruction for the ACT writing test, one student said, "I really enjoyed getting prepared for the ACT."

Discussion

It is important students perform well on college entrance writing exams such as the ACT, as these writing assessments are a part of college admission and used to make course placement decisions. Identifying interventions that improve the performance of high school students with high-incidence disabilities and struggling writers on such tests is imperative, as these assessments require them to engage in aspects of writing they find challenging (Graham et al., 2013). In this randomized control trial study, the effectiveness of SRSD instruction to improve performance on the ACT college entrance

writing assessment for these students was investigated. This included determining if such instruction enhanced ACT writing performance immediately after instruction and one week later and if such instruction resulted in improved genre knowledge, self-efficacy, and more generalized writing performance.

Enhancing Students' ACT Writing Performance

Research questions one, two, and six address the impact of the instruction on students' writing performance on the ACT, maintenance, and social validity. As predicted, high school students with high-incidence disabilities and struggling writers who were taught the strategy HIT SONGS^3 using SRSD wrote stronger ACT essays than control students. ACT essays written by SRSD instructed students evidenced more sophisticated advanced planning (*ES* = 5.54), greater overall writing quality (*ES* = 4.86), more argumentative elements (*ES* = 4.20), and increased use of transition words (*ES* = 1.78).

Maintenance. Also, as expected the effects of SRSD instruction were maintained over a short period of time for planning, quality of students' writing, the number of argumentative elements included in essays, and number of transition words students used when writing their compositions. Maintaining the effects of the SRSD instruction over time is important, as the ACT assessment is only administered on specific dates a few times a year, and some students take the ACT assessment multiple times in hopes of improving their score. Thus, future research needs to determine if the instruction provided in this study is maintained over more than a week of time as was done in this study.

Social validity. As hypothesized, students who received the SRSD intervention not only enjoyed the instruction, but also found it very helpful in providing them with the information and skills needed to be successful on the ACT writing exam. Students also believed there were many aspects of the instruction they received could be used in other settings, such as writing assignments in their classes. These results are similar to other SRSD instruction for argumentative writing with high school students (Hoover et al., 2012; Kiuhara et al., 2012; Mason et al., 2013; Ray et al., 2017).

Meaningful writing improvements. SRSD instructed students' improvement on the ACT writing assessment was not only statistically significant, but it was meaningful as well. In analyzing the quality of students' writing, the official ACT writing exam scoring scale was utilized. The national average ACT writing score for students in the graduating class of 2016 was 6.2 (ACT, Inc., 2017c). After receiving SRSD instruction, nine out of 10 treatment students in this study scored above the national average, with only one student scoring below, earning a score of 6. This highlights that all students benefited from the SRSD instruction and that there were no nonresponders. Furthermore, the treatment students had a mean pretest score of 3.15, which increased to 8.38 at posttest. The 2016 national percentile rank for a writing score of 8 is 82. Thus, only 18% of recent high school graduates who took the ACT achieved a writing score of 8 or above (ACT, Inc., 2017a).

Additionally, there was a robust response to the SRSD instruction for the number of argumentative elements students included in their essays. At pretest, treatment students included an average of 4.95 argumentative elements. These elements typically included students summarizing the prompt and stating their opinion on the topic from the prompt.

At posttest the treatment students' had an average of 16.63 argumentative elements within their essay. This large increase meant students' essays were transformed from summary paragraphs to powerful argumentative essays with a beginning that caught the reader's attention, stated and supported their thesis, analyzed and evaluated the three perspectives from the prompt, discussed the relationship between their thesis and the perspectives, and summarized the key ideas at the end.

The general findings that SRSD instruction improved students' planning and writing were consistent with previous research. First, Ray et al. (2017) reported HIT SONGS[3] taught via SRSD enhanced the planning and writing of 10th grade students who experienced writing difficulties, and the positive effects of such instruction were maintained over time. These students were also positive about the instruction they received. Second, researchers from other studies with high school students with high-incidence disabilities and struggling writers found significant increases in students' writing performance as a result of SRSD instruction for argumentative writing (Chalk et al., 2005; Eissa, 2009; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Mason et al., 2013). Third, as is the case with SRSD instruction in general (Graham et al., 2013), effect sizes were quite large. This study provided evidence on the effectiveness of a new planning and composing strategy that can be used with high school students who find writing challenging.

Effects of Instruction on Genre Knowledge, Self-Efficacy, and Generalization

Research questions three, four, and five address the impact of instruction on students' genre knowledge, self-efficacy for writing, and writing generalization. Contrary to expectations, SRSD instruction did not have a statistically significant impact on

students' genre knowledge for the ACT and self-efficacy for ACT writing. It also did not produce a statistically significant impact on a second norm-referenced writing measure. However, SRSD instructed students made large meaningful gains in each of these areas, as effect sizes in each of these areas exceeded 1.66. Treatment students' genre knowledge scores almost quadrupled and their self-efficacy scores increased by slightly more than 20 points on a 100-point scale. Their performance on the WIAT-III went from an average 17 points below the normative mean to an average 4 points above it. This put these lower performing students' writing at posttest slightly above average in terms of the national normative group for this test. In contrast, students in the control group made relatively small changes on these variables.

The most likely explanation for why there was not a statistically significant difference between treatment and control students for genre knowledge, self-efficacy, and WIAT-III writing performance is the study was underpowered. It consisted of only four instructional groups per condition. Additionally, there were large standard deviations for these three measures which impacts the power of the statistical tests due to the variability in students' scores (Field, 2000). Nevertheless, there are other possible explanations for why statistical significance for these three variables was not obtained.

Genre knowledge. Another potential explanation for non-statistical findings for genre knowledge is the design included a pretest ACT essay exam. This may have familiarized students in the control condition with the basic elements of the exam, increasing their performance just enough at posttest so a statistical difference between the two groups was not obtained (control students' scores did increase by an average of one genre element).

Self-efficacy. For the self-efficacy measure, it is possible a statistically significant difference was not obtained because students with high-incidence disabilities and struggling writers overestimate their self-efficacy, reporting high levels of confidence that they write well. This has occurred in other studies with these students (e.g., Graham & Harris, 1989). This seems like an unlikely explanation in the present investigation as students' average self-efficacy scores were in the 50s and 60s. This does not rule out the possibility that students in this study were not able to accurately assess their writing capabilities. For instance, during instruction when asked "What is a thesis?" neither student in the treatment group from School B knew what a thesis was. However, on their pretests both students had reported they were 80% confident they could write an argument that clearly states their thesis.

Generalization. A potential explanation for why the effects of SRSD instruction did not produce a statistically significant effect on the WIAT-III is that students in the treatment group at posttest reached the ceiling for one or more of the scoring categories on this generalization measure. For example, the scoring categories of reasons or explanations each have a maximum amount of three possible points. If a student included four reasons or explanations, they would still only earn the maximum of three points for reasons or explanations. This is a likely explanation as five of the treatment students included four or more reasons or explanations in their posttest essays.

Another explanation for non-statistical effects on the WIAT-III is that this measure differed significantly from the ACT writing test, and instruction to promote generalization would be needed. While both measures assessed argumentative writing, the ACT writing exam had a lengthy prompt based on a contemporary issue and a 40-

minute time limit resulting in lengthier essays due to composition time. The generalization measure was a one sentence prompt based on students' personal preferences and gave students only 10 minutes to write. Generalization from one test to the other may require deliberate instruction to make this happen. It is difficult to determine if this was a possible factor in this study, as researchers from other SRSD investigations have found generalization effects without generalization instruction (Graham et al., 2013).

Limitations and Future Research

One limitation of this study was the grouping of students in the treatment and control groups. While students were randomly assigned by condition and there were 10 students in each condition, there were unequal numbers of students from each school and unequal numbers of students in each group. This impacted the study by having a treatment group that only included one student resulted in the student receiving all the attention from the instructor and eliminated the ability for the student to work with peers. Future research should try to have an equal number of students from each school and an equal number of students in each group. This would include having a minimum of two students per group. Also, the study only included 20 students with 8 total groups. Consequently, the study was underpowered. Thus, future research should include a larger number of students or groups depending on whether instruction is delivered individually or to groups of students, respectively. Furthermore, the maintenance measure in this study was limited to one week and only one type of writing was assessed in terms of generalization. Future studies need to extend the period for maintenance effects and assess multiple avenues for generalization. This is important as the ACT is only offered a

few times during the year and students need to spend time studying for all five subject area tests on the ACT.

An additional limitation to the current study is that all students choose to be a part of this investigation, which took place during the summer or after school. Thus, all the participating students were interested and motivated to learn the strategies to improve their writing skills for the ACT. The intervention was also implemented by the first author. Future research is needed to examine if the treatment is effective with a broader range of students not just volunteers for a special program. This includes specifically testing its impact with students with different disabilities as well as testing its effects when it is delivered by classroom teachers. Furthermore, additional replication is needed to establish if the findings from this study can be duplicated. This includes studies that examine which aspects of instruction are responsible for student gains. Finally, future research should investigate the use of this instruction as a means for improving students' argumentative writing for general classroom assignments and as a way to improve college entrance exam scores on other assessments such as the SAT.

Implications for Practice

The ACT writing assessment is a challenging task, especially for students with high-incidence disabilities and struggling writers. It requires students to engage in writing processes that are difficult for them such as analyzing a prompt, planning, writing, revising, and regulating the writing process. This study enhances the body of research demonstrating writing can be improved when students are provided with SRSD instruction specifically designed to meet the demands of the ACT writing task and needs of the learner.

The results of this study are unprecedented and provide support that specialized instruction can improve students' performance on college entrance writing exams, even when the instructed students are younger. The investigation provides intriguing evidence that such instruction may enhance writing performance more broadly. Even though the impact of the SRSD instruction provided here did not result in a statistically significant effect on a separate measure of writing performance, the obtained effect size was substantial (*ES* = 1.81).

Finally, SRSD instruction and strategies taught in this study are powerful tools teachers can use to prepare and help their students make meaningful gains on the college entrance writing exam. While there are many aspects to success in the college admissions process, application of the teaching procedures used in this study can help students with high-incidence disabilities and struggling writers to succeed on an important aspect in this process.

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Table 1

Participant Characteristics

	Treatment	Control	Total	χ^2
Variable Level	N (%)	N (%)	N (%)	
Gender				p = .65
Female	5 (50%)	3 (30%)	8 (40%)	
Male	5 (50%)	7 (70%)	12 (60%)	
School				
School A	2 (20%)	2 (20%)	4 (20%)	
School B	1 (10%)	2 (20%)	3 (15%)	
School C	2 (20%)	1 (10%)	3 (15%)	
School D	5 (50%)	5 (50%)	10 (50%)	
Grade				
9th	1 (10%)	5 (50%)	6 (30%)	
10th	3 (30%)	2 (20%)	5 (25%)	
11th	2 (20%)	2 (20%)	4 (20%)	
12th	4 (40%)	1 (10%)	5 (25%)	
Ethnicity				p = .65
Caucasian	3 (30%)	5 (50%)	8 (40%)	
African American	1 (10%)	1 (10%)	2 (10%)	
Hispanic	1 (10%)	2 (20%)	3 (15%)	
Asian	1 (10%)	2 (20%)	3 (15%)	
Indian	2 (20%)	0 (0%)	2 (10%)	
Other	2 (20%)	0 (0%)	2 (10%)	
Primary Disability				
Specific Learning	2 (20%)	1 (10%)	3 (15%)	
Disability				
ADHD / ADD	1 (10%)	3 (30%)	4 (20%)	
Autism	1 (10%)	2 (20%)	3 (15%)	
Traumatic Brain Injury	1 (10%)	0 (0%)	1 (5%)	
Struggling Writer	5 (50%)	4 (40%)	9 (45%)	
Secondary Disability				
Speech and Language	2 (20%)	2 (20%)	4 (20%)	
Bipolar	0 (0%)	1 (10%)	1 (5%)	
Dyslexia	0 (0%)	1 (10%)	1 (5%)	
Not Applicable	8 (80%)	6 (60%)	14 (70%)	
Variable Level	M (SD)	M (SD)	M (SD)	
Age	199.20 (16.04)	188.90 (13.40)	194.05 (15.33)	p = .14

Table 2

Means and Standard Deviations of Dependent Variables by Condition and Time

	Individual Scores						Small Group Scores					
	Treatment (N = 10)			Control (N = 10)		Effect Size	Treatment (N = 4)			Control (N = 4)		Effect Size
Measure	Pretest	Posttest	Mainten-ance	Pretest	Posttest	g post	Pretest	Posttest	Mainten-ance	Pretest	Posttest	g post
Planning	0.40 (0.84)	4.60 (0.84)	3.70 (1.42)	1.10 (1.45)	0.80 (1.32)	*3.90	0.35 (0.47)	4.65 (0.47)	4.05 (0.74)	0.78 (0.90)	0.40 (0.80)	*6.20
Quality	3.20 (1.14)	8.50 (1.27)	8.50 (2.17)	2.90 (1.29)	3.30 (1.16)	*3.86	3.15 (0.87)	8.38 (0.75)	8.35 (1.58)	2.45 (0.90)	2.93 (0.94)	*4.86
Ideas and Analysis	1.60 (0.70)	4.41 (0.74)	4.44 (0.73)	1.60 (0.84)	1.70 (0.67)	*3.68	1.50 (0.58)	3.98 (0.37)	4.18 (0.62)	1.30 (0.60)	1.55 (0.64)	*3.71
Development and Support	1.70 (0.48)	4.10 (0.74)	4.00 (1.15)	1.40 (0.70)	1.70 (0.67)	*2.85	1.70 (0.24)	3.98 (0.37)	3.98 (0.90)	1.20 (0.40)	1.63 (0.48)	*3.75
Organization	1.30 (0.48)	4.50 (1.40)	4.20 (1.40)	1.40 (0.52)	1.40 (0.52)	*2.90	1.35 (0.47)	4.52 (0.41)	4.15 (0.87)	1.28 (0.32)	1.20 (0.40)	*6.98
Language Use	1.90 (0.74)	4.30 (0.67)	4.10 (0.99)	1.70 (0.95)	1.90 (0.99)	*2.49	1.80 (0.54)	4.28 (0.66)	3.83 (0.77)	1.35 (0.70)	1.45 (0.90)	*2.62
Argumentative Elements	5.40 (2.32)	16.50 (2.72)	16.10 (3.18)	4.40 (3.31)	5.30 (3.47)	*3.13	4.95 (1.89)	16.63 (2.06)	16.00 (1.78)	3.55 (1.96)	4.28 (2.51)	*4.15
Transition Words	2.58 (2.59)	8.60 (2.89)	8.40 (4.38)	0.70 (0.67)	1.70 (1.83)	*1.99	3.75 (3.84)	9.43 (3.22)	9.28 (4.62)	0.58 (0.43)	1.35 (1.08)	*1.78
Genre Knowledge	4.10 (5.36)	17.90 (10.13)	12.80 (4.76)	6.40 (3.95)	7.60 (4.60)	1.53	6.93 (7.66)	16.75 (5.63)	12.65 (3.79)	6.83 (3.27)	7.63 (3.64)	1.66
Self-Efficacy	58.12 (16.84)	83.59 (9.48)	81.99 (11.93)	55.82 (31.79)	62.04 (28.83)	0.86	62.10 (18.79)	85.63 (5.65)	84.19 (5.04)	51.19 (17.81)	63.47 (2.91)	2.18
Generalization (WIAT-III)	78.80 (14.91)	101.20 (15.16)	99.20 (16.80)	84.80 (8.50)	91.60 (15.88)	0.96	83.10 (17.33)	103.60 (10.34)	101.63 (14.16)	80.58 (10.36)	89.00 (8.46)	1.11

Note. Standard deviation in parentheses. Planning was 0 to 5 point scale; Quality was a 2 to 12 point scale; Ideas and Analysis was a 1 to 6 point scale; Development and Support was a 1 to 6 point scale; Organization was a 1 to 6 point scale; Language Use was a 1 to 6 point scale; Self-efficacy was a 0 to 100 Likert-type scale. * $p < .0045$

APPENDIX A

PILOT STUDY ARTICLE

Effects of SRSD College Entrance Essay Exam Instruction for High School Students with Disabilities or At-Risk for Writing Difficulties

Abstract

Strategies instruction has improved the writing of high school struggling writers in previous studies, including students with disabilities. This study examined the effectiveness of argumentative writing instruction for the ACT writing exam using the Self-Regulated Strategy Development (SRSD) model with high school students with disabilities or at-risk for writing difficulties. Using a multiple baseline across participants design, four 10th grade students (3 males, 1 female) were taught to analyze ACT prompts, plan, and write an argumentative essay using the SRSD model. Following instruction, students increased the quality of their plans, the number of argumentative elements, overall ACT essay score, number of words, and number of transition words in their ACT essays. Students were positive about the strategy, learning process, and its effects.

Keywords: writing intervention, struggling writers, high school, ACT exam

Effects of SRSD College Entrance Essay Exam Instruction for High School Students with Disabilities or At-Risk for Writing Difficulties

Writing is an important skill for college and beyond. The significance of writing is especially emphasized in the influential Common Core State Standards (CCSS; Common Core State Standards Initiative, 2015a). This document stresses that students need to be able to compose text for a variety of purposes including organizing, understanding, analyzing, and synthesizing information while using various forms of technology and media.

Despite the importance of writing, mastery of this skill presents a challenge for many students. The most recent National Assessment of Educational Progress (NAEP) writing data, collected in 2011, revealed only 24% of 12th graders performed at the proficient level in writing which represents "solid academic performance" (National Center for Education Statistics, 2012, p. 7), with just 5% of 12th grade students with disabilities performed at this level.

With the advent of CCSS, writing instruction has become a high priority in many schools, as this reform effort established challenging goals for students' writing attainment. This includes developing the writing skills needed to be prepared for college and the work place. The standards shift the focus of writing instruction from narrative and opinion writing to developing students' skills at producing "evidence-based writing along with the ability to inform and persuade" through composition (CCSS, 2015b).

CCSS emphasis on college readiness is consistent with the importance that many colleges place on writing as a gateway skill to college entrance. Currently, 633 schools require and hundreds more recommend that students take the writing portion of college

entrance exams as part of the college admission process (Barge, 2015). While admission decisions are based on many components, the high-stakes college entrance exams (i.e. the ACT and SAT), including the written assessments, are an important part of this process. Many universities require students to achieve a minimum score on college entrance exams, and course placement decisions may be based on these tests. While the writing assessment, on a test like the ACT, is not the same as a college writing assignment, it analyzes students' abilities to develop ideas around a specific topic and write in a coherent manner using logic and reasoning (ACT, Inc., 2015b).

Since the ACT writing test was first administered, students' average writing scores across the United States have declined from a 7.7 in 2006 to a 7.1 in 2014, on a scale of 2 to 12 (ACT, Inc., 2015a). Similar declining scores were found for the SAT (U.S. Department of Education, 2015) writing test. While there are some studies which have examined the effectiveness of specific procedures for enhancing students' performance on the multiple choice portions of college entrance exams (e.g. Lane, Robertson, Mofield, Wehby, & Parks, 2009), we were unable to locate a study designed to improve the performance of struggling writers on the ACT or SAT writing tests. Thus, there is a need to identify effective methods for improving students' performance on writing exams, like the ACT.

In the present study, I examined the effectiveness of teaching high school students with disabilities or at-risk for writing difficulties a strategy for planning and drafting argumentative essays. The strategy was designed to specifically enhance performance on the ACT writing exam. The ACT writing test was selected for two reasons. First, ACT introduced a new writing exam in September 2015, making it important to identify

effective methods for improving all students' writing, especially less skilled writers, performance on this test. Second, the ACT exam was particularly important to students in this study as the school in which the investigation took place is an official ACT exam site.

The ACT writing test is an "exercise in argumentative writing..." (ACT, Inc., 2015a). The prompts used to assess students' writing asks students to write an argumentative essay where they evaluate multiple perspectives on a given issue, develop their own perspective on this issue, and make clear the relationship between their perspective and provided perspectives. While the current study was designed to specifically improve performance on this test, stronger argumentative writing is beneficial, in general, as it is a critical skill in high school (CCSS, 2015b), college (CCSS, 2015b), and the workplace (Kiuhara, Graham, & Hawken, 2009).

Students with disabilities and struggling writers are at a disadvantage on the ACT writing test because they have difficulties with the required writing tasks (Graham, Harris, and McKeown, 2013). Students with disabilities have difficulty understanding writing prompts and rarely generate advanced plans to organize their ideas. Furthermore, these students often compose text that has limited ideas and is poorly organized. Thus, to address these writing difficulties, students in this study were taught a strategy that emphasized procedures for analyzing the ACT writing prompt, generating and organizing ideas for accomplishing the requirement of the prompt (i.e., developing a written writing plan in advance), and drafting a suitable argument based on this plan.

Analysis of the writing prompt was emphasized because the ACT exam is very specific about what needs to be included in the essay, and student success on this test

depends on meeting these requirements. Developing a written writing plan before writing was stressed in this study, as advanced planning provides the writer with an organized conception of what they want to say (Flowers & Hayes, 1980), creating a visible representation of their writing intentions that is not subject to forgetting (Kellogg, 1996). This further reduces the need to plan while writing, making the process of drafting an essay less cognitively demanding (Scardamalia & Bereiter, 1987). Students were taught to develop their plan quickly due to the time demands of the ACT writing exam (i.e., 40 minutes). Finally, the strategy directed students to implement their plan, while modifying it as needed which included rereading their essay to make it better. As a result, planning was not limited to planning in advance, as good writers often plan before and during writing (Graham, 2006). While, the creation of an advance plan theoretically makes the task of drafting an essay easier, it does not eliminate the need to plan while writing.

As they learned the planning and drafting strategy, students were also taught about basic elements of argumentative writing, the use of transition words, and good word choice when writing. Each of these attributes are characteristics of good writing (Education Northwest, 2014). In addition, students with disabilities and struggling writers often have trouble managing and regulating the writing process. Thus, students were taught self-regulation strategies including goal setting for their writing, self-evaluating their performance, applying self-instructions to help with troublesome aspects of composing, and self-reinforcing their accomplishments. The use of such self-regulation procedures when added to writing strategy instruction can enhance overall writing performance of less skilled writers (Graham, Kiuhara, McKeown, & Harris, 2012).

The instructional approach used to improve ACT writing performance in this study was Self-Regulated Strategy Development model (SRSD). SRSD is a method of explicit instruction that provides scaffolded support for struggling writers. The instruction includes a genre specific writing strategy, self-regulation strategies, and six stages of instruction for teaching the strategies. The instructional stages are (a) developing background knowledge, (b) discussing the strategy, (c) modeling the strategy, (d) memorizing the strategy, (e) supporting the strategy, and (f) independent performance. The stages are described in detail in the method section.

SRSD was chosen because it has been an effective method for teaching writing strategies (Graham et al., 2013; Rogers & Graham, 2008), and deemed an evidence-based approach by four independent groups (Baker, Chard, Ketterlin-Geller, Apichatabutra, Doabler, 2009; Graham & Perin, 2007b; National Center on Intensive Intervention, 2015; U.S. Department of Education, 2012). A recent meta-analysis of the writing intervention research literature showed that SRSD instruction resulted in the largest effect sizes on writing performance of all tested interventions (Graham et al., 2012; Graham & Perin, 2007a).

SRSD has been especially effective in teaching writing to high school students with disabilities and those at-risk for writing difficulties (Chalk, Hagan-Burke, & Burke, 2005; Hoover, Kubina, & Mason, 2012; Jacobson & Reid, 2010, 2012; Kiuhara, O'Neile, Hawken, & Graham, 2012; Mason, Kubina, & Hoover, 2013). For example, Kiuhara et al. (2012) enhanced the writing performance of 10^{th} grade students with high incidence disabilities by using SRSD to teach them a strategy for planning and drafting argumentative text. Likewise, Hover, Kubina, and Mason (2012) enhanced argumentative

quick writes by 11th and 12th graders with learning disabilities using SRSD instruction. Due to the unique nature and importance of the ACT argumentative writing task, we examined if SRSD instruction could be used to effectively help struggling writers meet the specific challenges of the ACT writing test.

Research questions

Our study addressed two research questions. First, what is the effect of SRSD instruction for college entrance test writing on enhancing the elaboration of students' advanced plans, overall ACT writing scores, number of argumentative essay elements, number of words written, and number of transition words? Our second research question concerned social validity: Did SRSD instructed students view this instruction as valuable? I predicted that students would generate more elaborated plans and increase their overall ACT writing scores, number of argumentative essay elements, length, and number of transition words. Previous SRSD studies with less skilled high school writers have found similar positive results (Chalk et al., 2005; Hoover et al., 2012; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Mason et al., 2013).

I also anticipated that instructed students would find the treatment as acceptable and effective. This aligns with results from prior studies with less skilled high school writers receiving SRSD instruction (Hoover et al., 2012; Kiuhara et al., 2012; Mason et al., 2013). To answer these two research questions, a multiple baseline across participants design was implemented with four less skilled 10th grade writers.

Method

Setting and Participants

This study took place in a suburban private high school in a southwestern state. The Catholic college preparatory school served approximately 580 ninth through twelfth grade students. The school's population was 66% Caucasian with 99% of students attending college.

After receiving permission from the Institutional Review Board and the school's principal, students were identified for possible participation in the study. Each student was considered at-risk for writing difficulties according to the following criteria (a) recommendation by the student's language arts teacher that the student had writing difficulties, (b) produced 8 or less argumentative elements on an ACT pretest, and (c) scored at or below the 25th percentile on the essay composition portion of the Wechsler Individual Achievement Test – Third Edition (WIAT – III). Students who were recommended by their teacher took the WIAT-III essay composition test which was administered before the start of the study and followed the standardized procedures outlined in the WIAT-III manual. The reliability of the alternative form for this test for grades 6 to 12 is 0.85 (Psychological Corporation, 2009). All the WIAT-III essays were scored by the first and second author of the study. Interrater reliability, calculated through Pearson correlation, was 0.99.

For each of the students that met the inclusion criteria, parental consent and student assent were obtained. The four students who participated in the study were all in 10th grade and two had a disability. English was the primary language for all the students.

The first student instructed was Dominic. He was a 15 years and 11 months old Hispanic student. He scored at the 16th percentile on the WIAT-III essay composition test. At the end of the first semester of 10th grade, his cumulative percentage average was

74% and he was at 65% in his English course. He had a Cognitive Skills Quotient (CSQ) of 91 on the High School Placement Test which is interpreted in the same manner as an IQ score. He had a diagnosis of Attention Deficit Hyperactivity Disorder and Anxiety Disorder.

Gabrielle was the second student to be instructed. She was a 15 years and 8 months old Hispanic student. On the WIAT-III essay composition test, she scored at the 25th percentile. She had a cumulative percentage average of 78% and an English grade of 83% at the end of the first semester of 10th grade. Her CSQ was 78 on the High School Placement Test.

The third student to be instructed was Kevin. He was a 15 years and 3 months old Caucasian student. He scored at the 16th percentile on the WIAT-III essay composition test. At the end of the first semester of 10th grade, he earned a 77% cumulative percentage average and English grade. On the High School Placement Test he had a CSQ of 126.

The fourth student instructed was Mark. He was a 15 years and 1 month old Caucasian student. He scored at the 25th percentile on the WIAT-III essay composition test. At the end of the first semester of 10th grade, he earned a cumulative percentage average of 76% and a 70% English grade. His CSQ on the High School Placement Test was 93. He had a diagnosis of dysgraphia and dyslexia.

Additionally, all four students scored below the writing benchmark on the ACT Aspire test. The benchmark indicates whether a student is on track to be successful in their first year of college courses. According to ACT, Inc. (2017a) students who score below the benchmark can benefit from the type of writing instruction provided in this study, which include prewriting strategies, reviewing model essays, practice organizing

an essay so it builds in a logical progression, writing a strong and clear thesis, and other skills to improve their overall writing (ACT, Inc. 2017a).

Two of the students were taught one-on-one by the first author. The other two students, Kevin and Mark, were taught together in the last leg of the study. The instructor was a former high school teacher with experience teaching students who find school learning challenging. She had previous experience using SRSD instruction. Instruction was held in a classroom during the last period of the school day, except a few lessons were held before school for one student due to scheduling. For all students within the school, the last class period was an opportunity to receive extra help with class work or to use the time as a study hall.

SRSD Instruction

SRSD instruction involved three central components (a) an argumentative writing strategy, (b) self-regulation strategies, and (c) six stages of SRSD instruction for teaching writing and self-regulation strategies.

Argumentative writing strategy. The argumentative writing strategy taught in this study was represented by the mnemonic HIT SONGS[3]. The strategy was designed to help students successfully complete the newly modified ACT writing test (ACT, Inc., 2015b) and improve their scores on this assessment. The strategy aided students by providing them with a mechanism for analyzing the ACT writing prompt; creating a quick plan for composing their argument; and using the plan, expanding it, and checking their work as they drafted their essay. A mnemonic served as a reminder to carry out the mental operations included in the strategy. The first word of the mnemonic, HIT, outlined the essential introduction paragraph elements (a) **H**ook, (b) **I**ntroduce the topic, and (c)

Thesis. The next part of the mnemonic, SONG, was repeated three times to analyze each of the perspectives stated in the prompt; (a) **S**tate the perspective, (b) **O**utlook on the perspective, (c) **N**eed examples, and (d) **G**ive your opinion. The final portion of the mnemonic, S^3, reminded students what needed to be included in the conclusion paragraph; (a) **S**upport your thesis, (b) **S**tate the relationships between your thesis and the perspectives given in the prompt, and (c) **S**ummary.

Self-regulation strategies. Self-regulation strategies were also taught to students as they learned to use the HIT $SONGS^3$ strategy. This included goal setting, self-instructions, self-evaluation, and self-reinforcement. Students worked with the instructor to set writing goals for each essay. This included creating essays with all the necessary argumentative elements. It also included other goals that were individualized for students as they progressed through the lessons. For instance, students would set the goal of adding an additional example within their essay or using different transitions words at the beginning and within paragraphs. When working through the writing process, students were taught to use self-instructions to assist them in thinking of good ideas, composing their essay, and to check their work. Students created their own self-instructions based on their needs. For example, a student who tended to rush through work, instructed himself to take his time when writing. Moreover, students self-evaluated their essays each time they completed writing an essay collaboratively or independently. Students would assess whether they had analyzed the prompt, planned using the strategy, and wrote a quality essay that made sense and incorporated all the argumentative elements. After students evaluated an essay, they graphed their score on a chart to help them see their progress towards their goals. Lastly, students were taught to self-reinforce their progress. After

completing each step of the writing process, students were encouraged to compliment themselves. They were further taught to celebrate their hard work when they completed an essay.

Six stages of instruction. The argumentative writing and self-regulation strategies were taught using the SRSD instructional model which includes six stages of instruction (Graham et al., 2013). The instructional stages were applied recursively according to individual student's needs. Moreover, the instruction was highly interactive and discourse-rich. For each instructional stage, students were taught to criterion before moving on to the subsequent stage of instruction. The first stage of SRSD was to develop and activate background knowledge. The instructor worked with the student to advance his or her understanding of argumentative writing elements through a discussion. The instructor also discussed with the students the structure and requirements of the ACT writing test, and they conjointly analyzed an ACT writing prompt. The criteria for completing this stage was the ability to articulate the following basic elements of a quality ACT test argumentative essay: introduction of the topic, thesis, stating and analyzing each perspective given in the prompt, supporting your thesis, relating your thesis to other perspectives, and summarizing key points.

Discussing the strategy was the second stage of SRSD instruction. Here the instructor presented the strategy, HIT SONGS^3, and discussed with the student the importance of each part of the strategy and how to implement it during the writing process. The strategy was further explored by reading and identifying the parts of HIT SONGS^3 in exemplar ACT argumentative essays. Low quality ACT argumentative essays were also analyzed, with the teacher and students working together to improve the

poorly written essay by using the strategy to rework it. For this stage, students had to meet the criteria of being able to identify the parts of the strategy within a sample essay and identify the purpose of the strategy and when to use it.

The third stage was modeling the strategy. The instructor modeled how to use the writing strategy while analyzing and ACT writing prompt, engaging in planning, writing, and evaluating what was written. To make these processes more visible, she thought aloud, making her thinking visible as she engaged in these activities. While modeling this process, the instructor applied self-regulation strategies involving self-instructions, self-evaluation, and self-reinforcement. For instance, when thinking aloud during the writing process, the instructor modeled getting overwhelmed after reading the prompt and used the following self-instruction, "There is a lot I need to do to respond to the prompt, but I know I can use HIT SONGS^3 to help me write a good essay." The instructor also modeled self-evaluation by changing ideas from the notes to make a stronger argument when composing the essay and by rereading the completed essay and correcting any mistakes. When the instructor finished, she modeled self-reinforcement by saying, "Wow! When I use the strategy HIT SONGS^3 I write a great essay." After modeling, the teacher discussed and analyzed with the students the writing strategy and self-instructions she used. The instructor also discussed setting writing goals with students; the starting goal for each student was to write an essay that included all the parts of HIT SONGS^3. The criterion for this stage was students developing personalized self-instructions that would be helpful to them when writing.

Memorizing the strategy was the fourth stage of instruction. However, memorizing the strategy began once the strategy was introduced. The instructor worked

with the students to memorize the strategy, and discussed that the students needed to be able to remember the strategy because they cannot bring the strategy page with the meaning of HIT SONGS^3 with them when taking ACT test. The criterion for this stage of instruction was being able to state each step of the strategy correctly from memory.

The fifth stage was supporting the student's use of the strategy and application of self-regulation procedures. During this stage, the student worked with the teacher to use self-instructions and self-reinforcement when working through the writing process and evaluated and graphed their progress on the goal setting sheet. During this stage, the instructor and student worked collaboratively using the writing and self-regulation strategies. The instructor and student continued to write together as the instructor gradually shifted control of the writing process to the student. The student worked towards independence while receiving prompts from the instructor. The criteria for this stage required students to be able to analyze the ACT writing prompt, create a plan, compose an essay, and evaluate their essay while using self-regulation strategies with minimal prompts from the instructor.

Independent performance was the last stage in SRSD instruction where students independently wrote an essay responding to an ACT writing prompt using learned strategies. Students' criteria for completing this stage was being able to independently use the writing and self-regulation strategies and produce an essay with at least 18 argumentative elements.

Each writing lesson lasted 30 minutes. The first student taught, Dominic, received 13 lessons totaling six and one-half hours of instruction. Gabrielle, the second student taught, received 12 lessons totaling six hours of instruction. The third student receiving

instruction was Kevin and he participated in 14 lessons totaling seven hours of instruction. Mark, the fourth student taught, received 10 lessons totaling five hours of instruction. While Kevin and Mark were taught together, Mark received less instruction due to being absent from school.

Treatment Integrity

The fidelity of each lesson was assessed in two ways. First, the instructor used lesson plans as a guide for instruction and checked any step of a lesson that was completed. All steps were checked as completed for each student. Second, a professor in the field of writing instruction observed 36% to 42% of the lessons for each student. Using the same checklist applied by the instructor, the observer checked any step that was completed. The treatment fidelity across each of the lessons was 100%.

Writing Prompts

There were twenty-two argumentative writing prompts that were used during testing and instruction. The prompts were from practice ACT writing tests and were designed to be relevant for high school students (e.g. topics included intelligent machines, public health and individual freedom, bilingual accreditation, endangered species, and experiential education). Each of the writing prompts was formatted and structured in the same way in order to maintain consistency and prepare students for the ACT writing test. Each prompt included a heading which stated the overall topic of the prompt as well as an introductory paragraph that gave a brief overview of the topic and expressed that there are various perspectives on the topic. The prompt then provided the following instructions (this example was for the topic intelligent machines), “Read and carefully consider these perspectives. Each suggests a particular way of thinking about

the increasing presence of intelligent machines" (ACT, Inc., 2015d). The prompt next provided three perspectives on the topic. For instance, one of the perspectives for the prompt intelligent machines was: "Perspective One: What we lose with the replacement of people by machines is some part of our own humanity. Even our mundane daily encounters no longer require from us basic courtesy, respect, and tolerance for other people (ACT, Inc., 2015d). Finally, students were directed to write their essay using the following directions (illustrated for intelligent machines):

> "Write a unified, coherent essay in which you evaluate multiple perspectives regarding intelligent machines. In your essay, be sure to: (a) analyze and evaluate the perspectives given, (b) state and develop your own perspective on the issue, and (c) explain the relationship between your perspective and those given. Your perspective may be in full agreement with any of the others, in partial agreement, or wholly different. Whatever the case, support your ideas with logical reasoning and detailed, persuasive examples" (ACT, 2015d).

Students wrote argumentative essays in response to practice ACT prompts at baseline, post-instruction, and maintenance phases. The students were given the prompts in sample ACT books and provided the same directions used during ACT test administration. Students had 40 minutes to complete the essay test, per ACT test guidelines. The order of prompts for testing was randomly assigned. The tests were administered by a person who was not involved in instruction. This was done so that the instructor did not serve as a prompt to use the taught strategy. Further, the test administrator was trained to criterion on conducting tests.

Outcome Measures

Before the essays were scored, all identifying information was removed and all essays (N = 33) were typed into a word processing program in order to reduce presentation effects (such as poor handwriting) that could influence the judgments made by raters about the text written by the student (see Graham, Harris, & Hebert, 2011). No grammar or spelling corrections were made when typing student essays. All plans and essays were scored independently by the first author and a trained rater who was blind to the design and purpose of the study. Interrater reliability was calculated using Pearson correlation.

Planning. Students were provided a separate page on which to plan their essay. Plans were scored using a 0 to 5 point scale. Students received a score of 0 if no plan was evident, a score of 1 if they wrote their essay on the planning sheet and then copied it onto the essay paper, a score of 2 if they wrote an essay or words related to their essay on the planning sheet and made changes between their plan and essay, a score of 3 if words were listed related to developing a plan , a score of 4 if a strategy was used but there was no change between their plan and essay, and a score of 5 if a strategy was used and there was a change between their plan and essay. Interrater reliability for planning scores was 1.00.

Overall ACT writing score. The ACT scoring rubric was used to analyze the overall ACT writing score of students' essays (complete rubric can be found at http://www.act.org/content/dam/act/unsecured/documents/Writing-Test-Scoring-Rubric.pdf). The students received an overall ACT writing scores ranging from 4 – 24 which is the sum of four subscores. The ACT subscores categories were: (a) ideas and

analysis, (b) development and support, (c) organization, and (d) language use. Each subcategory was scored on a scale ranging from 1 – 6 (with 1 representing a lower score). Ideas and analysis examined if the paper analyzed multiple perspectives and established a clear argument and thesis. Development and support evaluated use of rationale and examples to support claims. Organization assessed arrangement of paragraphs and use of transition words between and within paragraphs. Language use addressed word choice, voice, sentence structure, grammar, and spelling within the paper. Interrater reliability was 0.98.

Argumentative elements. There were twelve essential elements identified for writing an argumentative essay in response to an ACT prompt including: a hook, introducing the topic, stating a thesis, stating perspectives from the prompt, stating the outlook on each perspective, discussing each perspective using examples, giving an opinion on each perspective, restating the thesis, providing rational for the thesis, stating the relationship between the thesis and perspectives, summarizing key ideas, and leaving the reader thinking. Students received 1 point for each element presented in their essay. Additional points were given when students provided more than one element for a category (e.g., restating all three perspectives from the prompt resulted in 3 points). There was no ceiling for this measure as students could include as many examples as time allowed to support their claims. Interrater reliability was 0.98.

Number of words. The total number of words in an essay was identified using the Microsoft Word Count feature.

Number of transition words. Transition words were identified by looking at the first words or phrases at the beginning of each sentence. Words or phrases were

considered a transition if they were on the list of acceptable transitions from the WIAT-III scoring protocol. Each transition identified received 1 point. Students were not penalized if the words following the transition were an error such as a run-on sentence or sentence fragment. The interrater reliability was 0.98.

Social Validity

Each student was interviewed by the instructor after the completion of instruction. The instructor audio recorded the interview and took notes as students responded. Students were asked the following questions (a) now that you have learned to use strategies to write argumentative essays, please tell me what you liked most about these strategies, (b) please tell me if there is anything you do not like about these strategies, (c) please tell me what you liked about how you learned to use these strategies, (d) if you were the teacher, is there anything you would do differently to help students learn these strategies, and (e) is there anything else you think I should know about learning to use these strategies to write argumentative essays?

Experimental Design and Analysis

A multiple baseline design across participants with multiple probes in baseline was implemented and occurred within four staggered phases (Gast & Ledford, 2014). Phase one was baseline where students were administered multiple writing probes. Each probe required students to write an argumentative essay responding to an ACT essay prompt within a 40 minute time limit. Once baseline data was stable for student one, the second phase of the study began which included SRSD instruction. Stability was operationalized as three or more data points in a similar pattern that could be used to predict future data points if the intervention was not introduced (Gast & Ledford, 2014).

Instruction ended when a student was able to independently use writing and self-regulation strategies to reach their writing goal of including 18 or more argumentative elements. The third phase was post-instruction; probes were given immediately after instruction was complete and continued until students reached stability on administered writing probes. Maintenance was the fourth phase where writing probes were administered four weeks after instruction for all students. The percent of non-overlapping data (PND) was calculated for each outcome variable by counting all the data points that do not overlap and counting the total number of data points. Then the number of non-overlapping data points was divided by the total number of data points and then multiplied by 100 (Gast & Ledford, 2014).

Results

After completing SRSD instruction for HIT SONGS[3] all students showed improvement in elaborated planning, overall ACT writing score, number of argumentative elements (see Figure 1), number of words, and number of transition words on an ACT writing prompt. Table 3 provides the *M* and *SD* for each student's scores at baseline, post-instruction, and maintenance.

Planning

Planning was scored on a 0 to 5-point scale with 0 representing no plan and 5 representing an elaborated plan was created and students showed evidence of using a planning strategy and planning continued as they wrote. At baseline, Dominic and Kevin planned their first essays, writing several words on the planning sheet, whereas Mark planned all of his pretest essays, developing a plan in the form of a word web. No other pretest essays were planned (i.e., 59% were not planned).

On posttest probes, all essays by each student were planned in advance with one exception. Dominic did not plan his last post-instruction essay. All of Kevin's and Mark's post instructional plans received a score of 5, as did the first post-instructional plan written by Dominic and Gabriel. The other post-instructional plans developed by these two students received a score of 3 (a plan that listed the steps of the strategy). PND for post-instructional plans was 92%. Even more impressive all students planned on their one-month maintenance probe (PND = 100%), receiving either a score of 5 (Kevin and Mark) or a score of 3 (Dominic and Gabrielle).

ACT Writing Score

Students' performance on the overall ACT writing score, evaluated on a 12-point scale, showed substantial improvement across all participants at post-instruction and maintenance when compared to baseline performance. PND for the four students indicated a large effect at both post-instruction (100%) and maintenance (100%).

Dominic's mean performance on the ACT writing score increased from baseline (M = 3.33; SD = 0.58) to post-instruction (M = 8.67; SD = 1.15) by 260% and from baseline to maintenance by 240%. Gabrielle's mean performance over doubled from baseline (M = 4.50; SD = 1.00) to post-instruction (M = 9.33; SD = 1.15), whereas her maintenance score increased by 222% from baseline. Kevin's mean performance increased by 185% from baseline (M = 5.40; SD = 0.89) to post-instruction (M = 10.00; SD = 0), as did his maintenance score. Finally, Mark's mean performance increased by 256% from baseline (M = 2.60; SD = 0.55) to post-instruction (M = 6.67; SD = 1.15) and by 231% from baseline to maintenance.

Argumentative Elements

A criterion of 18 argumentative elements was established. There was no ceiling for this measure, as students could produce an essay with an unlimited number of elements. On all writing probes, students obtained higher scores at post-instruction and maintenance than at baseline (see Figure 1). PND for each student was 100% at post-instruction and 100% at maintenance.

Dominic's mean performance improved by 491% from baseline (*M* = 3.67; *SD* = 0.58) to post-instruction (*M* = 18.00; *SD* = 1.00). At maintenance his score of 12 was 327% above baseline. Gabrielle's mean performance increased from baseline (*M* = 7.00; *SD* = 0.82) to post-instruction by 262% (*M* = 18.33; *SD* = 0.58). The same level of increase was evident at maintenance. Kevin's mean performance increased by 273% from baseline (*M* = 7.20; *SD* = 0.84) to post-instruction (*M* = 19.67; *SD* = 0.58), as did his maintenance score. Lastly, Mark's mean performance increased by 412% from baseline (*M* = 3.80; *SD* = 0.45) to post-instruction (*M* = 15.67; *SD* = 1.16), as did his maintenance score.

Number of Words

SRSD instruction resulted in an improvement in number of words written, but these effects were not as strong as they were for the previous three variables. PND for the four students was 75% at both post-instruction and maintenance, with PNDs at both time points at 100% for Dominic and Gabrielle; and 67% for Kevin at post-instruction and 100% at maintenance. Mark, however, had a PND of 33% at post-instruction and 0% at maintenance.

Dominic increased on total number of words by 375% from baseline (*M* = 86.67; *SD* = 19.43) to post-instruction (*M* = 324.67; *SD* = 14.01) and 250% from baseline to maintenance, where he wrote 217 words. Gabrielle's mean performance increased from baseline (*M* = 229.00; *SD* = 68.45) to post-instruction by 170% (*M* = 390.33; *SD* = 23.03) and from baseline to maintenance, where she wrote 372 words. Kevin's mean performance increased by 131% from baseline (*M* = 257.40; *SD* = 22.94) to post-instruction (*M* = 336.00; *SD* = 85.86), as did his maintenance score of 355 words. Mark's mean performance increased by 129% from baseline (*M* = 192.60; *SD* = 31.94) to post-instruction (*M* = 247.67; *SD* = 33.50). He dropped slightly from baseline to maintenance, where he wrote 171 words.

Number of Transition Words

Each transition word or phrase at the beginning of a sentence that a student used in their writing was counted. SRSD instruction resulted in an improvement in the number of transition words students used in their essays. The results were similar to the number of words written measure, with PNDs at both time points at 100% for Dominic, Gabrielle, and Kevin. Mark, however, had a PND of 0% at post-instruction and maintenance.

Dominic increased by almost five-fold from baseline (*M* = 0; *SD* = 0) to post-instruction (*M* = 4.67; *SD* = 1.16) on number of transition words, and three-fold from baseline to maintenance, where he used 3 transition words. Gabrielle's mean performance increased from baseline (*M* = 1.75; *SD* = 1.26) to post-instruction by 267% (*M* = 4.67; *SD* = 0.58) and from baseline to maintenance by 457% where she use 8 transition words. Kevin's mean performance increased by 206% from baseline (*M* = 3.40; *SD* = 0.55) to

post-instruction (*M* = 7.00; *SD* = 1.00), as did his maintenance score of 7 transition words. Mark's mean performance improved by 194% from baseline (*M* = 1.20; *SD* = 1.30) to post-instruction (*M* = 2.33; *SD* = 0.58) and by 167% from baseline to maintenance, with the use of 2 transition words.

Treatment Acceptability

After completing SRSD writing instruction, students were interviewed about the intervention. All of the students liked learning the HIT SONGS[3] strategy and felt that it helped them improve their essay writing. Students discussed that the strategy helped them develop a plan and made writing easier because they had a way to organize their thoughts. They also felt the mnemonic helped them remember the key elements to include in their essay. One student shared, "The strategy helped me organize my paper better. It really helped me focus on those parts more. I would skip the thesis before. My body paragraphs they are now more organized." When asked if there was anything they did not like about the strategy, they indicated they liked all of the aspects. One student stated that the strategy made her write more than she usually would for a paper. The students were also asked what they liked about the way they learned to use the strategies. Students found it beneficial to analyze poor and good sample essays. They also liked collaborative writing stating, "It was helpful to write essays together." Additionally, one student exclaimed, "Modeling helped me a lot!" None of the students felt there was anything to change about the way they learned to use the strategy. When given the opportunity to share other thoughts about the strategies or instruction, one male student proclaimed, "It was fun!"

Discussion

In this study, I examined if SRSD instruction for college entrance test writing enhanced the elaboration of students' advanced plans, overall ACT writing scores, number of argumentative essay elements, number of words written, and number of transition words? After receiving SRSD instruction using the strategy HIT SONGS[3] students' planned more consistently and produced more elaborated plans, received higher ACT quality scores, and increased the number of argumentative essay elements, words, and transition words in their essays. The only exception involved Mark who showed minimal gains in number of words written and transition words used following SRSD instruction. Nevertheless, the findings from this study strongly support the use of SRSD instruction as a means for improving ACT writing test taking performance of less skilled high school writers. Below I discuss students' performances in each area, indicating how it replicated or extended previous research.

Planning

SRSD instruction for the ACT writing test had a large effect on the elaboration of students' plans. All students improved their plans as a result of instruction. Before receiving SRSD instruction, three students did not develop a plan for a majority of their essays. If they did plan, it usually involved writing down a few key words from the prompt or words related to the format of their essay (i.e. introduction, body, and conclusion). The one student, Mark, who consistently planned before writing on baseline tests drew a web with the title of the prompt in the middle and wrote words about essay format (i.e. body, perspective, and conclusion).

After SRSD instruction, all students developed an elaborated plan and engaged in additional planning as they wrote for at least their first post-instruction essay. Their plans involved creating their own graphic organizer with short notes about what they were going to write about in each paragraph. Two students, Dominic and Gabrielle, did not develop plans this thorough after their first post-instruction test, creating plans that only wrote out the steps of the strategy. During the interview at the end of the study, they each indicated reducing planning due to time concerns, and felt they could still use the strategy and organize thoughts in their head.

Prior research using SRSD instruction to teach argumentative writing strategies to high school students with disabilities and at-risk for writing difficulties also examined students' planning behavior, measuring the amount of time students spent planning (Jacobson & Reid 2010, 2012; Kiuhara et al., 2012). In all of these studies, students increased the amount of time they spent planning from baseline to post-instruction. This study extends the literature by evaluating the elaboration of students' plans, showing SRSD instruction had salutary effects on this measure.

Overall ACT Writing Score

All students improved their overall ACT writing scores immediately following instruction and at maintenance. At baseline the ACT writing scores ranged from an average of 2.60 to 5.40, with students using paragraph structure, a few transition words, and good language use. Many of the pre-test essays written by students did not include thesis statements. However, when a thesis statement was included, it was usually a summary of the prompt. For example, on her first pre-test Gabrielle wrote: "This article is

explaining how the United States is taking charge and trying to protect those endangered species."

Overall ACT writing scores range from 2 to 12-points with the national average ACT writing score of 6.2 for the graduating class of 2016 (ACT, Inc., 2017b). After receiving SRSD instruction, all students' scores went from below to above the national average, with average scores ranging from 6.67 to 10.00. Students' post-instruction essays typically included unified ideas, analysis of perspectives provided in the prompt, and developed and provided support for their thoughts. Students also provided a clear line of thinking for their argument. Students further improved their thesis writing skills. Instead of writing a summary statement, students wrote theses that conveyed their point of view and the argument of the essay. For instance, Gabrielle's thesis from her first post-instruction essay was, "I believe that funding for the arts is necessary because it helps students in many different ways."

While the overall ACT essay score is a measure unique to this particular writing assessment, the rubric has similar components to measures applied in other studies to score essays for quality (Chalk et al., 2005; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Mason et al., 2013). Prior studies have demonstrated that SRSD instruction with high school students with disabilities and at-risk for writing difficulties enhanced quality of writing (Chalk et al., 2005; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Mason et al., 2013). This study replicates and extends this finding with a similar, but different measure of writing quality.

Argumentative Essay Elements

The number of argumentative essay elements students incorporated into their essays increased for all students after receiving SRSD instruction and was sustained through the maintenance phase. All students had three to eight argumentative essay elements in baseline essays. These elements typically included summarizing the three perspectives given in the prompt and a statement of the student's opinion. For example, Kevin's first pre-test essay only included one body paragraph which stated:

> To start off, some beleive protecting endangered species should be done. They think that scince we can help them with our technology we have, we should. Another perspective is tht conservation decisions shold be based on the risk and value of the species to the Earth, not just the publicly well-known species. Lastly, a final perspective would be helping species at risk due to human activities and factors. Some conservation programs have unintended consequences that can create environmental hazards (spelling not corrected).

On their post-instruction essays, students included 15 to 20 argumentative essay elements. Their post-instruction essays provided more analysis and evaluation of each of the perspectives from the prompt and included examples and rationale for their argument. Kevin's first post-instruction essay included three body paragraphs each of which analyzed a perspective from the prompt. An example of one of his body paragraphs is:

> To start off, perspective one states that our society should strive for the greatest good for the greatest amount of people. It shows that freedom cannot interfere with that. This is a strong perspective because benefits the greater good. For example, someone who drive reckless creates risks for themselves and others. If

that person was able to drive that way, that would cause health risks that could harm others. I agree with this perspective because it benefits the greater good (spelling not corrected).

Our finding that SRSD instruction increased number of argumentative elements replicates the findings of many prior SRSD studies providing instruction in argumentative writing (Hoover et al., 2012; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Mason et al., 2013), but extend these findings to a new measure.

Number of Words Written

Increasing the number of words written was not an explicit goal for students in this study, but all the students' average number of words written increased from baseline to post-test. During their interviews, students indicated that during baseline testing they were often unsure of what the prompt was asking them to write. In essence, they wrote what they thought was being asked of them, which typically resulted in three paragraphs: an introductory paragraph about the topic, a summary paragraph of the perspectives given in the prompt, and occasionally a paragraph about the student's opinion on the topic.

After SRSD instruction, the students had a clearer understanding of the expectations of the writing assignment, which resulted in writing more text than at baseline. During post-instruction and maintenance students wrote an introductory paragraph, three body paragraphs that analyzed each of the perspectives provided in the prompt, and a conclusion paragraph that provided their stance on the topic and support for their opinion.

Improvements in amount written were reported in five other SRSD studies conducted with high school students with writing difficulties (Chalk et al., 2005; Hoover

et al., 2012; Jacobson & Reid, 2010, 2012; Mason et al., 2013). This study replicates these findings.

Transition Words

Students in the present study increased their use of transition words from baseline to post-test and maintenance. All but one student used transition words during baseline, and such words typically included: also, but, not only, another, and in conclusion. These words were mostly used at the beginning of paragraphs. Following SRSD instruction there was not only an increase in transition words (up to eight transition words in one essay), but students also used a greater variety of transition words and used them at the start and within paragraphs. Example transition words used after SRSD instruction were: to begin with, for example, for instance, although, on the other hand, overall, ultimately, and finally. The current study replicates findings from two previous SRSD investigations (Jacobson and Reid, 2010, 2012) demonstrating SRSD enhances high school students with writing difficulties use of transition words when writing an argument.

Social Validity

The second research question asked if students who received SRSD instruction viewed this instruction as valuable. All students responded positively about the strategy and the method by which they learned the strategy. Students shared that SRSD instruction helped them prepare for the newly revised ACT writing exam which was important to them because scores on ACT tests have implications for college admissions. This study replicates the previous social validity findings of SRSD instruction with high school students with writing difficulties, as students in four previous studies found SRSD

instruction for writing to be effective and acceptable (Hoover et al., 2012; Kiuhara et al., 2012; Mason et al., 2013).

Limitations and Future Research

There are several limitations that need to be mentioned. First, the study had a small sample size of four students. The generalizability of the results was also limited because the students in the sample were all in 10th grade at a private college preparatory school. Third, the instruction was provided by the first author during an end of the day study period. Also, instructional fidelity was measured by number of steps completed which may not capture all of the important aspects of SRSD instruction. Finally, data was not collected on students' scores when taking the official ACT writing examination.

The limitations of this study suggest possibility areas for future research. First, a there are limits to the generalizability of this studies results. The students were all from a college preparatory school which may have impacted the amount they wrote, their persistence when writing, and positive behavior throughout the writing instruction and testing. A randomized control trial with a larger number of students and examining the effectiveness of this strategy with students with disabilities, students from diverse populations, and students at varying grade levels would provide additional information about the effectiveness of SRSD teaching HIT SONGS3. Additionally, having the instruction taught by classroom teachers would determine if this relatively complex strategy can be applied in typical school contexts.

Implication for Practice

In the United States, 69.2% of high school graduates attend college (U.S. Bureau of Labor Statistics, 2016). Entrance into college can be influenced by writing skills and

performance. The instruction and strategies taught in this study are tools that teachers can use to address this issue for students who find writing challenging, including those with disabilities. The strategy HIT SONGS^3 can successfully be taught one-on-one or in a small group to help students make meaningful gains on the ACT writing exam, but additional research is needed to determine if such instruction is effective when delivered at the whole class level. In addition, this study supports the use of SRSD as a mechanism for teaching writing strategies to students with disabilities and at-risk for writing difficulties at the high school level. When combined with prior research in this area demonstrating its effectiveness with typically developing students and those experiencing writing difficulties from early elementary through secondary school (Graham et al., 2013; Graham & Perin, 2007b), it is clear that SRSD instruction provides a valuable tool for teaching writing that should be applied in classes where writing is taught.

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Table 3

Means and Standard Deviations of Students' Scores at Each Stage

Student	Baseline *M (SD)*	Post-Instruction *M (SD)*	Maintenance Score
Dominic			
Elaborated Planning	0.67 (1.16)	2.67 (2.52)	3
Overall ACT Score	3.33 (0.58)	8.67 (1.15)	8
Argumentative Elements	3.67 (0.58)	18.00 (1.00)	12
Number of Words	86.67 (19.43)	324.67 (14.01)	217
Transition Words	0 (0)	4.67 (1.16)	3
Gabrielle			
Elaborated Planning	0 (0)	3.67 (1.16)	3
Overall ACT Score	4.50 (1.00)	9.33 (1.15)	10
Argumentative Elements	7.00 (0.82)	18.33 (0.58)	18
Number of Words	229.00 (68.45)	390.33 (23.03)	372
Transition Words	1.75 (1.26)	4.67 (0.58)	8
Kevin			
Elaborated Planning	0.40 (0.89)	5.00 (0)	5
Overall ACT Score	5.40 (0.89)	10.00 (0)	10
Argumentative Elements	7.20 (0.84)	19.67 (0.58)	19
Number of Words	257.40 (22.94)	336.00 (85.86)	355
Transition Words	3.40 (0.55)	7.00 (1.00)	7
Mark			
Elaborated Planning	3.00 (0)	5.00 (0)	5
Overall ACT Score	2.60 (0.55)	6.67 (1.15)	6
Argumentative Elements	3.80 (0.45)	15.67 (1.16)	15
Number of Words	192.60 (31.94)	247.67 (33.50)	171
Transition Words	1.20 (1.30)	2.33 (0.58)	2

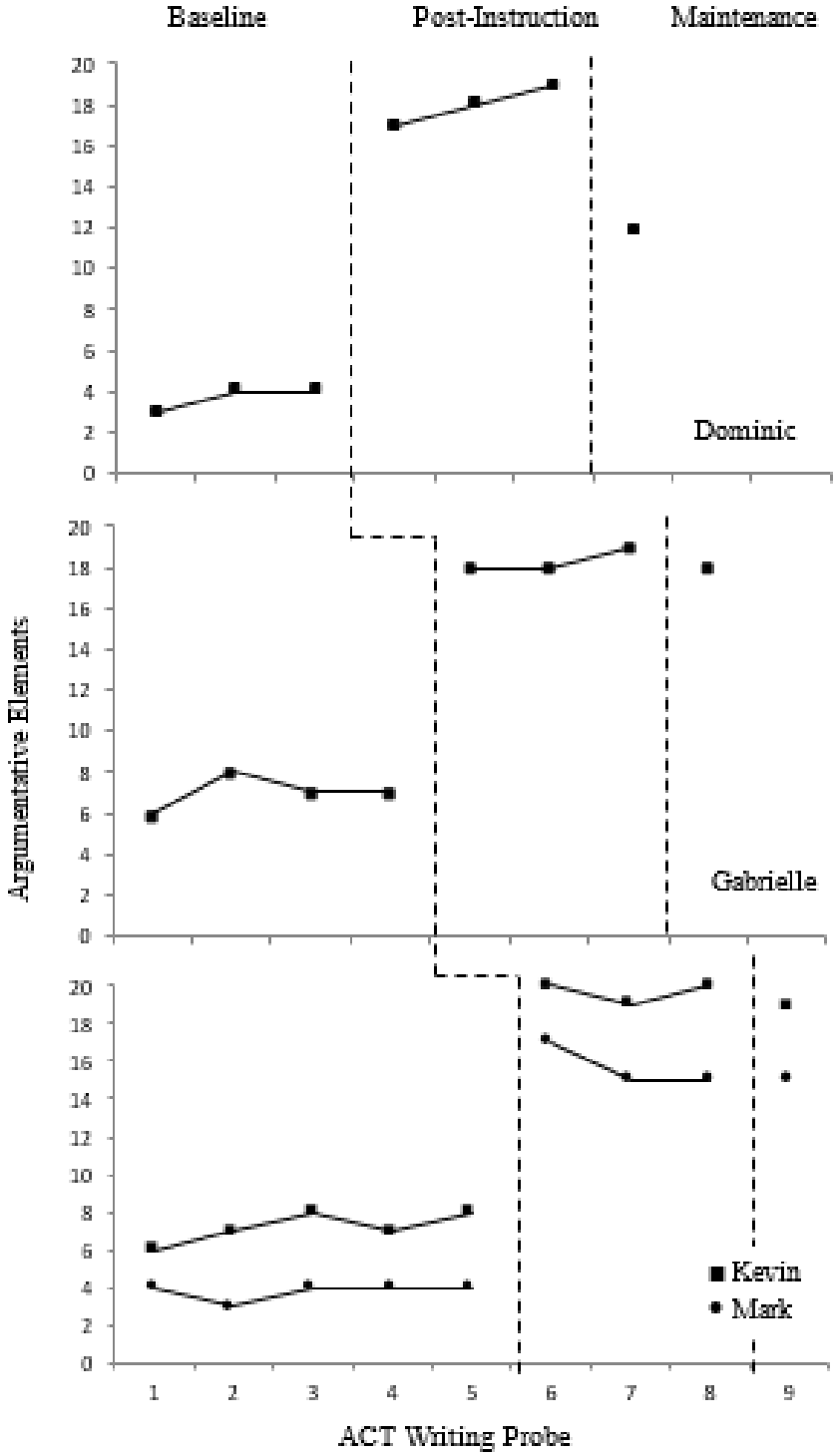


Figure 1. The effects of SRSD writing instruction for the ACT writing test on the number of argumentative elements included in an ACT essay across four high school students with writing difficulties.

APPENDIX B

INSTRUCTIONAL MATERIALS

Hook

Introduce Topic

Thesis

State perspective

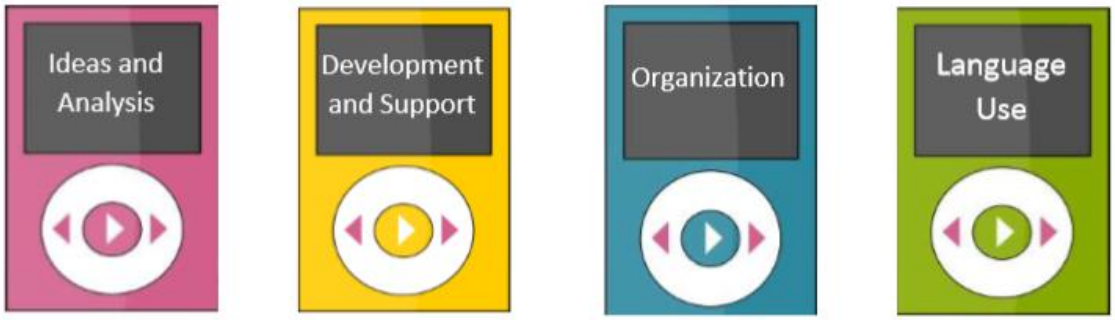
Outlook on perspective

Need Examples

Give your opinion

S³

- **S**upport your thesis
- **S**tate relationships (between your thesis and perspectives given)
- **S**ummary



ACT Writing and Math Preparation
Summer Enrichment

Who: Incoming sophomores, juniors, and seniors with learning disabilities, ADHD, and other high-incidence disabilities who plan to attend college.

What: ACT preparation course. Students will learn strategies to help them on the ACT essay composition and math test. This course is part of a research study through Arizona State University.

When: Mondays – Fridays, June 6 – 17 from 8:30am – 11:30am

Where: Badger High School

Cost: FREE

Registration: Registration is due **MAY 27th, 2016**. To register, please read and complete the registration form, parent consent form, and student assent form and bring to Badger High School Main Office. (Number of students: Minimum 6 /Maximum 20)

***In order to participate in this two week summer course, parent and student must complete the attached registration and permission forms.**

ASU Mary Lou Fulton Teachers College
ARIZONA STATE UNIVERSITY

Student Registration Form for
ACT Writing and Math Preparation Program

Please fill in the blanks or circle the appropriate choice.

Student First Name: _____ Student Last Name: _____

Birth Date: _____ Ethnicity: _____

Session: Mondays – Fridays, June 6 – 17 from 8:30 – 11:30am

Primary Disability: _____

Secondary Disability (if applicable):_____

Please Circle: In the fall of 2016, student will be entering: 9th / 10th / 11th / 12th grade

Student Cumulative GPA as of spring 2015: _____

Has your student taken the ACT test previously? Yes / No

If yes, what was their overall score? _____ Writing score? _____

Parent/Guardian Information:

Parent First Name: _____ Parent Last Name: _____

Parent Phone Number: _____ Parent Email: _____

ASU Mary Lou Fulton Teachers College
ARIZONA STATE UNIVERSITY

Parent Consent Letter

Dear Parent/ Guardian,

Your child is invited to receive instruction in writing and math as part of a research project conducted by Amber Ray and Dr. Steve Graham from the College of Education at Arizona State University. This research project has been approved by ASU and your child's school. The purpose of this study is to teach students with high-incidence disabilities strategies for writing an argumentative essay for the ACT college entrance exam writing prompts. Topics will include intelligent machines, school uniforms, advertising in schools, and so on. This type of argumentative essay writing is part of the ACT college entrance exam and is required by many colleges and universities. Students who are currently having trouble with this kind of writing are being invited to receive this extra instruction. Students will also receive math instruction and practice ACT math questions. Topics will include algebra, geometry, and trigonometry to improve ACT math scores. Participation in this study is voluntary and will not affect your child' grade.

Your child will participate in the program for 30 hours, learning in a small group with other students. Instruction would occur Mondays – Fridays from June 6 to June 17. Students will be randomly assigned to a writing or math classroom during week 1 and will receive the instruction in the alternate subject during week 2 (for example, week 1 writing; week 2 math). Students will be able to sign up for either the morning or afternoon instructional sessions each lasting 3 hours per day (morning session is 8:30am – 11:30am and afternoon session is 12:00pm – 3:00pm). Instruction will be provided by experienced teachers with master's degrees or higher in education.

To test the effectiveness of this instruction, students will take pretests before beginning instruction and posttests after instruction. Pretesting and post testing will each take about 1 hour and 20 minutes. Instruction and pre and post testing will take place in quiet rooms at your student's school. At the end of the project, I will interview the students in a group setting about what they thought about learning the writing strategies, this should take about 30 minutes. Additionally, lessons and the interview will be audiotaped to help ensure that students are being taught according to the lesson plans and to help with the improvement of teaching these lessons in the future. The audiotapes will be kept in a locked office at Arizona State University and will be destroyed one year after the completion of the study.

Information will also be collected about your child's disability, writing ability, academic goals, and other areas of academic achievement from your completion of the attached form, accessing your student's IEP and/or 504 Plan, and accessing your student's educational file at school. Each student will be assigned a unique identification number after the project director receives the registration form, signed parent consent form, and signed student assent form. A master list of students' linking identification numbers and names will be kept in a locked office at ASU. Only the research staff will have access to the master list of student names and identification numbers. Data will be stored in locked filing cabinet at ASU for five years from the date of the last data

collection point, at which time the master list of students linking identification numbers will be destroyed.

If you would like your student to be in this study to see how well this writing strategy and math instruction works, to receive instruction we need you to complete the attached registration form and have you and your student signed the attached pages granting permission to:

- Instruct your student in argumentative writing and math based on ACT practice tests,
- Score your student's pre- and posttests,
- Have your student participate in a short group interview (about 25 minutes) at the end of the project to see what he/she thought about getting this extra help, and
- Access your students IEP and/or 504 Plan and educational files.

There are no known risks to your student. This project should provide your son or daughter with some new writing and math skills. Information will also be shared with other educators (in talks and papers) about how successful the lessons were for students with different writing skills. The results of this study may be used in reports, presentations, or publications but your name/your child's name will not be used. The results also may be used to help shape future programs and school policies in other schools. In addition, your student will know that being in this study is a choice. If the student does not want to continue instruction or testing, he/she will be reminded that being in this program is a choice and will be asked if he/she would like to continue with the study. If your student wishes to withdraw, we will notify you and your student's school, and stop instruction.

All information collected about your student and your student's performance on pre- and posttests will be kept confidential and will be stored in locked files. Once the study is completed, your student's name will be removed from all materials. Your student's name will not be used in reporting or presenting the results of this study at any time. If you choose for your student not to take part, this will not affect your student's education in any way. If you agree to allow your student to take part, you are free to withdraw your student from the project at any time by calling or emailing Amber Ray. Thank you very much for thinking about having your student be in this project so that we can learn about the best ways to teach this writing ability to students. If you have any questions about this project, please contact Amber Ray at amber.chambers@asu.edu or 262-745-2762. You may also contact Steve Graham at steve.graham@asu.edu. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at 480-965-6788. **The second copy of this consent letter is for your records.**

Respectfully,

Amber Ray (Chambers), M.Ed.
Ph.D. Student, ASU

Steve Graham, Ed.D.
Professor, ASU

Parent Consent Form

Parent's First and Last Name (please print): _____

Student's First and Last Name (please print): _____

Please check the line below if you agree to allow your student to be in this project.

_____ Yes

Please sign below.

Parent Signature

Please sign below if you grant access to your students' IEP and/or 504 Plan and educational records.

Parent Signature

After reading, completing, and signing this letter, please turn it to the main office at Badger High School. Please keep the second copy of this form for your records.

Student Assent Letter

My name is Mrs. Ray and I am a graduate student under the direction of Dr. Steve Graham in the Teachers College at Arizona State University. I am conducting a research study to help students improve their writing and math on the college entrance test.

I am recruiting students to receive writing instruction where you would learn strategies good writers use when they write an argumentative essay based on an ACT college entrance test essay topic. You will also receive math instruction where you will learn strategies and practice math problems to prepare for the ACT math test. You will learn in a group with other students.

The instruction will occur either during the morning (from 8:30am – 11:30am) or afternoon (from 12:00 – 3:00pm) on Mondays through Fridays from June 6 – June 17. I will first have you take pretests which should take about 1 hour and 20 minutes to provide me with an idea of your current writing abilities in relation to the college entrance essay test. Then you will receive writing and math instruction, each for 1 week. After instruction has been completed, I will have you take posttests which should take about 1 hour and 20 minutes. At the end of this project, I will interview you about what you thought about learning the writing strategies I taught you, this should take about 30 minutes.

I will be audiotaping the lessons and interview to help ensure that you are being taught according to the lesson plans and to help improve the teaching of these lessons in the future. The audiotapes will be kept in a locked office at Arizona State University and will be destroyed one year after the completion of the study.

I will also be collecting some information from your school file about your disability, writing ability, academic goals, and other areas of academic achievement from the completion of the attached registration form, accessing your IEP and/or 504 Plan, and accessing your educational file at school. Each student will be assigned a unique identification number after I receive the registration form, signed parent consent form, and signed student assent form. A master list of students' linking identification numbers and names will be kept in a locked office at ASU. Only the research staff will have access to the master list of student names and identification numbers. Data will be stored in locked filing cabinet at ASU for five years from the date of the last data collection point, at which time the master list of students linking identification numbers will be destroyed.

Your participation in this study is voluntary and will not affect your grade. If you have any questions concerning the research study, please email me at amber.chambers@asu.edu and we can set up a time to talk.

Student Assent Form

Please **fill in the blanks**.

Student's First and Last Name: _____

Date: _____

Please **check the line** below if you agree to be in this project.

Yes _____

Please **sign** below.

Student's Signature: _____

After reading, completing, and signing this letter, please turn it to the main office at Badger High School. Please keep the second copy of this form for your records.

HIT SONGS^3: Lesson 1

___ 1. Discuss what students know about argumentative essays.

___ 2. Discuss that ACT writing test is an argumentative essay.

___ 3. Analyze ACT Writing Prompt

___ 4. Introduce HIT SONGS^3, go over each part.

___ 5. Practice HIT SONGS^3

___ 6. Find HIT SONGS^3 in an example essay.

___ 7. Make notes from example essay on graphic organizer.

___ 8. Count up all the parts. Should have 18 or more parts.

___ 9. Discuss transition words and find transition words in the essay.

___ 10. Discuss the scoring of the ACT.

___ 11. Lesson Wrap Up – Students will be "quizzed" on HIT SONGS^3 next time.

$\frac{\text{\# of steps completed}}{\text{\# of steps possible}}$ ratio: percentage:

HIT SONGS^3: Lesson 2

___ 1. Practice HIT SONGS^3, go over each part

___ 2. Analyze ACT Writing Prompt

___ 3. Find HIT SONGS^3 in an example essay.

___ 4. Make notes from example essay on graphic organizer.

___ 5. Count up all the parts. Should have 18 or more parts.

___ 6. Discuss transition words and find transition words in the essay.

___ 7. Analyze ACT Writing Prompt (poor essay)

___ 8. Find HIT SONGS^3 in an example essay. (poor essay)

___ 9. Make notes from example essay on graphic organizer. (poor essay)

___ 10.Make notes to improve the example essay. (poor essay)

___ 11.Discuss transition words and find transition words in the essay. (poor essay)

___ 12.Write new essay together. (poor essay)

___ 13.Count up all the parts. Should have 18 or more parts.

___ 14.Model analyzing the ACT writing prompt.

___ 15.Model making notes on graphic organizer for all parts of HIT SONGS^3.

___ 16.Model using self-statements.

___ 17.Model writing the essay using HIT SONGS^3.

___ 18.Count up all the parts. Should have 18 or more parts.

___ 19.Graph essay on student progress chart in writing folder.

___ 20.Lesson Wrap Up – Students will be "quizzed" on HIT SONGS^3 next time.

# of steps completed / # of steps possible ratio: percentage:

HIT SONGS^3: Lesson 3

___ 1. Practice HIT SONGS^3, go over each part

___ 2. Collaboratively analyze the ACT writing prompt.

___ 3. Collaboratively make notes on graphic organizer for all parts of HIT SONGS^3.

___ 4. Use self-statements.

___ 5. Collaboratively write the essay using HIT SONGS^3.

___ 6. Count up all the parts. Should have 18 or more parts.

___ 7. Graph essay on student progress chart in writing folder.

___ 8. Establish prior performance.

___ 9. Set a goal to continue to write better essays.

___ 10. Discuss ACT Test timing.

___ 11. Lesson Wrap Up – Students will be "quizzed" on HIT SONGS^3 next time.

$\frac{\text{\# of steps completed}}{\text{\# of steps possible}}$ ratio: percentage:

HIT SONGS^3: Lesson 4

___ 1. Practice HIT SONGS^3, go over each part.

___ 2. Collaboratively analyze the ACT writing prompt.

___ 3. Collaboratively make notes on graphic organizer for all parts of HIT SONGS^3.

___ 4. Use self-statements.

___ 5. Collaboratively write the essay using HIT SONGS^3.

___ 6. Count up all the parts. Should have 18 or more parts.

___ 7. Graph essay on student progress chart in writing folder.

___ 8. Students independently complete an ACT essay. Teacher provides support as needed.

___ 9. Students read a peer's essay and locate the parts of HIT SONGS^3.

___ 10. Students conference with a peer about their essay.

___ 11. Lesson Wrap Up – Students will be "quizzed" on HIT SONGS^3 next time.

# of steps completed ratio: percentage:
# of steps possible

HIT SONGS^3: Lesson 5

___ 1. Practice HIT SONGS^3, go over each part.

___ 2. Provide students with testing booklet and answer booklet.

___ 3. Read aloud the ACT testing instructions.

___ 4. Students independently take ACT practice essay test under timed conditions.

___ 5. Count up all the parts. Should have 18 or more parts.

___ 6. Graph essay on student progress chart in writing folder.

___ 7. Lesson Wrap Up – Inform students they will take post-instruction test next.

# of steps completed / # of steps possible ratio: percentage:

ACT Math: Lesson 1

___ 1. Overview of math test time, number of questions, pacing, and directions.

___ 2. Practice 4 Math Questions and what each question means.

___ 3. Discuss the 8 main sections of the math test and the point breakdown.

___ 4. Discuss the frequently tested rules of Number Properties.

___ 5. Teacher models answering a number properties question using the 4 Math Questions.

___ 6. Collaborative practice answering number properties questions using the 4 Math Questions.

___ 7. Independent practice answering number properties questions using the 4 Math Questions.

___ 8. Discuss the frequently tested rules of divisibility.

___ 9. Teacher models answering an operations question using the 4 Math Questions.

___ 10. Collaborative practice answering operations questions using the 4 Math Questions.

___ 11. Independent practice answering operation questions using the 4 Math Questions.

___ 12. Lesson Wrap Up

# of steps completed / # of steps possible ratio: percentage:

ACT Math: Lesson 2

___ 1. Review 4 Math Questions and what each question means.

___ 2. Discuss the frequently tested rules of powers and roots.

___ 3. Discuss the frequently tested rules of algebraic expressions.

___ 4. Discuss the frequently tested rules of factoring algebraic expressions.

___ 5. Discuss the frequently tested rules of solving equations.

___ 6. Teacher models answering a variable manipulation question using the 4 Math Questions.

___ 7. Collaborative practice answering variable manipulation questions using the 4 Math Questions.

___ 8. Independent practice answering variable manipulation questions using the 4 Math Questions.

___ 9. Discuss the frequently tested rules of fractions and decimals.

___ 10. Discuss the frequently tested rules of percents.

___ 11. Discuss the frequently tested rules of ratios, proportions, and rates.

___ 12. Discuss the frequently tested rules of averages.

___ 13. Discuss the frequently tested rules of possibilities and probability.

___ 14. Teacher models answering a proportions and probability question using the 4 Math Questions.

___ 15. Collaborative practice answering proportions and probability questions using the 4 Math Questions.

___ 16. Independent practice answering proportions and probability questions using the 4 Math Questions.

___ 17. Lesson Wrap Up

$\frac{\text{\# of steps completed}}{\text{\# of steps possible}}$ ratio: percentage:

ACT Math: Lesson 3

___ 1. Review 4 Math Questions and what each question means.

___ 2. Discuss the frequently tested rules of coordinate geometry.

___ 3. Teacher models answering a coordinate geometry question using the 4 Math Questions.

___ 4. Collaborative practice answering coordinate geometry questions using the 4 Math Questions.

___ 5. Independent practice answering coordinate geometry questions using the 4 Math Questions.

___ 6. Discuss the frequently tested rules of lines and angles.

___ 7. Discuss the frequently tested rules of triangles – general.

___ 8. Discuss the frequently tested rules of right triangles.

___ 9. Discuss the frequently tested rules of other polygons.

___ 10. Discuss the frequently tested rules of circles.

___ 11. Discuss the frequently tested rules of solids.

___ 12. Teacher models answering a plane geometry question using the 4 Math Questions.

___ 13. Collaborative practice answering plane geometry questions using the 4 Math Questions.

___ 14. Independent practice answering plane geometry questions using the 4 Math Questions.

___ 15. Lesson Wrap Up

# of steps completed / # of steps possible ratio: percentage:

ACT Math: Lesson 4

___ 1. Review 4 Math Questions and what each question means.

___ 2. Discuss the frequently tested rules of intermediate algebra.

___ 3. Teacher models answering a patterns, logic, and data question using the 4 Math Questions.

___ 4. Collaborative practice answering patterns, logic, and data questions using the 4 Math Questions.

___ 5. Independent practice answering patterns, logic, and data questions using the 4 Math Questions.

___ 6. Discuss the frequently tested rules of trigonometry.

___ 7. Teacher models answering a trigonometry question using the 4 Math Questions.

___ 8. Collaborative practice answering trigonometry questions using the 4 Math Questions.

___ 9. Independent practice answering trigonometry questions using the 4 Math Questions.

___ 10. Discuss strategies on what to do if students get stuck on a problem.

___ 11.Lesson Wrap Up

# of steps completed / # of steps possible ratio: percentage:

ACT Math: Lesson 5

___ 1. Review 4 Math Questions and what each question means.

___ 2. Students independently complete an ACT math practice test.

___ 3. Students self-grade their ACT math practice test.

___ 4. Teacher provides explanations and models how to solve each problem.

___ 5. Lesson Wrap Up

# of steps completed / # of steps possible ratio: percentage:

Lesson 1: HIT SONGS^3

SRSD Stages: Developing Background Knowledge, Discuss Strategy

Objectives: Discus argumentative writing. Analyze ACT writing prompt. Introduce the strategy HIT SONGS^3. Identification of HIT SONGS^3 parts in example essay. Discuss the scoring of ACT essays.

Materials:

- HIT SONGS^3 Diagram
- Example Prompt and Essay: Intelligent Machines
- HIT SONGS^3 Graphic Organizer
- Transition Words Chart
- ACT Writing Test Scoring Rubric
- Flash Cards
- Pencils
- Scratch Paper
- Student Folders
- Genre Knowledge Pretest
- ACT Writing Pretest
- Self-Efficacy Pretest
- Generalization (WIAT-III) Pretest

Pretesting:

- Genre Knowledge Pretest
- ACT Writing Pretest
- Self-Efficacy Pretest
- Generalization (WIAT-III) Pretest

Anticipatory Set:

- Inform students you are going to teach them strategies for writing argumentative essays, particularly to help them with the college entrance test essays (ACT/SAT).

New Knowledge:

- **Discuss Argumentative Essays**
    - Ask students what they know about argumentative/persuasive essays.
        - Discuss that these essays try to convince or persuade a reader to agree with the writer.
        - Example of good persuasion: advertisements
        - A powerful argumentative essay has a beginning that catches the reader's attention, provides a thesis statement about what you believe, provides reasons why you believe it, explains the reasons, addresses various perspectives, and summarizes the key ideas at the end.
    - Ask students if they have taken the writing portion of a college entrance test (ACT or SAT).

        - Discuss that on the ACT and SAT the writing test is an argumentative essay that involves analyzing various perspectives and presenting a perspective of your own.

- **Analyze ACT Writing Prompt – Intelligent Machines**
    - Read through the ACT prompt together (Intelligent Machines).
    - Identify the issue being presented.
    - Consider the three perspectives presented. Consider pros and cons of each.
    - Discuss what the prompt is asking the student to do.
    - Identify and underline key words within the prompt.
        - Student will want to incorporate key words from the prompt in their essay.
    - Think about who your reader will be.
    - Tell students we are going to learn a strategy for remembering the parts of a good argumentative essay. The strategy is called HIT SONGS^3. The strategy will help you improve your argumentative essay writing abilities in class and on college entrance tests.

10 MINUTE BREAK

- **Introduce HIT SONGS^3**
    - Hand out a HIT SONGS^3 diagram to each student.
    - Discuss that HIT SONGS^3 is a trick good writer's use for organizing their notes for argumentative essays.
    - Go over parts of HIT SONGS^3.
        - H = Hook: This is where you catch the reader's attention.
        - I = Introduce topic: Establish and employ insightful context for analysis of the issue and its perspectives.
        - T= Thesis: Generate an argument that critically engages with multiple perspectives on the given issue. Argument's thesis reflects nuance and precision in thought and purpose.
        - S = State perspective: Restate in your own words one of the perspectives given in the prompt.
        - O: Outlook on the perspective: Describe the strengths and weaknesses of the perspective. What new insights does this perspective provide or fail to provide?
        - N = Need to discuss with examples: Support your position with reasoning and examples taken from your reading, studies, experience, or observations.
        - G = Give your opinion: Do you agree or disagree with this perspective?
        - S^3 =

- Support your thesis:
    - Restate your thesis.
    - Provide support and reasoning. An integrated line of skillful reasoning and illustration effectively conveys the significance of the argument.
- State relationships: Discuss the relationships between your thesis and perspectives provided in the prompt.
- Summary: Summarize your key ideas and leave the reader thinking.

- Practice HIT SONGS^3.

- **Find HIT SONGS^3 in an essay and teacher models making notes. – Intelligent Machines**
    - Tell the students you are going to read and examine the argumentative essay together. Ask students to look for the parts of HIT SONGS^3 while you are reading. (Have the HIT SONGS^3 diagram where students can see it.)
    - Introduce HIT SONGS^3 graphic organizer. Explain that this is how writers plan before writing an essay.
    - Distribute copies of argumentative essay to each student. Ask students to silently read along while you read the paper out loud.
    - Have the students identify each part of HIT SONGS^3. As each part is identified, add notes in the graphic organizer. Explain that notes should be just a few words.
        - *Options for checking for understanding parts*
            - *Have students underline or circle parts as you find them.*
            - *Have students point parts out to a neighbor or partner*
            - *Have students respond orally*
            - *Closely monitor students who struggle with writing*
    - Count the parts of HIT SONGS^3 within the essay. There should be **18 or more parts.**
    - Discuss and identify transition words in the example essay.
        - Discuss why they are important and how they help the reader.
        - Refer students to transition words list in student folder.
    - Discuss sentence structure, conventions, word choice, style, and organization of the paper.

- **Scoring the ACT**
    - Discuss the ACT writing test scoring rubric.
    - Discuss the four areas of writing that students will be evaluated.
        - Ideas and Analysis
        - Development and Support

        - Organization
            - Organization: The response exhibits a skillful organizational strategy. The response is unified by a controlling idea or purpose, and a logical progression or ideas increases the effectiveness of the writer's argument. Transitions between and within paragraphs strengthen the relationships among ideas.
        - Language Use
            - Sentence Structure: Sentence structures are consistently varied and clear.
            - Conventions: Check to make sure grammar, usage, and mechanics are correct. Errors can impede understanding.
            - Word Choice: The use of language enhances the argument. Word choice is skillful and precise.
            - Style: Stylistic and register choices, including voice and tone, are strategic and effective.

- **Practice HIT SONGS^3 mnemonic**
    - *Write out HIT SONGS^3 on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

Wrap Up:

- Students will be quizzed on what HIT SONGS^3 stands for next session (no grade).
- Have students put materials from the lesson in their writing folders.
- Determine if some of your students, the struggling writers, need a little more help with this lesson, and plan for this as possible.

Lesson 2: HIT SONGS^3

SRSD Stages: Develop Background Knowledge, Discuss Strategy, Model Strategy; Memorize Strategy

Objectives: Review and practice HIT SONGS^3. Analyze ACT writing prompt. Identification of HIT SONGS^3 parts in example essay. Revise a poor example essay to meet all the criteria of a good argumentative essay. Model analyzing the ACT writing prompt and model the writing process using HIT SONGS^3. Graph essay.

Materials:

- HIT SONGS^3 Diagram
- Example Prompt and Essay: Bilingual Accreditation
- Example Prompt and Essay: School Uniforms – poor
- Writing Prompt: Competitive Academic Atmospheres
- HIT SONGS^3 Graphic Organizer
- Transition Words Chart
- Flash Cards
- Pencils
- Scratch Paper
- Student Folders

Anticipatory Set:

- Ask students the name of the strategy for argumentative writing.
- Ask students what each letter stands for in HIT SONGS^3 and why it is important.
- Discuss why students need to memorize HIT SONGS^3. Inform students they will be quizzed at the beginning of each session on HIT SONGS^3.
    - *Options for practice – have students:*
        - *Write out HIT SONGS^3 on scratch paper and state what each letter means.*
        - *Quiz each other in partners or small groups.*
        - *Respond chorally to the teacher.*
        - *Use flashcards to quiz each other.*

New Knowledge:

- **Review HIT SONGS^3**
    - Practice what each letter in HIT SONGS^3 stands for and why it is important.
        - H = Hook: This is where you catch the reader's attention.
        - I = Introduce topic: Establish and employ insightful context for analysis of the issue and its perspectives.
        - T= Thesis: Generate an argument that critically engages with multiple perspectives on the given issue. Argument's thesis reflects nuance and precision in thought and purpose.

        - S = State perspective: Restate in your own words one of the perspectives given in the prompt.
        - O: Outlook on the perspective: Describe the strengths and weaknesses of the perspective. What new insights does this perspective provide or fail to provide?
        - N = Need to discuss with examples: Support your position with reasoning and examples taken from your reading, studies, experience, or observations.
        - G = Give your opinion: Do you agree or disagree with this perspective?
        - S^3 =
            - Support your thesis:
                - Restate your thesis.
                - Provide support and reasoning. An integrated line of skillful reasoning and illustration effectively conveys the significance of the argument.
            - State relationships: Discuss the relationships between your thesis and perspectives provided in the prompt.
            - Summary: Summarize your key ideas and leave the reader thinking.

- **Analyze ACT Writing Prompt – Bilingual Accreditation**
    - Read through the ACT prompt together (Bilingual Accreditation).
    - Identify the issue being presented.
    - Consider the three perspectives presented. Consider pros and cons of each.
    - Discuss what the prompt is asking the student to do.
    - Identify and underline key words within the prompt.
        - Student will want to incorporate key words from the prompt in their essay.
    - Think about who your reader will be.

- **Find HIT SONGS^3 in another essay and teacher models making notes. – Bilingual Accreditation**
    - Tell the students you are going to read and examine another argumentative essay together. Ask students to look for the parts of HIT SONGS^3 while you are reading. (Have the HIT^3 SONGS diagram where students can see it.)
    - Distribute copies of argumentative essay to each student. Ask students to silently read along while you read the paper out loud.
    - Have the students identify each part of HIT SONGS^3. As each part is identified, add noes in the graphic organizer. Remind students that notes should be just a few words.

        - *Options for checking for understanding parts*
            - *Have students underline or circle parts as you find them.*
            - *Have students point parts out to a neighbor or partner*
            - *Have students respond orally*
    - Count the parts of HIT SONGS^3 within the essay. There should be **18 or more parts.**
    - Identify transition words in the essay.
    - Discuss sentence structure, conventions, word choice, style, and organization of the paper.
        - Talk about the tone of the essay. When students write their essay they should use academic language (they should not write like it is a conversation or text messages).
        - Discuss using a variety of vocabulary, but students shouldn't try to use words they have heard of but don't know the meaning.

- **Analyze ACT Writing Prompt – School Uniforms**
    - Read through the ACT prompt together (School Uniforms).
    - Identify the issue being presented.
    - Consider the three perspectives presented. Consider pros and cons of each.
    - Discuss what the prompt is asking the student to do.
    - Identify and underline key words within the prompt.
        - Student will want to incorporate key words from the prompt in their essay.
    - Think about who your reader will be.

- **Find HIT SONGS^3 in another essay, identify areas that need improvement, and teacher models making notes. – School Uniforms**
    - Tell the students you are going to read and examine another argumentative essay together. Ask students to look for the parts of HIT SONGS^3 while you are reading. (Have the HIT SONGS^3 diagram where students can see it.)
    - Distribute copies of argumentative essay to each student. Ask students to silently read along while you read the paper out loud.
    - Have the students identify each part of HIT SONGS^3. As each part is identified, add notes in the graphic organizer. Remind students that notes should be just a few words.
    - Count the parts of HIT SONGS^3 within the essay. There should be **18 or more parts.**
    - Identify transition words in the essay.
    - Discuss sentence structure, conventions, word choice, style, and organization of the paper.
        - Talk about using a variety of vocabulary throughout the essay.

- **Make notes to improve the essay. – School Uniforms**
    - Go through the graphic organizer and make notes to improve each aspect of HIT SONGS[3].
        - Discuss the variety of ways to catch reader's attention (question, fact, and anecdote).
            - Remember to incorporate words from the prompt.
            - Should capture the overall debate of the prompt.
        - Discuss introducing the topic.
            - Should provide a clear idea of the topic.
            - Should express both sides of the argument.
        - Discuss the ways to write a clear thesis statement.
            - Develop your own perspective on the topic.
            - Should establish and expand briefly on your position.
        - Discuss the perspectives. Discuss if they will convince the reader.
        - Discuss the outlooks on each perspective. Make sure the qualifications and complications enrich and bolster ideas and analysis.
            - Emphasize thinking about the reader.
            - Need to make sure that reasons and examples are not repetitive.
            - Should use descriptive examples to make your points.
            - Evidence should vary from personal life, literature, culture, etc.
        - Discuss the author's perspective paragraph. Does the author state the relationships between their thesis and the perspectives from the prompt?
        - Discuss the summary.
            - Does the writer restate the thesis in a new way?
            - Does the author discuss the relationships between thesis and perspectives provided in the prompt?
            - Does the author summarize the key ideas from the essay?
            - Does the writer leave the reader thinking?
                - The ending should provide an expansion that looks toward the future.
        - Discuss transition words. Find transition words in the essay and fix them if they don't make sense.
        - Discuss sentence structure, conventions, word choice, style, and organization.

- **Write a new essay together from the notes you made. – School Uniforms**

- Does it make sense?
- Are all the perspectives addressed?
- Will it convince your reader?
- Is it a better essay?
- Does the ending summarize all the key points?

- **Count the Parts**
  - Count the parts of HIT SONGS^3 within the essay. There should be **18 or more parts.**

10 MINUTE BREAK

- **Practice HIT SONGS^3 mnemonic**
  - *Write out HIT SONGS^3 on scratch paper.*
  - *Quiz each other in partners or small groups.*
  - *Respond chorally to the teacher*
  - *Use flashcards to quiz each other*

- **Model using self-statements to analyze ACT Writing Prompt – Competitive Academic Atmospheres**
  - Read through the ACT prompt together (Competitive Academic Atmospheres).
  - Identify the issue being presented.
  - Consider the three perspectives presented. Consider pros and cons of each.
  - Discuss what the prompt is asking the student to do.
  - Identify and underline key words within the prompt.
    - Student will want to incorporate key words from the prompt in their essay.
  - Think about who your reader will be.

- **Model using self-statements for writing an argumentative essay using HIT SONGS^3. - Competitive Academic Atmospheres**
  - Read the prompt aloud. Model things you might think when selecting an argument for the essay.
    - Ex: "Take my time. A good idea will come to me." "What do I believe about this topic?"
  - Pass out self-statement sheets to students.
    - Ask students what they think in their head when they have to pick an idea to write about – do the things you think in your head help you or get in your way? Have students record 1-2 things they can say to help them think of good ideas on their self-statement sheet. We want to use self-statements that help us! If students have

trouble, help them create their own statements or let them "borrow" one of yours until they can come up with their own.

- Show students a blank graphic organizer on the board or a chart. State, "I will use this page to make and organize my notes. You can help me." Tell students they will do this too next time they write an opinion essay. State, "This helps me plan my paper. I can write down ideas for each part. I can write ideas down in different parts of this page as I think of ideas."
- Briefly review the parts of HIT SONGS^3 in the graphic organizer. Review your writing goals: To write a good argumentative essay with at least 18 parts.

- **Model using problem definition, self-evaluation, planning with HIT SONGS^3, coping, and self-reinforcement statements as your work on making notes. - Competitive Academic Atmospheres**
  - Problem definition: What do I have to do? I need to….
  - Planning with HIT SONGS^3: Have I completed my notes? Do I have 18 parts?
  - Self-evaluation: How am I doing? Am I using each step? Can I think of more evidence?
  - Coping: I can do this if I try. Don't worry, worrying doesn't help. Take my time.
  - Self-reinforcement statements: I really like this idea. I can do this.

- **Model writing your argumentative essay using HIT SONGS^3. - Competitive Academic Atmospheres**
  - Keep the HIT SONGS^3 diagram out or on the board.
  - State, "Now I can write my argumentative essay and add more good ideas."
  - Model the entire process of writing an argumentative essay using the practice prompt.
  - Use self-statements throughout the writing process.
    - "How shall I start? I need to catch the reader's attention with a hook."
    - "What do I need to do? I need to write a clear thesis."
    - Model using your notes to write paragraphs. Continue writing until you are finished.
    - At least two times ask, "Does my essay make sense? Will the reader be persuaded by my evidence?"
    - Use coping statements.
    - Add or change at least one piece of evidence as you work.
    - Write the summary.
    - Model rereading the essay and counting the parts.

        - Model rereading the essay looking at transition words, sentence structure, conventions, word choice, style, and organization.
        - When the essay is finished, use a self-reinforcement statement. "Good work. I'm done!"

- **Introduce Graphing Sheet and Graph the Essay**
    - Ask students if the essay we just wrote had all the parts. Count up all the parts.
    - A good persuasive essay has at **least 18 parts.**
        - Hook (1 point)
        - Introduce Topic (1 point)
        - Thesis (1 point)
        - State the perspectives from the prompt (3 points) – 1 per perspective
        - Outlook on each perspective (3 points) – 1 per analysis of a perspective
        - Need to discuss with examples (3 points) – 1 per perspective
        - Give your opinion (3 points) – 1 per perspective
        - Summary[3]
            - Support your thesis (1 point for restating thesis, 1 point for providing rational for your thesis)
            - State relationships between your thesis and perspectives given (1 point)
            - Summary (2 points – 1 point for summarizing key ideas, 1 point for leaving the reader thinking)
    - Show students how to graph based on the number of parts written.

- **Practice HIT SONGS[3] mnemonic**
    - *Write out HIT SONGS[3] on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

Wrap Up:

- Quizzed on what HIT SONGS[3] stands for next session (no grade).
- Have students put materials from the lesson in their writing folders.
- Determine if some of your students, the struggling writers, need a little more help with this lesson, and plan for this as possible. Identify students who understand all of these concepts well and begin to think about adding goals for their writing to push them further, such as working on effective vocabulary, sentence combining to create more complex sentences, writing more to support their reasons, and so on. Use your curriculum to help establish additional goals for your more competent writers.

Lesson 3: HIT SONGS^3

SRSD Stages: Memorize Strategy; Support Strategy, Examine Prior Performance, and Establish Writing Goals

Objectives: Review and practice HIT SONGS^3. Develop self-statements. Collaboratively analyze the ACT writing prompt and collaboratively work through the writing process using HIT SONGS^3. Develop self-statements. Graph essay. Discuss pretest essay. Compare pretest to current writing. Establish goals for writing better essays. Discuss time testing.

Materials:

- HIT SONGS^3 Diagram
- Writing Prompt: Summer School
- HIT SONGS^3 Graphic Organizer
- Transition Words Chart
- Flash Cards
- Pencils
- Self-Statement Sheet
- Graphing Sheet
- Scratch Paper
- Student Folders
- Scored Pretests
- Collaborative essay

Anticipatory Set:

- **Test HIT SONGS^3**
    - Ask students what each letter in HIT SONGS^3 stands for and why it is important.
    - Remind students they will be quizzed at the beginning of each session on HIT SONGS^3. Let students know that soon they won't be able to use the graphic organizer. **Emphasize memorization of HIT SONGS^3.**
    - *Options for practice – have students:*
        - *Write out HIT SONGS^3 on scratch paper and state what each letter means.*
        - *Quiz each other in partners or small groups.*
        - *Respond chorally to the teacher.*
        - *Use flashcards to quiz each other.*

New Knowledge:

- **Student Self-Statements**
    - Pass out student folders. Ask students to add to their self-statements lists. Remind students that their self-statements should be in their own words. Make sure the students adds these to their list:
        - 1-2 statements to say to **get started.** *For example,* **"What is it I have to do? I have to write an argumentative essay using HIT SONGS^3."** - *In the students' own words.*

        - 1-2 statements to say **while you work**: self-evaluation, coping, self-reinforcement, and any others the students like. *In the students' own words.*
        - 1-2 statements to say **when you're finished** such as "This is great! My readers will be persuaded." *In the students' own words.*
    - Tell students that we don't have to state these things out loud. Once we learn them we can think these things in our heads, whisper it to ourselves, or read it on our lists.

- **Collaboratively analyze ACT Writing Prompt – Summer School**
    - Read through the ACT prompt together (Summer School).
    - Identify the issue being presented.
    - Consider the three perspectives presented. Consider pros and cons of each.
    - Discuss what the prompt is asking the student to do.
    - Identify and underline key words within the prompt.
        - Student will want to incorporate key words from the prompt in their essay.
    - Think about who your reader will be.

- **Group Collaborative Writing, Teacher Leads – Summer School**
    - Pass out student folders. Remind students they can use the HIT SONGS^3 diagram, transitions sheet, and self-statements sheet.
    - Read the prompt aloud and decide as a group what you believe.
    - Let students lead the writing process as much as possible. Help students as needed. This is a collaborative process, together you will write a group essay.
    - What do we do next? Use HIT SONGS^3 and organize notes in the graphic organizer.
    - Review your writing goals: To write a good argumentative essay with at least 18 parts.
    - After students generated notes for all of the essay parts, look back at the notes and see if you can add more. Make sure there are notes for good transition words.
    - With the students, examine the parts of HIT SONGS^3 in the notes. Are they all there?
    - What do we do next? Write the essay. Revise as appropriate.

- **Self-Statements**
    - Use self-statements throughout the process.
    - Encourage students to add new self-statements to their sheet.

10 MINUTE BREAK

- **Practice HIT SONGS^3 mnemonic**
    - *Write out HIT SONGS^3 on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

- **Group Collaborative Writing, Teacher Leads – Summer School (cont.)**
    - Reread the essay and make any corrections needed.
    - Make changes to at least 2 parts of the essay.

- **Graph the Essay**
    - Ask students if the essay we just wrote had all the parts. Count up all the parts.
    - A good persuasive essay has at **least 18 parts.**
    - Graph the essay.

- **Group collaborative revising**
    - Reread the essay and evaluate sentence structure, conventions, word choice, style, and organization.
    - Brainstorm alternate hook, alternate way to phrase the thesis statement, additional examples to incorporate, and alternate way to leave the reader thinking.

- **Establish Prior Performance**
    - Say, "Do you remember the argumentative essay you wrote before learning HIT SONGS^3?" Pass out each student's pretest.
    - Tell students you don't expect them to have all the parts in this essay, they hadn't learned the strategy yet. Have students read their paper and see which parts they have. Have students count up the number of parts they have. ***You can have students graph this number on their progress monitoring graph, or skip this if you prefer.***
    - Briefly discuss with students which parts they have and which they don't. Emphasize that they wrote this essay before learning the strategy for writing. Now that they know the strategy their writing has already greatly improved. Compare the pretest paper to the collaborative paper and talk about what the students have learned about good writing. If any students are exhibiting frustration or are upset about their pretest essay, encourage them to use a self-statement.
    - Set a goal to continue writing better papers. ***Each opinion essay they write should have at least 18 parts.***
- **ACT Test Timing**

- Discuss with the student how they can use HIT SONGS^3 in class and on college entrance essay tests. Discuss how the college entrance tests are timed and how they might manage their writing time.
- ACT: 40 minute time limit
    - 2 minutes to read prompt and decide thesis
    - 8 minutes planning
    - 25 minutes writing
    - 5 minutes rereading and revising

Wrap Up:

- Quizzed on what HIT SONGS^3 stands for next session (no grade).
- Have students put materials from the lesson in their writing folders.
- Continue to work with students who need extra support and students who may need additional, more challenging goals.

Lesson 4: HIT SONGS^3

SRSD Stages: Support Strategy; Independent Performance

Objectives: Review and practice HIT SONGS^3. Collaborative analyzing of prompts and writing with less teacher support until students are able to write independently. Graph essays.

Materials:

- HIT SONGS^3 Diagram
- Writing Prompt: Access to Technology
- Writing Prompt: Wilderness Areas
- Transition Words Chart
- Flash Cards
- Pencils
- Self-Statement Sheet
- Graphing Sheet
- Scratch Paper
- Student Folders

***Differentiate instruction and support based on individual student needs.**

Anticipatory Set:

- **Test HIT SONGS^3**
    - Ask students what each letter in HIT SONGS^3 stands for and why it is important.
    - **HIT SONGS^3 needs to be memorized at this point within the lessons.**
    - *Options for practice – have students:*
        - *Write out HIT SONGS^3 on scratch paper and state what each letter means.*
        - *Quiz each other in partners or small groups.*
        - *Respond chorally to the teacher.*
        - *Use flashcards to quiz each other.*

New Knowledge:

- **Collaboratively analyze ACT writing prompt, slowly reduce teacher support. – Access to Technology**
    - ***Collaboration can occur as whole class, small groups, or in partners based on students' needs.**
    - ***This time can also be used for make-up instruction for students who had absences. The teacher will work with the students who had absences and other students will work in small groups or pairs to write an essay.**
    - Read through the ACT prompt together.
    - Identify the issue being presented.
    - Consider the three perspectives presented. Consider pros and cons of each.
    - Discuss what the prompt is asking the student to do.

- Identify and underline key words within the prompt.
    - Student will want to incorporate key words from the prompt in their essay.
- Think about who your reader will be.

- **Collaborative writing, slowly reduce teacher support – Access to Technology**
    - Pass out student folders. The goal is to wean off the use of the HIT SONGS^3 diagram, transitions sheet, and self-statements sheet.
    - Read the prompt aloud and decide as a group what you believe.
    - Let students lead the writing process as much as possible. Help students as needed. This is a collaborative process, together you will write a group essay.
    - What do we do next? Use HIT SONGS^3 and organize notes. Have students create their own graphic organizer on scratch paper.
    - Review your writing goals: To write a good argumentative essay with at least 18 parts.
    - After students generated notes for all of the essay parts, look back at the notes and see if you can add more. Make sure there are notes for good transition words.
    - With the students, examine the parts of HIT SONGS^3 in the notes. Are they all there?
    - What do we do next? Write the essay. Revise as appropriate.
    - Reread the essay looking at transition words, sentence structure, conventions, word choice, style, and organization.

- **Graph the Essay**
    - Ask students if the essay we just wrote had all the parts. Count up all the parts.
    - A good persuasive essay has at **least 18 parts.**
    - Graph the essay.

- **ACT Timed Test**
    - Discuss how the college entrance tests are timed and how they might manage their writing time.
    - ACT: 40 minute time limit
        - 2 minutes to read prompt and decide thesis
        - 8 minutes planning
        - 25 minutes writing
        - 5 minutes rereading and revising

10 MINUTE BREAK

- **Practice HIT SONGS^3 mnemonic**
    - *Write out HIT SONGS^3 on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

- **Students independently analyze ACT writing prompt, slowly reduce teacher support. – Wilderness Areas**
    - Read through the ACT prompt.
    - Identify the issue being presented.
    - Consider the three perspectives presented. Consider pros and cons of each.
    - Identify and underline key words within the prompt.
        - Student will want to incorporate key words from the prompt in their essay.
    - Think about who your reader will be.

- **Independent writing, slowly reduce teacher support – Wilderness Areas**
    - Pass out student folders. The goal is to wean off the use of the HIT SONGS^3 diagram, transitions sheet, and self-statements sheet.
    - Help students as needed.
    - Students use HIT SONGS^3 and organize notes. Have students create their own graphic organizer on scratch paper.
    - Make sure there are notes for good transition words.
    - Students write the essay. Revise as appropriate.
    - Students reread the essay looking at transition words, sentence structure, conventions, word choice, style, and organization.

- **Graph the Essay**
    - Ask students if the essay we just wrote had all the parts. Count up all the parts.
    - A good persuasive essay has at **least 18 parts.**
    - Graph the essay.

- **HIT SONGS^3 in Peer's Essay**
    - Have students find HIT SONGS^3 in a peer's essay
    - Make notes on graphic organizer
    - Count the parts
    - Find Transition Words

- **Conference with Peer**
    - Tell a peer what parts of HIT SONGS^3 you found in their essay
    - Tell a peer what parts of HIT SONGS^3 is missing in their essay

- **Practice HIT SONGS^3 mnemonic**
    - *Write out HIT SONGS^3 on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

Wrap Up:

- Quizzed on what HIT SONGS^3 stands for next session (no grade).
- Have students put materials from the lesson in their writing folders.
- Continue to work with students who need extra support and students who may need additional, more challenging goals.

Lesson 5: HIT SONGS^3

SRSD Stage: Independent Performance

Objectives: Independent writing of ACT essay in practice timed testing situation.

Materials:

- Practice ACT Essay Test: Civic Leaders
- Pencils
- Student Folders
- Genre Knowledge Posttest
- ACT Writing Posttest
- Self-Efficacy Posttest
- Generalization (WIAT-III) Posttest

Anticipatory Set:

- **Test HIT SONGS^3**
    - Ask students what each letter in HIT SONGS^3 stands for and why it is important.
    - **HIT SONGS^3 needs to be memorized.**
    - *Options for practice – have students:*
        - *Write out HIT SONGS^3 on scratch paper and state what each letter means.*
        - *Quiz each other in partners or small groups.*
        - *Respond chorally to the teacher.*
        - *Use flashcards to quiz each other.*

Practice Timed Test:

- Provide students with testing booklet and answer booklet. – Civic Leaders
- Read aloud the ACT testing instructions.
- Students independently take ACT practice essay test under timed conditions.
    - Once the test has begun, the teacher may not answer student questions (per the ACT testing guidelines).

Graph the Essay:

- Ask students if the essay we just wrote had all the parts. Count up all the parts.
- A good persuasive essay has at **least 18 parts.**
- Graph the essay.

10 MINUTE BREAK

Posttesting:

- Genre Knowledge Posttest (10 minutes)
- ACT Writing Posttest (40 minutes)
- Self-Efficacy Posttest (10 minutes)
- Generalization (WIAT-III) Posttest (10 minutes)

Social Validity Interview (25 minutes)

Wrap Up: Thank you students!

Lesson 1: ACT Math

Objectives: Discuss ACT math test and eight topics covered in ACT math test. Introduce 4 Math Questions. Practice number properties and operations math problems.

Materials:

- 4 Math Questions Diagram
- Pencils
- Scratch Paper
- Student Folders
- Genre Knowledge Pretest
- ACT Writing Pretest
- Self-Efficacy Pretest
- Generalization (WIAT-III) Pretest

Pretesting:

- Genre Knowledge Pretest
- ACT Writing Pretest
- Self-Efficacy Pretest
- Generalization (WIAT-III) Pretest

Anticipatory Set:

- Inform students you are going to teach them strategies for the math portion of the ACT test.

New Knowledge:

- **Discuss the ACT Math Test**
    - 60 questions
    - 60 minutes
    - Pacing: Spend about 1 minute per question.
    - Directions:
        - "Solve each problem, choose the correct answer, and then fill in the corresponding oval on your answer document. Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test. You are permitted to use a calculator on this test. You may use your calculator for any problems you choose, but some of the problems may best be done without using a calculator."
        - "Note: Unless otherwise stated, all of the following should be assumed. 1. Illustrative figures are NOT necessarily drawn to scale. 2. Geometric figures lie in a plane. 3. The word line indicates a straight line. 4 The word average indicates arithmetic mean."

- **8 main topics covered on ACT Math Test**
    - Plane Geometry – 7 points
    - Variable Manipulation – 7 points
    - Proportions and Probability – 6 points
    - Coordinate Geometry – 6 points
    - Operations – 3 points
    - Patterns, Logic, and Data – 3 points
    - Number properties – 2 points
    - Trigonometry – 2 points
- During this ACT math preparation course, we will be working through problems in order of complexity, starting with the easier problems and working through more difficult problems.

- **4 Math Questions**
    - Step 1: What is the question?
    - Step 2: What information am I given?
    - Step 3: What can I do with the information?
    - Step 4: Am I finished?

10 MINUTE BREAK

- **Practice 4 Math Questions**
    - Have students practice the 4 math questions with the goal of memorizing the questions.
        - *Write out 4 math questions on scratch paper.*
        - *Quiz each other in partners or small groups.*
        - *Respond chorally to the teacher*
        - *Use flashcards to quiz each other*

- **Frequently Tested Rules: Number Properties**
    - Review the most frequently tested rules for number properties:
        - Undefined
        - Real/imaginary
        - Integer/noninteger
        - Rational/irrational
        - Adding subtracting signed numbers
        - Multiplying/dividing signed numbers
        - PEMDAS
        - Absolute value

- **Number Properties: Teacher Modeling**

    - Teacher models using the 4 math questions to solve a number properties problem.

- **Number Properties: Collaborative Practice**
    - Teacher and students work collaboratively to use the 4 math questions to solve a number properties problem.

- **Number Properties: Independent Practice**
    - Students independently use the 4 math questions to solve a number properties problem.
    - Teacher discusses correct answer and how to solve the problem.

- **Frequently Tested Rules: Divisibility**
    - Review the most frequently tested rules for number properties:
        - Factor/multiple
        - Prime factorization
        - Relative primes
        - Common multiple
        - Least common multiple
        - Greatest common factor
        - Even/odd
        - Multiples of 2 and 4
        - Multiples of 3 and 9
        - Multiples of 5 and 10
        - Remainders

- **Operations: Teacher Modeling**
    - Teacher models using the 4 math questions to solve an operations problem.

- **Operations: Collaborative Practice**
    - Teacher and students work collaboratively to use the 4 math questions to solve an operations problem.

- **Operations: Independent Practice**
    - Students independently use the 4 math questions to solve operations problems.
    - Teacher discusses correct answer and how to solve the problems.

- **Practice 4 Math Questions**
    - *Write out 4 math questions on scratch paper.*
    - *Quiz each other in partners or small groups.*

- *Respond chorally to the teacher*
- *Use flashcards to quiz each other*

Wrap Up:

- Students will be "quizzed" on the 4 math questions next session (no grade).
- Have students put materials from the lesson in their folders.

Lesson 2: ACT Math

Objectives: Review 4 Math Questions. Practice variable manipulation and proportions and probability math problems.

Materials:

- 4 Math Questions Diagram
- Scratch Paper
- Pencils
- Student Folders

Anticipatory Set:

- Review the 4 math questions with the goal of memorizing the questions.
  - *Write out 4 math questions on scratch paper.*
  - *Quiz each other in partners or small groups.*
  - *Respond chorally to the teacher*
  - *Use flashcards to quiz each other*

New Knowledge:

- **Frequently Tested Rules: Powers and Roots**
  - Review the most frequently tested rules for powers and roots:
    - Multiplying and Dividing Powers
    - Raising Powers to Powers
    - Simplifying Square Roots
    - Adding and Subtracting Roots
    - Multiplying and Dividing Roots

- **Frequently Tested Rules: Algebraic Expressions**
  - Review the most frequently tested rules for algebraic expressions:
    - Evaluating an Expression
    - Adding and Subtracting Monomials
    - Adding and Subtracting Polynomials
    - Multiplying Monomials
    - Multiplying Binomials – FOIL
    - Multiplying Other Polynomials

- **Frequently Tested Rules: Factoring Algebraic Expressions**
  - Review the most frequently tested rules for factoring algebraic expressions:
    - Factoring Out a Common Divisor
    - Factoring the Difference of Squares
    - Factoring the Square of a Binomial
    - Factoring Other Polynomials – FOIL in Reverse

        - Simplifying an Algebraic Fraction

- **Frequently Tested Rules: Solving Equations**
    - Review the most frequently tested rules for solving equations:
        - Solving a Linear Equation
        - Solving "In Terms Of"
        - Translating from English into Algebra

- **Variable Manipulation: Teacher Modeling**
    - Teacher models using the 4 math questions to solve a number properties problem.

- **Variable Manipulation: Collaborative Practice**
    - Teacher and students work collaboratively to use the 4 math questions to solve a number properties problem.

- **Variable Manipulation: Independent Practice**
    - Students independently use the 4 math questions to solve a number properties problem.
    - Teacher discusses correct answer and how to solve the problem.

10 MINUTE BREAK

- **Frequently Tested Rules: Fractions and Decimals**
    - Review the most frequently tested rules for fractions and decimals:
        - Reducing Fractions
        - Adding/Subtracting Fractions
        - Multiplying Fractions
        - Dividing Fractions
        - Converting a Mixed Number to an Improper Fraction
        - Converting an Improper Fraction to a Mixed Number
        - Reciprocal
        - Comparing Fractions
        - Converting Fractions to Decimals
        - Repeating Decimal
        - Identifying the Parts and the Whole

- **Frequently Tested Rules: Percents**
    - Review the most frequently tested rules for percents:
        - Percent Formula
        - Percent Increase and Decrease
        - Finding the Original whole

        - Combined Percent Increase and Decrease

- **Frequently Tested Rules: Ratios, Proportions, and Rates**
    - Review the most frequently tested rules for ratios, proportions, and rates:
        - Setting up a Ratio
        - Part-to-Part and Part-to-Whole Ratios
        - Solving a Proportion
        - Rate
        - Average Rate

- **Frequently Tested Rules: Averages**
    - Review the most frequently tested rules for averages:
        - Average Formula
        - Average of Evenly Spaced Numbers
        - Using the Average to Find the Sum
        - Finding the Missing Number

- **Frequently Tested Rules: Possibilities and Probability**
    - Review the most frequently tested rules for possibilities and probability:
        - Counting the Possibilities
        - Probability

- **Proportions and Probability: Teacher Modeling**
    - Teacher models using the 4 math questions to solve an operations problem.

- **Proportions and Probability: Collaborative Practice**
    - Teacher and students work collaboratively to use the 4 math questions to solve an operations problem.

- **Proportions and Probability: Independent Practice**
    - Students independently use the 4 math questions to solve operations problems.
    - Teacher discusses correct answer and how to solve the problems.

- **Practice 4 Math Questions**
    - *Write out 4 math questions on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

Wrap Up:

- Students will be “quizzed” on the 4 math questions next session (no grade).
- Have students put materials from the lesson in their folders.

Lesson 3: ACT Math

Objectives: Review 4 Math Questions. Practice coordinate geometry and plane geometry math problems.

Materials:

- 4 Math Questions Diagram
- Scratch Paper
- Pencils
- Student Folders

Anticipatory Set:

- Review the 4 math questions with the goal of memorizing the questions.
    - *Write out 4 math questions on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

New Knowledge:

- **Frequently Tested Rules: Coordinate Geometry**
    - Review the most frequently tested rules for coordinate geometry:
        - Finding the Distance Between Two Points
        - Using Two Points to Find the Slope
        - Using an Equation to Find the Slope
        - Using and Equation to Find the Intercept
        - Equation for a Circle
        - Equation for a Parabola
        - Equation for an Ellipse

- **Coordinate Geometry: Teacher Modeling**
    - Teacher models using the 4 math questions to solve a number properties problem.

- **Coordinate Geometry: Collaborative Practice**
    - Teacher and students work collaboratively to use the 4 math questions to solve a number properties problem.

- **Coordinate Geometry: Independent Practice**
    - Students independently use the 4 math questions to solve a number properties problem.
    - Teacher discusses correct answer and how to solve the problem.

- **Frequently Tested Rules: Lines and Angles**
    - Review the most frequently tested rules for lines and angles:

        - Intersecting Lines
        - Parallel Lines and Transversals

- **Frequently Tested Rules: Triangles - General**
    - Review the most frequently tested rules for triangles-general:
        - Interior Angles of a Triangle
        - Exterior Angles of a Triangle
        - Similar Triangles
        - Area of a Triangle

- **Frequently Tested Rules: Right Triangles**
    - Review the most frequently tested rules for right triangles:
        - Pythagorean Theorem
        - Special Right Triangles

10 MINUTE BREAK

- **Frequently Tested Rules: Other Polygons**
    - Review the most frequently tested rules for other polygons:
        - Special Quadrilaterals
        - Areas of Special Quadrilaterals
        - Interior Angles of a Polygon

- **Frequently Tested Rules: Circles**
    - Review the most frequently tested rules for circles:
        - Circumference of a Circle
        - Length of an Arc
        - Area of a Circle
        - Area of a Sector

- **Frequently Tested Rules: Solids**
    - Review the most frequently tested rules for solids:
        - Surface Area of a Rectangular Solid
        - Volume of a Rectangular Solid
        - Volume of Other Solids

- **Plane Geometry: Teacher Modeling**
    - Teacher models using the 4 math questions to solve an operations problem.

- **Plane Geometry: Collaborative Practice**

    - Teacher and students work collaboratively to use the 4 math questions to solve an operations problem.

- **Plane Geometry: Independent Practice**
    - Students independently use the 4 math questions to solve operations problems.
    - Teacher discusses correct answer and how to solve the problems.

- **Practice 4 Math Questions**
    - *Write out 4 math questions on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

Wrap Up:

- Students will be "quizzed" on the 4 math questions next session (no grade).
- Have students put materials from the lesson in their folders.

Lesson 4: ACT Math

Objectives: Review 4 Math Questions. Practice patterns, logic, and data and trigonometry math problems.

Materials:

- 4 Math Questions Diagram
- Scratch Paper
- Pencils
- Student Folders

Anticipatory Set:

- Review the 4 math questions with the goal of memorizing the questions.
    - *Write out 4 math questions on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

New Knowledge:

- **Frequently Tested Rules: Intermediate Algebra**
    - Review the most frequently tested rules for intermediate algebra:
        - Solving a Quadratic Equation
        - Solving a System of Equations
        - Solving an Equation that Includes Absolute Value Signs
        - Solving an Inequality
        - Graphing Inequalities

- **Patterns, Logic, and Data: Teacher Modeling**
    - Teacher models using the 4 math questions to solve a number properties problem.

- **Patterns, Logic, and Data: Collaborative Practice**
    - Teacher and students work collaboratively to use the 4 math questions to solve a number properties problem.

- **Patterns, Logic, and Data: Independent Practice**
    - Students independently use the 4 math questions to solve a number properties problem.
    - Teacher discusses correct answer and how to solve the problem.

10 MINUTE BREAK

- **Frequently Tested Rules: Trigonometry**
    - Review the most frequently tested rules for trigonometry:

        - Sine, Cosine, and Tangent of Acute Angles
        - Cotangent, Secant, and Cosecant of Acute Angles
        - Trigonometric Functions of Other Angles
        - Simplifying Trigonometric Expressions
        - Graphing Trigonometric Functions

- **Trigonometry: Teacher Modeling**
    - Teacher models using the 4 math questions to solve an operations problem.

- **Trigonometry: Collaborative Practice**
    - Teacher and students work collaboratively to use the 4 math questions to solve an operations problem.

- **Trigonometry: Independent Practice**
    - Students independently use the 4 math questions to solve operations problems.
    - Teacher discusses correct answer and how to solve the problems.

- **Practice 4 Math Questions**
    - *Write out 4 math questions on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

Wrap Up:

- Students will be "quizzed" on the 4 math questions next session (no grade).
- Have students put materials from the lesson in their folders.

Lesson 5: ACT Math

Objectives: Review 4 Math Questions. Practice patterns, logic, and data and trigonometry math problems.

Materials:

- 4 Math Questions Diagram
- Pencils
- Scratch Paper
- Student Folders
- ACT Practice Math Test
- Genre Knowledge Posttest
- ACT Writing Posttest
- Self-Efficacy Posttest
- Generalization (WIAT-III) Posttest

Anticipatory Set:

- Review the 4 math questions with the goal of memorizing the questions.
    - *Write out 4 math questions on scratch paper.*
    - *Quiz each other in partners or small groups.*
    - *Respond chorally to the teacher*
    - *Use flashcards to quiz each other*

Practice Timed Test:

- Students complete an ACT math practice test independently.

- Students self-grade their ACT math practice test.
    - Teacher provides answer key.

- Teacher provides explanations and models how to solve each problem.

10 MINUTE BREAK

Posttesting:

- Genre Knowledge Posttest (10 minutes)
- ACT Writing Posttest (40 minutes)
- Self-Efficacy Posttest (10 minutes)
- Generalization (WIAT-III) Posttest (10 minutes)

Social Validity Interview (25 minutes)

Wrap Up:

- Thank you students!

APPENDIX C

ASSESSMENT AND SCORING MATERIALS

Scoring ACT Essays

Student's Scores

Rater: _____ **Student:** _____

Prompt: _____

Planning Score	
Number of Words	
ACT Quality - Overall Score	
ACT Sub Score – Ideas and Analysis	
ACT Sub Score – Development and Support	
ACT Sub Score – Organization	
ACT Sub Score – Language Use	
Argumentative Elements Score	
Number of Transitions	

Administration of ACT Writing Essay Test

Date: _____ Test Administrator: _____

1. Have students sign and print their first and last name and write their birth date at the top of each testing booklet.

2. Set your stopwatch to 40 minutes OR use your watch to write down the start time.

3. Say: **You will have 40 minutes to work on the Writing Test. Do not begin work until I tell you to do so. If you finish before I call time, recheck your work on the Writing Test, close both your test booklet and answer document, and place them on your desk with page 1 of the answer document facing up. You must sit quietly until time is called. Are there any questions?** Answer any questions.

4. Say: **You have 40 minutes to work on this test. Open your test booklet, read the assignment, and begin work.**

5. During the Writing Test, record the time of day you START timing the Writing Test above and calculate the times of day for announcing 5 minutes remaining and STOP. Make sure you record the actual times you make your announcements.

_____	_____	_____
START	5 minutes remaining	STOP

6. When your watch or timer indicates exactly 35 minutes have passed and you have checked the time, say: **You have 5 minutes remaining on this test.**

7. When your watch or timer indicates 5 more minutes have passed (exactly 40 minutes total) and you have checked the Stop time, say: **Stop, put your pencil down, and look up at me now**.

8. Verify everyone has stopped, and then say: **Close both your test booklet and answer document and keep them separate on your desk. Turn your answer document so that page 1 faces up and look up at me now.**

9. Say: **I will now collect the answer documents and test booklets. They will be picked up individually; do not pass them in.**

Scoring ACT Essays

The ACT Writing Test Scoring Rubric

	Ideas and Analysis	*Development and Support*	*Organization*	*Language Use*
Score 6: **Responses at this scorepoint demonstrate effective skill in writing an argumentative essay.**	The writer generates an argument that critically engages with multiple perspectives on the given issue. The argument's thesis reflects nuance and precision in thought and purpose. The argument establishes and employs an insightful context for analysis of the issue and its perspectives. The analysis examines implications, complexities and tensions, and/or underlying values and assumptions.	Development of ideas and support for claims deepen insight and broaden context. An integrated line of skillful reasoning and illustration effectively conveys the significance of the argument. Qualifications and complications enrich and bolster ideas and analysis.	The response exhibits a skillful organizational strategy. The response is unified by a controlling idea or purpose, and a logical progression of ideas increases the effectiveness of the writer's argument. Transitions between and within paragraphs strengthen the relationships among ideas.	The use of language enhances the argument. Word choice is skillful and precise. Sentence structures are consistently varied and clear. Stylistic and register choices, including voice and tone, are strategic and effective. While a few minor errors in grammar, usage, and mechanics may be present, they do not impede understanding.
Score 5: **Responses at this scorepoint demonstrate well-developed skill in writing an argumentative essay.**	The writer generates an argument that productively engages with multiple perspectives on the given issue. The argument's thesis reflects precision in thought and purpose. The argument establishes and employs a thoughtful context for analysis of the issue and its perspectives. The analysis addresses implications, complexities and tensions, and/or underlying values and assumptions.	Development of ideas and support for claims deepen understanding. A mostly integrated line of purposeful reasoning and illustration capably conveys the significance of the argument. Qualifications and complications enrich ideas and analysis.	The response exhibits a productive organizational strategy. The response is mostly unified by a controlling idea or purpose, and a logical sequencing of ideas contributes to the effectiveness of the argument. Transitions between and within paragraphs consistently clarify the relationships among ideas.	The use of language works in service of the argument. Word choice is precise. Sentence structures are clear and varied often. Stylistic and register choices, including voice and tone, are purposeful and productive. While minor errors in grammar, usage, and mechanics may be present, they do not impede understanding.
Score 4: **Responses at this scorepoint demonstrate adequate skill in writing an argumentative essay.**	The writer generates an argument that engages with multiple perspectives on the given issue. The argument's thesis reflects clarity in thought and purpose. The argument establishes and employs a relevant context for analysis of the issue and its perspectives. The analysis recognizes implications, complexities and tensions, and/or underlying values and assumptions.	Development of ideas and support for claims clarify meaning and purpose. Lines of clear reasoning and illustration adequately convey the significance of the argument. Qualifications and complications extend ideas and analysis.	The response exhibits a clear organizational strategy. The overall shape of the response reflects an emergent controlling idea or purpose. Ideas are logically grouped and sequenced. Transitions between and within paragraphs clarify the relationships among ideas.	The use of language conveys the argument with clarity. Word choice is adequate and sometimes precise. Sentence structures are clear and demonstrate some variety. Stylistic and register choices, including voice and tone, are appropriate for the rhetorical purpose. While errors in grammar, usage, and mechanics are present, they rarely impede understanding.
Score 3: **Responses at this scorepoint demonstrate some developing skill in writing an argumentative essay.**	The writer generates an argument that responds to multiple perspectives on the given issue. The argument's thesis reflects some clarity in thought and purpose. The argument establishes a limited or tangential context for analysis of the issue and its perspectives. Analysis is simplistic or somewhat unclear.	Development of ideas and support for claims are mostly relevant but are overly general or simplistic. Reasoning and illustration largely clarify the argument but may be somewhat repetitious or imprecise.	The response exhibits a basic organizational structure. The response largely coheres, with most ideas logically grouped. Transitions between and within paragraphs sometimes clarify the relationships among ideas.	The use of language is basic and only somewhat clear. Word choice is general and occasionally imprecise. Sentence structures are usually clear but show little variety. Stylistic and register choices, including voice and tone, are not always appropriate for the rhetorical purpose. Distracting errors in grammar, usage, and mechanics may be present, but they generally do not impede understanding.

(continued)

The ACT Writing Test Scoring Rubric

	Ideas and Analysis	*Development and Support*	*Organization*	*Language Use*
Score 2: **Responses at this scorepoint demonstrate weak or inconsistent skill in writing an argumentative essay.**	The writer generates an argument that weakly responds to multiple perspectives on the given issue. The argument's thesis, if evident, reflects little clarity in thought and purpose. Attempts at analysis are incomplete, largely irrelevant, or consist primarily of restatement of the issue and its perspectives.	Development of ideas and support for claims are weak, confused, or disjointed. Reasoning and illustration are inadequate, illogical, or circular, and fail to fully clarify the argument.	The response exhibits a rudimentary organizational structure. Grouping of ideas is inconsistent and often unclear. Transitions between and within paragraphs are misleading or poorly formed.	The use of language is inconsistent and often unclear. Word choice is rudimentary and frequently imprecise. Sentence structures are sometimes unclear. Stylistic and register choices, including voice and tone, are inconsistent and are not always appropriate for the rhetorical purpose. Distracting errors in grammar, usage, and mechanics are present, and they sometimes impede understanding.
Score 1: **Responses at this scorepoint demonstrate little or no skill in writing an argumentative essay.**	The writer fails to generate an argument that responds intelligibly to the task. The writer's intentions are difficult to discern. Attempts at analysis are unclear or irrelevant.	Ideas lack development, and claims lack support. Reasoning and illustration are unclear, incoherent, or largely absent.	The response does not exhibit an organizational structure. There is little grouping of ideas. When present, transitional devices fail to connect ideas.	The use of language fails to demonstrate skill in responding to the task. Word choice is imprecise and often difficult to comprehend. Sentence structures are often unclear. Stylistic and register choices are difficult to identify. Errors in grammar, usage, and mechanics are pervasive and often impede understanding.

ACT Overall Score: 2 – 12
ACT Sub Score - Ideas and Analysis: 1 - 6
ACT Sub Score – Development and Support: 1 - 6
ACT Sub Score – Organization: 1 - 6
ACT Sub Score – Language Use: 1 - 6

Scoring ACT Essays
Transitions

Scoring Theme Development and Text Organization: Transitions

A Does the essay include at least one ending punctuation mark?

☑ **Yes:** Continue to the next question (A1).

☒ **No:** Score Transitions **0 points** and move to **Scoring Theme Development and Text Organization: Reasons Why and Elaborations.**

ⓘ Box 7 **A1. Review the essay and look at the first word that follows each ending punctuation mark: How many of these words are included in the *List of Acceptable Transitions*?**

If 0, follow these steps:

1. Score Transitions **0 points.**
2. Move to **Scoring Theme Development and Text Organization: Reasons Why and Elaborations.**

If one or more, follow these steps:

1. Record each **transition**(s) in the space provided under Transitions in the Record Form, and circle the transition(s) on a copy of the student's essay.
2. Record the number of **transitions** identified (up to 5) as the Transitions score.
3. Move to **Scoring Theme Development and Text Organization: Reasons Why and Elaborations.**

Essay Composition: Theme Development and Text Organization

ⓘ *Information Box 7*

A **transition** must be the first word/phrase following an ending punctuation mark to receive credit. The first sentence of an essay cannot receive credit for including a **transition.**

Why must the transition be the first word of a sentence?

This requirement awards credit to the more salient and intentional usages of **transitions** and minimizes scoring time and effort.

Scoring Rules:

- Only award credit for **transitions** included in the *List of Acceptable Transitions.*
- Score the number of **transitions** used.
- Disregard the information after the **transition**: do not penalize if a run-on sentence, a fragment, or no text follows the **transition.**

Mechanics Errors:

- Do not penalize for failure to capitalize the **transition.**
- Do not penalize if the student forms a correct contraction of an acceptable **transitional** phrase.
- Do not penalize for a misspelled **transition** unless a different word is formed and the meaning is unclear.

Examples of misspelled transitions

- I like catching. *Aslo,* I like running. (Transitions = 1 point)
- I like catching. *All so,* I like running. (Transitions = 1 point)
- I used to love catching. *How* I love running! (Transitions = 0 points)

Scoring ACT Essays
Transitions

List of Acceptable Transitions				
1st, 2nd, 3rd, etc.	Despite	In sum/summary/summation	On the whole	Then
A further	Doubtless	In the (season of the year)	On top of that	Thereafter
A second/third/etc.	Due to	In the end	Once	Therefore
A similar	During	In the first place	One	These are/were
Above all	Earlier	In the future/past	Ordinarily	Third
Additionally	Equally important	In the meantime	Other	This also means
After	Especially	In the same manner/way	Otherwise	This concludes
Afterward(s)	Even	In the second place	Overall	This is/can
Again	Eventually	In truth	Particularly	This/That means
All in all	Ever since	Incidentally	Perhaps	Those are/were
All these reasons	Fifth	Indeed	Plus	Though
Also	Finally	Instead	Possibly	Thus
Alternatively	First(ly)	It follows that	Presently	To begin with
Although	For example/instance	It is true	Previously	To conclude
Altogether	For one (thing)	It seems	Probably	To do this
An additional	For that/these/this/those	Just as	Provided that	To doubt that
An example	Formerly	Last(ly)	Rarely	To explain
Another	Fourth	Lately	Rather	To illustrate
As a consequence/result	Frequently	Later	Recently	To put it another way
As an example	Further/Furthermore	Like	Regardless	To put it differently
As I said/have shown	Generally	Likewise	Remarkably	To start with
As long as	Given	Maybe	Right now	To sum (it) up
As soon as	Granted	Meanwhile	Second(ly)	To summarize
As well as	Hence	Moreover	Shortly	To this end
As you can see	Here is/are	Most important(ly)	Similarly	Today
At first	However	Most of all	Simultaneously	Tomorrow
At last	Immediately	Most of the time	Since	Truly
At that time/point	Importantly	My first/second/third/etc.	So far	Typically
At the same time	In (my) conclusion	My last/final/concluding	So that	Ultimately
At times	In addition	Namely	Sometimes	Unless
Basically	In any case/event	Naturally	Soon	Unlike
Because	In brief	Nevertheless/Nonetheless	Specifically	Until
Before	In case	Next	Still	Usually
Besides	In contrast	Not only	Subsequently	When
Best of all	In fact	Now	Surely	Whenever
Beyond	In general	Obviously	That is	Whereas
Certainly	In order to/for	Occasionally	The final/last/concluding	While
Clearly	In other words	Of course	The first/second/third/etc.	Without (a) doubt
Consequently	In particular	Often (times)	The main	Worst of all
Contrarily	In short	On one hand/the other hand	The next	Yesterday
Conversely	In simpler terms	On the contrary	The other	Yet another
Currently	In spite of			

First and Last Name: _____ Date: _____

Genre Knowledge

Suppose you had a friend who has to take the ACT writing test. The teacher told your friend they would write a practice ACT essay and each student would be sharing their ACT essay with the other students in the class. The other students would be reading or listening to it. If your friend asked you what kind of things are included in the ACT essay, what would you tell your friend? What are the parts of this type of essay?

Administering the Genre Knowledge Measure

Say: Today I want you to tell me everything you know about writing an essay for the ACT test. Please write your first and last name and date on the top of the page.

Check to see everyone has written their first and last name and date on the top of the paper.

Say: Let's read the prompt at the top of the page:

Suppose you had a friend who has to take the ACT writing test. The teacher told your friend they would write a practice ACT essay and each student would be sharing their ACT essay with the other students in the class. The other students would be reading or listening to it. If your friend asked you what kind of things are included in the ACT essay, what would you tell your friend? What are the parts of this type of essay?

Say: Use your best handwriting. You may write in bullet points, a list, or in sentences. I just want to know what you know about writing the ACT essay. You will have 10 minutes to complete this task. Do you have any questions?

See if there are any questions.

Say: Okay, tell me everything you know about an opinion essay. You may begin.

After 10 minutes have passed,

Say: Time is up. Please stop writing and I will collect your papers.

Scoring Genre Knowledge Measure for Idea Units

Scoring Idea Units

1. **Each *unique* idea in a students' response is an idea unit. Put / in front of the first word of the idea unit and / after the last word.**

For example, this is 1 idea unit:
/Good writers write well because they plan what they will say/

This is 3 idea units:
/Good writers write well because they plan,/write,/ and revise./

2. **Idea units are not determined by punctuation, sentence structure, or spacing on the page. Sentences can be divided into more than one idea unit, as shown in Rule 1. In addition, multiple sentences can make up a single idea unit, as shown in Rule 3.**

3. **An idea unit contains the idea *and* any explanation or examples of the idea.**

For example, this is 1 idea unit:

original idea

/They brainstorm ideas by writing them down on paper as they think of them. They try to keep generating as many ideas as they can while they are brainstorming. For example, I brainstormed 30 ideas yesterday./

followed by 2 sentences containing examples

4. **Each idea unit must be a *unique* idea. If it is not a unique idea, mark it out.**

For example:
/Good writers plan/ draft/ and revise/ ~~good writers they revise~~.

5. **Do not mark out new details or examples of a previous idea unit. Attach them to the first presentation of the idea using arrows and circling.**

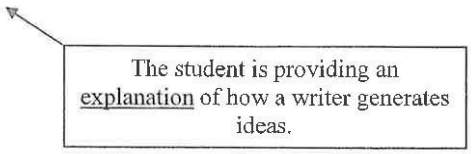
For example:

/They brainstorm ideas by writing them down on a paper as they think of them. Brainstorming is what they do. They try to keep generating as many ideas as they can while they are brainstorming. For example, I brainstormed 30 ideas yesterday./ They also revise their paper,/ ~~but brainstorming is what they really do,~~ they do this when they start.

6. **If 2 idea units differ slightly, do not cross out the second idea unit. Instead, mark each idea separately.**

For example:
/They generate ideas/ they brainstorm

HOWEVER, the sentence below would be scored as 1 idea unit, per Rule 2.
/They generate ideas by brainstorming/



7. **Do not mark out comments that appear to be irrelevant.**

For example, this is 2 idea units:
/They brainstorm ideas./ Yesterday I found I wanted to write./

8. **Count the number of *unique* idea units. Write this number down and circle it at the top of the paper.**

Categorizing Genre Knowledge Measure Idea Units			
CATEGORY and DEFINITION	**EXAMPLES**		
Generating or obtaining information (GI)	Research what you are writing about so you will be accurate.	Get information from an article about your topic.	Use multiple sources.
Elements: Hook (H)	Catch the reader's attention. Ask a question.	Use an exclamation. Write a short story.	Share a fact. Write a hook.
Elements: Introduction (I)	Introduce what you are writing about.	Give the context of the problem.	Define what the topic means.
Elements: Thesis (premise statement) (T)	Have a thesis/premise statement. What you're persuading a person to do. Give your opinion on the subject. Theme.	Pick a side/take a stand. The subject of your writing. What you're arguing about/saying/writing. Say if you agree or disagree. State thesis.	Something you would like to happen. Focus on the argument. Tell what you're trying to get. What you think. What you are supporting/disagreeing with.
Elements: State the Perspective (SP)	State the perspective. There are three perspectives.	List the first perspective and what it states or says.	You will be given three perspectives. Summarize each perspective.
Elements: Outlook on Perspective (OP)	Discuss the strengths and weaknesses of the perspective. Protest against what other people might say/argue. Compare/contrast.	State if it's a strong or weak argument. Include the other side of the argument.	Strong means you agree. Weak is disagreeing. How you would change if someone says your idea is wrong.
Elements: Examples (E)	Give examples related to the subject you're debating about.	Provide examples for that perspective. Give good information.	Have examples to support your opinion. Lots of details (specific details). Go in depth.
Elements: Opinion (O)	Give your opinion.	Say whether you agree with the	What you think about the

		perspective or disagree.	perspective.
Elements: Restate Thesis (RT)	Restate your opinion / thesis.	Mention again what you believe in.	Remind the reader of your position.
Elements: Support Thesis (ST)	Positive things about your side of the argument. Support your side. Reasons. Relationship. Evidence.	Back up your argument. Defending the side you chose. Main ideas. Use facts. Proof.	Why you are supporting/disagreeing with something. Why it is a good/bad idea. Back up ideas with evidence. Tell why your idea is the best.
Elements: Conclusion (C)	To wrap up. An ending. Finishing it off.	Closing paragraph. Summary.	The last bit of what you have to say. So the reader knows you're finished.
Appeal to Reader (APP)	Get the reader to do what you ask. Want the reader to go with your ideas. Why the reader should do what you ask them. Present ideas clearly. Get the reader to respect you. Try to convince.	Make the reader move to your opinion. Write in a kind manner. Change the reader's ideas. Make people stop. Make people listen. Show that you care about your side.	Get in the reader's mind to persuade them. Write in a way people can understand. Make the reader believe your way is the right way. How you persuade the reader to think the same way you do. Make sure what you're saying stands out to the reader.
Organization (OR)	Beginning/Middle/End. Use headings. Stay on track. Topic sentence.	Write in paragraphs. Use a graphic organizer. Make it flow.	Keep it organized. Use transition words (first, next, last). Stay on topic.
Word choice (WC)	Use your best language. Literary devices.	Use correct words. Adjectives.	Use good vocabulary. No slang.

	Onomatopoeias.		
Transcription, Grammar/Usage, & Sentence Construction (TGS)	Spelling. Write in sentences. Handwriting.	Capitalization. Punctuation. Indent.	Make sure everything is correct. Use your best writing skills.
Information related to the prompt (IRP)	Topic can be difficult or easy. There is a reading prompt. Write what the question tells you.	There will be a perspective that supports / against/ in the middle. There is an article to read.	There is a prompt that you read and write your essay on. Write what they are telling you to write.
Process (P)	Use strategy HIT SONGS[3]. There is a trick to help you be successful.	Following the steps will help you be successful. Need 18 parts or more.	Analyze the prompt. Plan, write, and revise.
Self-regulation (SR)	Try your best to write the essay. You have to relax.	Use the steps to be a better writer. You must study / practice.	Don't go to fast. Look at the clock to see what time you have left to write.
Information related to the Test (IRT)	You have 40 minutes to complete the test. It is an argumentative essay.	Have to take the test for college.	ACT is a test required for college. Test to see what you can do in writing.
Related other (RO) *Any reasonable response to the question that does not fit in one of the above categories*	Not like a story. An argument. Arguing back and forth. Answers. Thoughts.	Advertise. Like having a fight. Negotiation. Questions. Valid points.	Make an argument with someone. Strong feelings about a topic. Present ideas clearly. Have expression. Quotes / citations.
Unrelated other (UO) *Any response that does not reasonably relate to the question*	Descriptions of characters. Actions. Figures. A lot of talking.	Who it's from Who it's going to and why Say it out loud I don't write these	Good setting. Write your name / date. MLA format. Use dictionary.

	Rhetorical analysis. It's hard to explain.	that much. I don't know.	Don't draw.
Cross out "etc."			

First and Last Name: _____ Date: _____

Confidence about Writing

Students differ in how confident they are about doing different kinds of writing. Indicate how confident you are about doing the different writing activities below.

A 100 means you are absolutely certain you can do the activity. A 0 means that there is no chance you can do the activity.

A small number, such as 10, 20, or 30 means you have a little certainty that you can do the activity.

A score of 40, 50, or 60 means you have more certainty that you can do the activity.

A score of 70, 80, or 90 means you have even more certainty that you can do the activity.

You may assign **any number** between 0 and 100 when asked about each writing activity below. Place the number you pick for an item in the space next to it. Let's practice using this scale first.

Practice Items

0	10	20	30	40	50	60	70	80	90	100
No Chance	Very Little Chance		Little Chance		50/50 Chance		Good Chance	Very Good Chance		Complete Certainty

_____ I can write 5 words in a minute.

_____ I can write 20 words in a minute.

_____ I can write 50 words in a minute.

_____ I can write 150 words in a minute.

First and Last Name: _____ Date: _____

0	10	20	30	40	50	60	70	80	90	100
No Chance	Very Little Chance		Little Chance		50/50 Chance		Good Chance	Very Good Chance		Complete Certainty

1. _____ I can write an argument that will receive a high score on college writing tests like the ACT.
2. _____ I can write an argument that provides a hook at the beginning of the paper that will catch my reader's attention.
3. _____ I can write an argument that provides a strong introduction to my topic.
4. _____ I can write an argument that clearly states my thesis.
5. _____ I can write an argument that clearly organizes my ideas.
6. _____ I can write an argument that provides strong support for my thesis.
7. _____ I can write an argument that provides strong examples that support my thesis.
8. _____ I can write an argument that provides a strong concluding paragraph to my paper.
9. _____ I can easily get started when writing an argument.
10. _____ I can keep writing even when writing is difficult.

Self-Efficacy for Writing Scale (SEWS)

Say: Please write your first and last name and date on the top of both pages.

Check to see everyone has written their first and last name and date on the top of the paper.

Say: Let's read the prompt at the top of the page:

Students differ in how confident they are about doing different kinds of writing. Indicate how confident you are about doing the different writing activities below. A 100 means you are absolutely certain you can do the activity. A 0 means that there is no chance you can do the activity. A small number, such as 10, 20, or 30 means you have a little certainty that you can do the activity. A score of 40, 50, or 60 means you have more certainty that you can do the activity. A score of 70, 80, or 90 means you have even more certainty that you can do the activity. You may assign **any number** between 0 and 100 when asked about each writing activity below. Place the number you pick for an item in the space next to it. Let's practice using this scale first.

Practice using the scale with the students.

Say: Do you have any questions?

See if there are any questions.

Say: Okay, turn to the second page. Please assign any number between 0 and 100 when asked about each writing activity below.

Read aloud each writing activity and pause to allow students time to assign a number.

1. _____ I can write an argument that will receive a high score on college writing tests like the ACT.
2. _____ I can write an argument that provides a hook at the beginning of the paper that will catch my reader's attention.
3. _____ I can write an argument that provides a strong introduction to my topic.
4. _____ I can write an argument that clearly states my thesis.
5. _____ I can write an argument that clearly organizes my ideas.
6. _____ I can write an argument that provides strong support for my thesis.
7. _____ I can write an argument that provides strong examples that support my thesis.
8. _____ I can write an argument that provides a strong concluding paragraph to my paper.
9. _____ I can easily get started when writing an argument.
10. _____ I can keep writing even when writing is difficult.

Collect all students' papers when finished.

Writing Social Validity Interview Questions

Directions: Ask questions 1 – 4. Then as time allows, ask questions 5 – 6.

1. Before you started this instruction, how did you feel about taking the ACT writing test?
    a. Why?
    b. If you haven't taken the ACT, how did you feel about tests that involved writing?

2. After taking this class, how do you feel about taking the ACT writing test?
    a. Why?

3. Now that you have completed this class, what is it about the instruction that helped you become better prepared to take the ACT writing test?
    a. Can you be specific?
    b. What skills are better?

4. As a result of completing this class, what have you learned about writing a strong argument?
    a. Where could you use the skills you learned in the future?

5. If you were the teacher, is there anything you would do differently to help students learn these writing strategies?

6. Is there anything else you think I should know about the instruction for the ACT writing test?

Math Social Validity Interview Questions

Directions: Ask questions 1 – 4. Then as time allows, ask questions 5 – 6.

1. Before you started this instruction, how did you feel about taking the ACT math test?
    a. Why?
    b. If you haven't taken the ACT, how did you feel about tests that involved math?

2. After taking this class, how do you feel about taking the ACT math test?
    a. Why?

3. Now that you have completed this class, what is it about the instruction that helped you become better prepared to take the ACT math test?
    a. Can you be specific?
    b. What skills are better?

4. As a result of completing this class, what have you learned about answering math test questions and key math concepts?
    a. Where could you use the skills you learned in the future?

5. If you were the teacher, is there anything you would do differently to help students learn these math strategies?

6. Is there anything else you think I should know about the instruction for the ACT math test?

APPENDIX D

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

ASU Knowledge Enterprise Development

APPROVAL: EXPEDITED REVIEW

Stephen Graham
Division of Educational Leadership and Innovation - Tempe
480/965-7259
steve.graham@asu.edu

Dear Stephen Graham:

On 3/23/2016 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Write to College RCT
Investigator:	Stephen Graham
IRB ID:	STUDY00004118
Category of review:	(6) Voice, video, digital, or image recordings, (7)(b) Social science methods, (7)(a) Behavioral research
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• ACT Self Efficacy Scale for High School.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • ASU Badger acceptance letter.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Experiential Education.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Social Validity Questions_version2.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • WIAT III Essay Composition Measure.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Registration Packet ACT Writing and Math Prep.pdf, Category: Consent Form; • SRSD for ACT SAT Essay Lesson Sequence.pdf,

	Category: Other (to reflect anything not captured above); • ACT Genre Knowledge Measure.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Endangered Species.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Write to College RCT_IRB Protocol Form_version 2.docx, Category: IRB Protocol;

The IRB approved the protocol from 3/23/2016 to 3/27/2017 inclusive. Three weeks before 3/27/2017 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 3/27/2017 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Amber Ray
Stephen Graham
Amber Ray

APPENDIX E

DISSERTATION PROPOSAL

CHAPTER 1

INTRODUCTION

Attending College

There are many benefits in life to earning a college degree. Commonly identified advantages of a college degree as compared to a high school diploma include an increase of earnings throughout life, reduced unemployment rates, better job positions, enhanced health, and more community involvement (Rose, 2013). Since there are many benefits to earning a college degree, students need to be set up for success when applying to colleges. College applications often ask for information about a student's grade point average, extracurricular involvement, test scores, community service, and letters of recommendation.

While college admission decisions are based on many components, high-stakes college entrance exams (i.e., the ACT and SAT), including the written assessments, are an important part of this process. One college entrance exam is the ACT which includes five subject area tests: English, math, reading, science, and writing. The avenue to college entrance can be minimized for a student if he or she does not perform well on such tests. Many universities require students to achieve a minimum score on these assessments, and course placement decisions can be based on applicants' scores on writing exams from these batteries. Even though the writing test portion of the ACT is optional, 633 schools currently require and hundreds more recommend that students take the writing portion of college entrance exams as part of the college admission process (Barge, 2015). While the writing assessment on a test like the ACT is not the same as a college writing assignment,

it analyzes students' abilities to develop ideas around a specific topic and write in a coherent manner using logic and reasoning (ACT, Inc., 2015b).

As a result, many colleges and universities take students' writing test scores into consideration when making admission decisions because the college entrance writing exams are designed to "measures skills students use when writing a college paper—such as the ability to focus on a topic, to develop ideas, and to write logically and coherently, with proper sentence structure and sound reasoning" (ACT, Inc., 2015c). Even for students with high-incidence disabilities including attention deficit hyperactivity disorder (ADHD), learning disabilities (LD), speech and language impairments (SLI), and mild emotional and behavioral disorders (EBD), the score from such tests are often one of the factors used to determine whether or not a student will be admitted into the college or university.

Writing Assessment for Students with High-Incidence Disabilities

High-stakes writing tests and other writing assessments are especially difficult for students with high-incidence disabilities. Students with disabilities struggle in school for a variety of reasons based on each student's specific diagnosis. According to the National Center for Learning Disabilities (NCLD), a LD "affects the brain's ability to receive, process, store, respond to, and communicate information" (NCLD Editorial Team, 2014, p. 1). Researchers have found that students with LD, as a whole, develop and employ fewer strategies when working on academic tasks, such as writing (Stone & Conca, 1993). In a recent meta-analysis students with LD writing performance was compared to that of their typically developing peers (Graham, Collins, & Rigby-Wills, 2017). The meta-analysis found that students with LD had lower scores on every aspect of writing

that was assessed including writing quality, organization, ideation, and genre elements to name a few. Furthermore, a similar meta-analysis was conducted to compare the writing abilities of students with ADHD with their normally achieving peers (Graham, Fishman, Reid, & Hebert, 2016). Students with ADHD also had lower scores on writing quality, output, genre elements, and vocabulary. Overall, there is a consensus within the literature that students with high-incidence disabilities struggle with writing and underperform in writing when compared to their classmates.

Difficulties with writing will likely hinder students' with LD success in entering and succeeding in college. This is because many colleges take into account students' writing scores as part of the admissions process. Students with high-incidence disabilities need to be able to perform at a level that is competitive with their typically developing peers on these high-stakes writing exams. Additionally, writing is an important skill in college. Students must be able to convey their knowledge and understanding of a topic through writing as part of a college course. Thus, it is important to help students with LD become better writers as well as succeed on the college entrance writing tests because these tests are an important gateway to college.

Currently, 11% of undergraduate students report having a disability (U.S. Department of Education, 2015a). These students take the same ACT and SAT writing test as other students. While students with disabilities can submit disability documentation to request a 50% time extension on the writing test (ACT, Inc., 2015d), resulting in a 60 minute time limit to complete the ACT writing exam, many still struggle with completing the required writing task (ACT, Inc., 2015a). Helping students with

high-incidence disabilities be successful on the ACT writing test is needed because the test is very difficult.

ACT Writing Exam

Since 2006, when the ACT writing test was released, students' average writing scores across the United States have declined from a 7.7 to a 7.1 in 2014, on a scale of 2 to 12 (ACT, Inc., 2015a). Similar results are found on another college entrance exam, the SAT writing test, with scores from 2005 to 2013 decreasing from 497 to 488, on a range of 200 to 800 (U.S. Department of Education, 2015b). The results mean that the average student taking the ACT or SAT writing test is able to take a position on a topic and may briefly address a counter-argument, but the development of ideas is limited with few examples and details. Furthermore, the introduction and conclusion is likely to be underdeveloped, there is limited word choice, and there are distracting errors (ACT, Inc., 2015b). While there is no data to this effect, many students with high-incidence disabilities are likely to produce test responses that are even more underdeveloped, given their documented difficulties with writing (Graham et al., 2016; Graham, Collins, & Rigby-Wills, 2017).

In September 2015, the ACT introduced a new and enhanced writing test. While the test still focused on argumentative writing, the new version requires students to analyze multiple perspectives on contemporary issues. This task is more difficult than the previous test. The previous writing task provided students with a few sentences about a topic and then asked them to write a persuasive essay based on what they believe. The revised ACT writing test is of increased difficulty because it asks students to not only

develop an argument on a topic, but to also evaluate different given perspectives on the topic and provide rationale for why the perspectives support or counter their thesis.

The ACT writing test is evaluated on a holistic scale of 2 to 12 with four domain area scores (ideas and analysis, development and support, organization, and language use and conventions) ranging from 1 to 6. The ACT writing prompt provides students with a short paragraph about a topic, such as intelligent machines or public health and individual freedom. Students are then asked to analyze and evaluate three diverse perspectives given to them in the prompt about the topic. Students must also develop a thesis about their own beliefs on the topic and must describe the relationship between their thesis and the perspectives given within the prompt (ACT, Inc., 2015d). For the ACT, students must complete the writing task in 40 minutes.

All ACT writing prompts are formatted and structured in the same way. Each prompt includes a heading which states the overall topic of the prompt as well as an introductory paragraph that gives a brief overview of the topic and expresses that there are various perspectives on the topic. The prompt then provides the following instructions (this example is for the topic intelligent machines), "Read and carefully consider these perspectives. Each suggests a particular way of thinking about the increasing presence of intelligent machines" (ACT, Inc., 2015d). The prompt next provides three perspectives on the topic. For instance, one of the perspectives for the prompt intelligent machines is: "Perspective One: What we lose with the replacement of people by machines is some part of our own humanity. Even our mundane daily encounters no longer require from us basic courtesy, respect, and tolerance for other people" (ACT, Inc., 2015d). Finally,

students are directed to write their essay using the following directions (illustrated for intelligent machines):

> "Write a unified, coherent essay in which you evaluate multiple perspectives regarding intelligent machines. In your essay, be sure to: (a) analyze and evaluate the perspectives given, (b) state and develop your own perspective on the issue, and (c) explain the relationship between your perspective and those given. Your perspective may be in full agreement with any of the others, in partial agreement, or wholly different. Whatever the case, support your ideas with logical reasoning and detailed, persuasive examples" (ACT, 2015d).

A full example of the Intelligent Machines prompt can be found at http://www.act.org/content/dam/act/unsecured/documents/Sample-Writing-Prompt.pdf.

Assisting Students with High-Incidence Disabilities

Students with high-incidence disabilities need extra assistance to help them be successful on the ACT writing test, because of its importance to college admission. Surprisingly, there are no studies or data on how to help these students perform better on the ACT writing test. One means for doing this would be to teach students writing, planning, and self-regulation strategies to compose an acceptable ACT response essay using self-regulated strategy development (SRSD) instruction. Learning strategies are specific approaches used to assist an individual in learning and succeeding academically (Deshler & Schumaker, 1986). A practical definition by Reid, Lienemann, and Hagaman (2013) defines a strategy as "a series of ordered steps that helps a student perform a task" (p. 17). Strategies are often represented by mnemonics that help students remember the steps of the strategy. Learning strategies help students master content material, but they

do not specifically teach students the content material itself (Deshler & Schumaker, 1986; Reid et al., 2013). High school students who master effective learning as well as study strategies are more likely to succeed in college (Levinson & Ohler, 1998). Learning strategies need to be taught systematically (Reid et al., 2013). Strategy instruction is the process of teaching students learning strategies through explicit descriptions, discussion between teacher and students, questioning, modeling, and practicing.

The students who participated in this study were taught an argumentative writing strategy which included a planning strategy, self-regulation strategies, and argumentative writing genre knowledge. The genre-specific writing strategy used in this study is represented by the mnemonic HIT SONGS[3] for the argumentative writing ACT test which stands for **H**ook, **I**ntroduce the topic, **T**hesis, **S**tate the perspective, **O**utlook on the perspective, **N**eed examples, **G**ive your opinion, **S**upport your thesis, **S**tate the relationships between your thesis and the perspectives given in the prompt, and **S**ummary. This strategy was developed to respond to the requirements of the ACT prompt and scoring rubric. The mnemonic is a tool to help students remember the requirements of the ACT test and the writing processes, such as planning, in which they were to engage. Using a planning strategy helps students with writing by providing them with a mechanism for organizing their thoughts and ideas before composing an essay. Students who are taught strategies for planning show strong improvement in their writing abilities (Graham & Harris, 2014). The self-regulation strategies taught included goal setting, self-instructions, self-evaluation, and self-reinforcement. Furthermore, students learned about the genre of argumentative writing through discourse about the genre, reading sample essays, and discussing key aspects of quality writing such as word choice

and transition words. The argumentative writing strategy HIT SONGS[3], self-regulation strategies, and argumentative writing genre knowledge instruction were tested in a pilot study. Students who learned the strategies through SRSD instruction made gains in the quality of their plans, number of argumentative elements in their essay, quality of their essay, number of words, and number of transition words.

Self-Regulated Strategy Development

One form of explicit strategy instruction is SRSD; which was selected as the method of teaching for the following reasons. First, strategy instruction helps improve the writing quality of students. Specifically, students who are taught a writing intervention using SRSD make greater gains in writing than other forms of strategy instruction (Graham & Harris, in press). Second, there have been over 100 studies conducted using SRSD to teach writing strategies with first grade students through adults (Graham, Harris, & McKeown, 2013; MacArthur & Lembo, 2009). The results from these studies show that SRSD is effective for struggling writers, students with disabilities, and high school students when learning writing strategies. There is evidence from several studies that when high school students with disabilities receive SRSD instruction in writing, their writing abilities improve (Chalk, Hagan-Burke, & Burke, 2005; Eissa, 2009; Hoover, Kubina, & Mason, 2012; Jacobson & Reid, 2010, 2012; Kiuhara, O'Neile, Hawken, & Graham, 2012; Mason, Kubina, & Hoover, 2013; Ray, Graham, & Liu, 2017).

Third, SRSD integrates several theoretical perspectives to provide an effective approach to learning writing strategies (Harris & Graham, in press). The major theories SRSD draws upon are the cognitive-behavioral intervention model, expertise theory, self-regulation theory, affective theory, constructivist theory, information processing theory,

social cognitive theory, sociocultural theory, and socio-cognitive theory (Harris & Graham, in press). This is helpful because instruction designed by examining a wide body of literature across different theories allows for the opportunity to create the most effective instructional method. Fourth, SRSD is comprised of instructional stages that provide explicit, scaffolded instruction to develop students' writing and self-regulation abilities. Students proceed through these stages using a criterion based learning model. Students do not move on to later instructional stages until they have achieved initial criteria. These stages and criterion procedures are described below.

SRSD is an instructional framework consisting of six instructional stages: (1) Develop Background Knowledge, (2) Discuss the Strategy, (3) Model the Strategy, (4) Memorize the Strategy, (5) Support the Strategy, and (6) Independent Performance (Harris, Graham, Chambers, & Houston, 2014). The instruction not only follows the six-instructional stages, but also incorporates the use of a genre-specific writing strategy and self-regulations components. The instruction is designed to be discourse rich and recursive to provide students with the scaffolded instruction needed to successfully complete the writing task independently (See Figure 2).

During the first stage, developing background knowledge, the teacher works with students to read sample works of the genre of focus and discusses the different elements that are part of that specific genre. Additionally, the teacher introduces the writing and self-regulation strategies that will be learned. Self-regulation strategies include self-instructions, self-evaluation, self-reinforcement, and goal setting. An example criterion for this stage includes students being able to articulate the key elements and characteristics of an essay within the genre being studied.

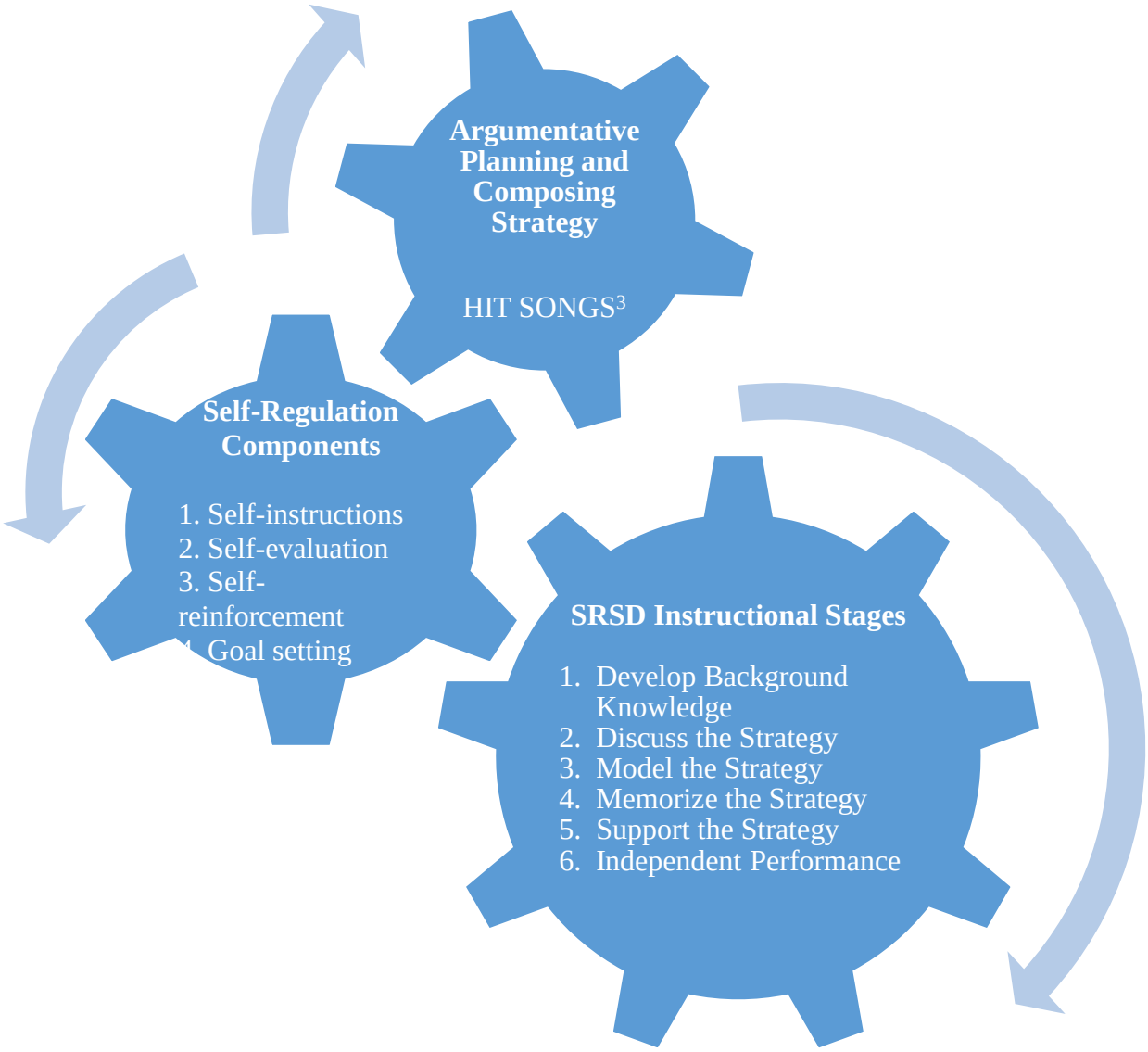


Figure 2. Components of SRSD Instruction.

Discussing the strategy is the second stage, where teachers help students develop knowledge of good writing in general, the genre, the writing process, and self-regulation of the writing process. Teachers also discuss with students their current levels of performance and introduce the strategy that can assist them in improving their writing performance. Furthermore, teachers provide students with a graphic organizer that coincides with the strategy for note taking. Collaboratively, poor essay models are

examined and improved to meet the genre- specific element requirements. A model criterion for this stage includes students being able to identify when to use the strategy and being able to locate the parts of the strategy within a sample essay.

The third stage is modeling the strategy. The instructor models and works collaboratively with the students on how to use the writing and self-regulation strategies. The instructor and students then discuss and analyze the teacher's modeling performance and students develop their own self-statements to assist them during the writing process. A possible criterion for this stage includes students developing their own self-statements for writing and articulating the purpose of self-statements in the writing process.

Memorizing the strategy is the fourth stage; however, this often begins in earlier stages. Teachers work with the students to memorize the strategy. Students reaching automaticity is essential because they will not be able to look at notes on state tests or college entrance exams. An example criterion for the fourth stage, includes students accurately stating the parts of the strategy from memory.

The fifth stage is supporting the strategy. Here the teacher and students use writing and self-regulation strategies collaboratively. The teacher begins a gradual release of control by slowly putting more responsibility on the students. The teacher fades the prompts and guidance given to students individually based on students' needs. A model criterion for the fifth stage is students being able to analyze the writing prompt, create a plan, compose an essay, and evaluate their essay while using self-regulation strategies with minimal prompts from the instructor.

The final step is independent performance which is achieved when students are able to successfully implement the writing and self-regulation strategies independently.

The teacher also discusses with students generalization of the strategies. A possible criterion for this stage is students being able to independently use the writing and self-regulation strategies to compose an essay.

Purpose of Study and Research Questions

The purpose of this study was to examine the effectiveness of teaching high school students with high-incidence disabilities and struggling writers the strategy HIT SONGS^3 for planning and composing argumentative essays using SRSD instruction. The strategy was designed to specifically enhance performance on the ACT writing exam which is an argumentative writing task. A detailed description of HIT SONGS^3 and SRSD instruction is provided in Chapter 3: Methodology.

The study addressed six research questions:

1. Does SRSD instruction for the ACT writing assessment enhance the quality of students' advanced plans, overall ACT writing scores, number of argumentative essay elements, and number of transition words?
2. Are the effects of SRSD instruction for the ACT writing assessment maintained over time?
3. What is the effect of SRSD instruction for the ACT writing assessment on students' genre knowledge?
4. What is the effect of SRSD instruction for the ACT writing assessment on students' self-efficacy for writing?
5. Does SRSD instruction for the ACT writing assessment enhance students' performance on a more general argumentative writing task?
6. Do SRSD instructed students view this instruction as valuable?

Evaluating the quality of students' plans is important because students who learn and incorporate planning strategies when writing produce higher quality essays (Graham & Harris, in press). I hypothesized that students would produce higher quality plans following SRSD instruction because they were taught a planning strategy for generating and organizing ideas to meet the requirements of the ACT writing prompt. SRSD instruction has also enhanced planning performance in prior studies with less skilled high school writers (Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Ray, Graham, & Liu, 2017).

I further expected that SRSD instruction would enhance overall ACT writing scores, the number of argumentative essay elements, and transition words included in students' papers and that these improvements would be maintained over time. The strategy was designed to ensure students met the requirements of the ACT exam as well as the criteria for scoring it. It also provided students with a planning mechanism for generating and organizing their writing ideas in an efficient manner, increasing the likelihood of producing longer and better essays. In addition, students learned about the basic elements of a good persuasive essay and the role of transition words in highlighting and separating key ideas, and they were taught how to apply this knowledge as part of SRSD instruction. Previous studies with less skilled high school writers have found similar positive results (Chalk et al., 2005, Eissa, 2009, Hoover et al., 2012; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Mason et al., 2013; Ray, Graham, & Liu, 2017).

Additionally, I hypothesized that students' genre knowledge for the ACT writing test would increase. This is because the students received instruction on the analyzing the ACT writing prompt and the key components of a quality ACT essay. I also predicted

that the students' self-efficacy for writing would increase because the instruction was designed to help them understand the ACT writing task and taught students the skills necessary for successfully completing the ACT writing test. This knowledge should help improve students' confidence in their writing abilities for the ACT writing test. Self-efficacy is important to increase because the more efficacious a student is about his or her writing abilities the greater their motivation and writing achievement will be (Zimmerman & Risemberg, 1997).

Furthermore, I predicted that the instruction would help improve students' general persuasive writing abilities because the instruction covered ideas, analysis, development, support, organization, transition words, and language use in writing. It is important to examine if there are improvements in students' general persuasive writing skills because the ACT writing exam is a once in a lifetime task; whereas persuasive writing in general is an important skill for college and the workplace. A meta-analysis found evidence that students taught using SRSD were able generalize writing skills learned to different writing tasks (Graham et al., 2013).

Finally, I anticipated that instructed students would find the treatment to be acceptable and effective, as it provided them with the knowledge and skills needed to write a strong essay for the ACT, mechanisms for viewing their success, and involved a gradual release model of instruction. Prior studies with less skilled high school writers receiving SRSD found that this instructional method was viewed as effective and acceptable (Hoover et al., 2012; Kiuhara et al., 2012; Konrad et al., 2006; Mason et al., 2013; Ray, Graham, & Liu, 2017).

Definition of Terms

High-incidence disabilities. High school students were identified as having a high-incidence disability if they had a current Individualized Education Plan or 504 Plan that specified one of the following diagnoses: Attention Deficit Hyperactivity Disorder (ADHD), Learning Disability (LD), Speech and Language Impairment (SLI), or mild Emotional and Behavioral Disorder (EBD). A student is considered to have a mild EBD when he or she is able to attend and participate in an inclusive classroom without disturbing the learning or safety of other students within the class.

SRSD. SRSD instruction involves three central components (a) an argumentative writing strategy, (b) self-regulation strategies, and (c) six stages of SRSD instruction for teaching writing and self-regulation strategies. The argumentative writing strategy is represented by the mnemonic HIT SONGS^3. The first word of the mnemonic, HIT, outlined the essential introduction paragraph elements (a) **H**ook, (b) **I**ntroduce the topic, and (c) **T**hesis. The next part of the mnemonic, SONG, was repeated three times to analyze each of the perspectives stated in the prompt; (a) **S**tate the perspective, (b) **O**utlook on the perspective, (c) **N**eed examples, and (d) **G**ive your opinion. The final portion of the mnemonic, S^3, reminded students what needed to be included in the conclusion paragraph; (a) **S**upport your thesis, (b) **S**tate the relationships between your thesis and the perspectives given in the prompt, and (c) **S**ummary. Self-regulation strategies include goal setting, self-instructions, self-evaluation, and self-reinforcement. The six instructional stages are (1) Develop Background Knowledge, (2) Discuss the Strategy, (3) Model the Strategy, (4) Memorize the Strategy, (5) Support the Strategy, and (6) Independent Performance.

Criterion performance. The design of the instruction allows for each student to be taught until criterion performance has been met for each of the six SRSD instructional stages. Criterion performance was determined for each stage through having students complete a task aligned with the goal of that stage of instruction.

Argumentative writing. Writing that supports a claim through analyzing various perspectives on a topic and using reasoning and evidence (CCSS, 2015b).

Summary

Overall, effective procedures for helping students with high-incidence disabilities be successful on the ACT writing test need to be developed. This is because many students applying for and attending college have disabilities and college is important for all students, including those with high-incidence disabilities. Students with high-incidence disabilities and struggling writers have significant writing problems which reduce their chances of being successful on the ACT writing test. It is important to develop writing instruction to help students on the ACT writing test as there currently is no data on how to help these students be successful on the ACT writing test.

A possible solution is to use SRSD instruction to teach students an argumentative writing strategy for the ACT writing test. A review of the research literature on SRSD writing instruction for high school students with disabilities is included in Chapter 2. Chapter 3 includes a complete description of the study's methodology.

CHAPTER 2

REVIEW OF LITERATURE

Why Writing Is Important

Writing is an essential skill for life. Students need to graduate high school with considerable writing competence in order to be successful in college, the workplace, and the community (Graham & Perin, 2007b). Writing is an effective tool because it can assist students in learning content material by encouraging students to decide what information is most important, synthesize information, reflect on what they write and have learned, and put information into their own words (Graham and Hebert, 2011). Further, the importance of writing has been recognized by many educational policy makers as evident through the Common Core State Standards (CCSS) for Writing (CCSS Initiative, 2015a).

More specifically in terms of education and learning, writing is important because it is used to evaluate students' learning (Kiuhara, Graham, & Hawken, 2009). To demonstrate their knowledge, students frequently are asked to write paragraphs, short responses, or complete written worksheets for an assignment. Further, writing is a useful tool for learning (Bangert-Drowns, Hurley, & Wilkinson, 2004). Writing can help facilitate learning as it can require making decisions about which information is most important as well as synthesizing this information. Writing to learn also provides students the opportunity to be reflective about their own learning as it creates a concrete record of material students view as important enough to record, while also helping students internalize information, as putting information into one's own words can make it more memorable.

Given the importance of writing, there is an increasing need to be able to write effectively. There are multiple implications for individuals who write poorly. First, if students are not proficient writers by the end of high school, they will be unable to meet the challenging academic demands of college (Graham & Perin, 2007b). Students are expected to convey their knowledge and abilities through writing in college and are assessed on their writing products. Second, writing proficiency affects success in the workplace (Graham & Perin, 2007b). Decisions on hiring and promoting individuals, in a variety of fields, are impacted by a person's ability to write effectively (The National Commission on Writing, 2004).

Organization of the Chapter

The chapter is divided into three sections. First, an examination of current practices for teaching writing to high school students is presented. This review provides a foundation for understanding what high school students already experience when learning writing skills at school, which is relevant to the proposed argument for this dissertation: students with high-incidence disabilities who struggle with writing need explicit instruction for the writing portion of the ACT test above and beyond what is currently provided within the classroom. Next, a review of studies that utilize self-regulated strategy development (SRSD) instruction for teaching writing to high school students with disabilities is presented. This is relevant because SRSD is the proposed instructional method for teaching a writing strategy to high school students with high-incidence disabilities in the proposed study. Finally, a review of studies that examined current college entrance exam test preparation practices is presented. This is relevant as this

study proposes to analyze the effectiveness of an intervention for the college entrance exam writing test.

Current High School Writing Instruction

There are many qualitative reviews and meta-analyses about teaching writing (cf. Gillespie & Graham, 2014; Graham & Harris, in press; Graham & Hebert, 2011; Graham & Perin, 2007a; Rogers & Graham, 2008). The purpose of this section of the review of literature is to synthesize the information known about teaching writing to high school students. This section of the review of literature addresses three research questions:

1. What are current writing practices at the high school level?
2. What are effective writing interventions for high school struggling writers and what writing skills do these interventions address?
3. How are high school students being prepared for high-stakes writing tests and college writing?

Review Method

Given the amount of research conducted on teaching writing, inclusion criteria were limited to scholarly and peer-reviewed journal articles retrieved through an electronic library database search and Google Scholar. Resources that did not address issues related to high school students' writing were excluded. For the first and second research question, the search specifications included "writing AND high school," and "teaching writing AND high school." The first research question addressed specific writing practices at the high school level; thus, studies that included surveys, interviews, and observations were included if appropriate. For the second research question, meta-analyses and reviews of literature were considered due to the vast amount of literature on

writing interventions. The search specifications for the third research question included "preparing students for writing in college," and "writing test preparation." Articles that were systematic studies (i.e., experimental, quasi-experimental, meta-analysis, or qualitative) were included if appropriate.

As an additional step, a preeminent writing researcher (i.e., Steve Graham) was contacted and identified manuscripts that were appropriate to this review. Furthermore, to gain a clear picture of the most current writing practices with high school students, only studies conducted within the last 10 years were considered. A total of 11 research articles were identified and included in this review (see Table 4 for an overview of each article).

Coding forms were used to review each obtained study. First, the coding sheet for the three survey studies was created based on the paper *Six Criteria for Survey Sample Design Evaluation* (Wang & Fan, 1998). The six criteria included (a) specified population, (b) unit of analysis, (c) desired sample size, (d) selection procedures, (e) response rate, and (f) estimation procedures (Wang & Fan, 1998). The coding sheet for the five meta-analyses was adapted from the website *Evaluating the Validity of a Meta-Analysis* (Office of Medication Education Research and Development, 2008). The seven criteria included (a) research question, (b) specified population, (c) inclusion criteria, (d) number of studies, (e) assessment of study quality, (f) data abstraction, and (g) homogeneity of results form study to study (Office of Medication Education Research and Development, 2008). There was one review of literature included. The quality of the review of literature was evaluated using similar criteria from the meta-analysis coding sheet and a checklist from the book *Writing Literature Reviews* (Galvan, 2013).

Furthermore, the qualitative study was evaluated through consulting the book *Qualitative Research Design* (Maxwell, 2013) with a particular emphasis on assessing validity. Finally, one practitioner article was included and evaluated using review criteria for the journal Teaching Exceptional Children which includes importance of the topic, originality, clarity, accuracy and validity of the content, value of the contribution to the professional literature, implications for special education practitioners, and quality of the writing (Sage Publications, 2016). All of the articles were read at least three times to gain an overall understanding of the content, to discover information to complete coding sheets, and to provide an accurate description before writing this section of the review of literature.

Table 4

Overview of Articles Reviewed for Section on Current High School Writing Instruction

Article	Methods	Topic	Grade(s)	*N*
Applebee & Langer (2011)	Classroom observations, teacher and student interviews, and a teacher survey	Writing in schools	6^{th} – 12^{th}	260 classrooms – observation 220 teachers & administrators – interviewed, 138 students – interviewed 1520 teachers – survey
Cook & Bennett (2014)	Review of single case design studies	Writing interventions for students with disabilities	9^{th} – 12^{th}	14 studies
Gillespie & Graham (2014)	Meta-analysis	Writing interventions for students with LD	1^{st} – 12^{th}	43 studies
Gillespie, Graham, Kiuhara, &	Survey of teachers	Writing to learn activities across content areas (English, history,	9^{th} – 12^{th}	211 teachers

Hebert (2014)		science, and math)		
Graham & Harris (in press)	Meta-analysis of meta-analyses	Evidence-based writing practices	1st – 12th	20 studies
Graham & Hebert (2011)	Meta-analysis	Connection between writing and reading	1st – 12th	95 studies
Graham & Perin (2007a)	Meta-analysis	Effective writing instruction elements	4th – 12th	142 studies
Kiuhara, Graham, & Hawken (2009)	Survey of teachers	Writing within content areas (English, history, science, and math)	9th – 12th	361 teachers
Moss & Bordelon (2007)	Qualitative (observations, interviews, and survey)	Practices of three high school teachers instructing a reading and writing course for seniors	12th	3 classrooms
Olinghouse & Colwell (2013)	Practitioner article	Research-based recommendations for preparing students with LD for large-scale writing tests	3rd – 12th	Not applicable
Rogers & Graham (2008)	Meta-analysis	Writing interventions evaluated by single case design studies	1st – 12th	88 studies

Note. LD = Learning Disability

Results

What are current writing practices at the high school level? A total of three studies were located that addressed this question (Applebee & Langer, 2011; Gillespie, Graham, Kiuhara, & Hebert, 2014; Kiuhara, Graham, & Hawken, 2009). Methodology applied included surveys, interviews, and observations of high school teachers' writing practices.

Description of survey studies. The first survey study occurred during the fourth year of a four year study and targeted middle and high school teachers (Applebee & Langer, 2011). The survey's goal was to gain information about writing in classrooms and was sent to a representative sample of 9,298 teachers within English, math, science, and history content areas. Across the four subject areas, an equal number of surveys were sent to middle school and high school teachers. The authors additionally decided to oversample five states of whose curriculum they had studied during year three of the four year study. The authors did not specify how they calculated their desired sample size. They received 1,520 responses, equaling a 25.7% response rate. The authors grouped the data by grade level and subject area for analyses. The authors analyzed the background variables, which were provided through Market Data Research (MDR), of responders and nonresponders. While most of the variables indicated no differences between the two groups, a significant difference was identified in the locale of teachers. The teachers in suburban communities responded less than the other locales. To adjust for oversampling in five states and the nonresponders, the authors constructed weight variables based on estimates for each state from the National Center for Educational Statistics. In general, the study was well conducted, but is limited by not specifying a desired sample size, the oversampling of five states, and the small return rate.

In a second study, researchers surveyed a random sample of ninth through 12th grade teachers across English, history, science, and math content areas (Gillespie et al., 2014). This study inquired about the use of writing to learn activities across content areas. The survey was sent to 800 teachers which was determined by assuming a 50% return rate and a sampling error of plus or minus 3% within a 95% confidence interval. The

actual return rate was 26% (N = 211). During analyses the authors grouped the teachers according to content area. The authors used the information from MDR to analyze any differences between responders and nonresponders; no statistically significant differences were identified. No weighting or adjustment was needed due to the similarities in responders and nonresponders. The study is limited though by the low response rate.

The final study surveyed ninth through 12th grade English, history, and science teachers (Kiuhara et al., 2009). The study focused on learning about the use of writing across content areas. The survey was sent to 711 teachers using stratified random sampling procedures selecting equal numbers of teachers in the four geographic regions of the United States. Their sampling numbers were determined by expecting a 50% return rate with a sampling error of 5% for binary questions and 3.5% for questions with eight possible response choices. The total response rate was 51% (N = 361). The authors analyzed the data by grouping teachers based on content area. Using the information from MDR the authors analyzed the differences between responders and nonresponders. The only statistically significant difference was based on content area as English teachers were more likely to respond to the survey. The authors did not provide any information about using weighting or nonresponse adjustment for significant differences between responders and nonresponders. Largely, this study met high quality standards, including a good response rate, but would have been improved through a discussion of techniques for addressing differences between responders and nonresponders.

Overall, the survey studies included in this section of the review of literature were of good quality. They provided clear descriptions of the specified population and information on selection procedures. Two of the studies specified how they determined a

desired sample size and all studies reported the total number of responses and response rate. A limitation for two of the studies was a small response rate, 26% or less. Additionally, all the studies described their procedures for testing for differences between responders and nonresponders. However, only one of the two studies that found differences reported use of appropriate estimation procedures to take the differences into account. The survey studies addressed writing assignments, writing to learn, technology, audience for writing, and approaches to teaching writing.

Writing assignments. It is commonly assumed that high school students are expected to produce written products across content areas (i.e., English language arts, social studies, science, and math). In a survey of high school English language arts, social studies, and science teachers by Kiuhara et al. (2009), teachers reported that the most common types of writing they assigned were short answer response, response to material read, completing worksheets, and summary of materials read. On average, teachers reported implementing these activities once a week. Other writing activities that were reported being used monthly were journal entries and writing lists. Longer assignments, such as a five-paragraph essay or a persuasive essay, were assigned once a quarter or once a semester. Many writing assignments teachers reported using only once per year or less, including copying text, PowerPoint presentation, personal narrative, research paper, email correspondence, short story, poem, book report, memo, biography, autobiography, business letter, and stage/screen play.

The survey results also found differences by discipline (Kiuhara et al., 2009). Language arts teachers were more likely than social studies and science teachers to have students write creatively, use writing for personal purposes, or to respond to reading

materials. Language arts teachers were also less likely to use worksheets as compared to social studies teachers. The social studies teachers assigned students more writing using composing assignments as compared to science teachers. These activities included responding to reading material, five-paragraph and persuasive essays, short stories, book reports, biographies, and autobiographies. Finally, science teachers were more likely to assign students writing without composing activities that focused on learning concepts, such as worksheets and writing step-by-step instructions, as compared to English language arts and social studies teachers.

In their extensive study of writing instruction, Applebee and Langer (2011) observed 260 classrooms, interviewed 220 teachers and administrators, interviewed 138 students, and surveyed a random selection of 1,520 teachers. In their study, they found that students were not required to write very much while in high school, and that there were differences in writing expectations across subject areas. They found that high school students were averaging writing 1.6 pages a week for English class and 2.1 pages for science, social studies, and math combined. When students were asked to write an assignment that was one page or less, English teachers reported assigning an average of 5.5 papers during a quarter with science, social studies, and math combined only reporting assigning 8.9 papers per quarter. Additionally, most of the assignments were writing without composing (i.e., fill in the blank or short answer) and only 17.6% of the assignments involved writing a paragraph or more, which Applebee and Langer considered extended writing. When writing in class, students spent about 7.7% of time on extended writing across English, social studies, science, and math.

Based on the results of the two studies, high school students were not expected to write very much and there were differences across subject areas in what they write (Applebee & Langer, 2011; Kiuhara et al., 2009). High school students were mainly expected to write short answer responses. Longer essays were more often assigned by English language arts teachers and only occur a few times a year. Other content area teachers assign writing, but it most often is writing without composing. Overall, Applebee and Langer (2011) and Kiuhara et al. (2009) both found that high school teachers used writing as a way for students to respond or summarize information about material read; however, there are many other ways students can use writing to help them learn, such as note-taking, written analysis, journaling, and synthesizing information across sources (Ray, Graham, Houston, & Harris, 2016).

Writing to learn. A recent survey examined high school teachers' reported use of writing to learn activities across the content areas of English language arts, social studies, science, and math (Gillespie et al., 2014). The survey asked teachers about the frequency with which they implemented 43 different writing to learn activities within the school year. Taking notes while listening was the writing to learn activity teachers reported using once a week or more. The writing activities to support student learning that teachers reported using several times a month included taking notes while reading, composing an explanation, responding to short answer questions, completing worksheets, drafting a description, and writing an analysis or interpretation. Most of these writing to learn activities involved writing without composing. The rest of the 36 writing to learn activities teachers reported implementing them once a month to not at all.

The results of this survey also found differences in the writing to learn activities implemented by subject area (Gillespie et al., 2014). English language arts teachers were more likely to have students write longer essays (i.e. literary analysis) and write creatively (i.e. write a metaphor) than social studies, math, and science teachers. Math teachers were more likely than English language arts, social studies, and science teachers to have students use writing to help them solve a problem. Science teachers were more likely than all other teachers to have students write a lab report. Social studies teachers were more likely to have students write longer essays (i.e. persuasive, defending a point, or 5-paragraph essays) than math or science teachers. Math, science, and social studies teachers were all more likely than English language arts teachers to have students learn by taking notes while listening.

When having students utilize writing activities to support their learning, teachers reported providing instruction for the writing to learn activities 53% of the time (Gillespie et al., 2014). Most commonly, this included describing the writing to learn strategy to the students. When they taught the writing to learn activity about half of the time teachers explained why it was effective, modeled its use, had students practice the activity independently or with a peer, discussed and reminded students other situations students could use the strategy, and assessed the impact of the writing to learn activity. They also reported providing additional instruction for students who needed extra assistance. In general, the survey found that high school students were not often expected to complete writing to learn activities that involve composing. The longer essay compositions occur most often within the English language arts class and occur once a month or less.

Technology. An important result from the Gillespie et al. (2014) survey was that four of the writing to learn activities that teachers reported using infrequently involved the use of technology. This included 80% or more of the teachers stating they never or only a few times a year had students complete writing to learn activities that involved writing emails, blogs, web pages, or creating PowerPoints. This was similar to the findings from Applebee and Langer (2011) on the use of technology to teach writing.

The study by Applebee and Langer (2011) also addressed the use of technology when teaching writing. They found that most of the time the technology for teaching writing was used by the teacher to present information through the use of a document camera, PowerPoint, internet, and videos. Most often, technology was used by students to type written documents through word processing or for accessing the internet for source material. The survey revealed that 80.2% of high school English language arts teachers reported having students use word processing to create final drafts to of papers.

Audience for writing. Applebee and Langer (2011) reported that teachers were the audience for much of the work that high school students write. However, not all writing assignments were graded by teachers across English language arts, social studies, science, and math reporting responding to student writing without grading 20% of the time. Students were also commonly asked to share their writing with peers. Forty-four percent of English teachers reported having students frequently or very frequently share writing with other students.

Approaches to teaching writing. The survey by Kiuhara et al. (2009) examined the evidence-based writing practices teachers reported using when teaching writing. The three evidence-based practices used by more than half of the teachers several times a

month were positive reinforcement, direct instruction (defined as modeling, guided practice, and review), and developing specific writing assignment goals. Applebee and Langer (2011) also found that English teachers used direct instruction to explicitly teach writing strategies. However, when they observed English classrooms, only 6.3% of the time was used for direct instruction with an additional 5.5% of time spent studying writing models. This is a small amount of time spent teaching writing strategies. As noted by Applebee and Langer (2011), this amounted to a little over three minutes of instruction on writing strategies in a 50-minute class period or two hours and 22 minutes over a nine week grading period.

Additionally, Applebee and Langer (2011) discovered that across subject areas, there was a focus by teachers on what needs to be included in the writing assignment, and this was actualized through discussion, rubrics, and sometimes exemplar models of writing assignments. Furthermore, 90% of English language arts teachers also reported using a process-oriented approach to writing instruction where they spent class time teaching strategies for generating ideas, planning, drafting, revising, and organizing writing assignments. A process approach to writing was also reported by social studies teachers with 60.7% reporting spending class time on developing ideas before writing and 41.4% teaching writing strategies. Having students work collaboratively can also help students with writing. Applebee and Langer's study (2011) revealed that 60.4% English language arts teachers reported students working together on writing and 43.9% reported creating a writing workshop environment for students.

A final aspect addressed in the study by Kiuhara et al. (2009) was teaching writing to high school students who were struggling learners. Their survey revealed that

teachers reported minimal use of adaptations for struggling writers with only two adaptations, increasing students writing about what they read and additional instruction on organizing text, being used one to two times per month. The other 14 adaptations teachers reported using only once or twice a year. Why teachers across subject areas did not implement more adaptations in this study was unknown. One possibility is that teachers were unaware of evidence-based writing instructional strategies and interventions that could assist their students who struggle with writing.

The three studies (Applebee & Langer, 2011; Gillespie et al., 2014; Kiuhara, Graham, & Hawken, 2009) reviewed in this section provide information about the current writing practices of high school students. Based on these studies, high school students are being assigned writing and writing to learn activities across all subject areas. However, high school students are not expected to write very much and writing assignments often are writing without composing. In general, students write more in English language arts class than in any other subject area. Students infrequently use technology for writing and when technology is used it is for students to compose a final draft on a word processing program. When completing writing assignments, students mainly write for their teachers or peers. Finally, teachers use evidence-based practices for teaching writing, but they spend a very short amount of time providing such instruction. The instruction is often centered on explaining a rubric to students or using the process writing approach. For students who are struggling learners, minimal use of adaptations were reported.

While these three studies provide a good base of information on writing practices in high school, more research is needed for generalizability of the information. Furthermore, there currently are no standards or developmental research about the

amount of writing that should be done by high school students. This makes it difficult to determine what the right amount of writing is for them. Additionally, when responding to surveys teachers may interpret the questions differently or have various ideas about what different types of writing assignments entail. Overall, more than three studies are needed to provide a picture of the writing occurring in high schools. Given the relatively limited time and attention to teaching writing in high school in many classes, it seems important to provide students in general and those with disabilities with more instruction on how to write and write successfully when taking high-stakes assessment – a basic objective of my proposed study.

What are effective writing interventions for high school struggling writers and what writing skills do the interventions address? Several meta-analyses (Gillespie & Graham, 2014; Graham & Harris, in press; Graham & Hebert, 2011; Graham & Perin, 2007a; Rogers & Graham, 2008) and a review of literature (Cook & Bennett, 2014) have been conducted to determine the effectiveness of various writing interventions and to provide information about evidence-based writing instruction. This review synthesizes the information from these five meta-analyses and review of literature that is relevant to teaching high school students. However, it must be noted that these studies did not allow me to limit my examination just to high school students, as they often included students in other grades (e.g., middle school).

Description of the meta-analyses and review of literature. The first meta-analysis was conducted by Gillespie and Graham (2014). They evaluated research on writing interventions for students with LD across first through 12th grade. Their inclusion criteria for articles was that the study (a) involved students in grades first through 12th

with LD; (b) tested a writing intervention; (c) evaluated students' quality of writing; (d) included a randomized control trial, quasi-experimental, or within-subjects group design; (e) included data needed to calculate an effect size and average weighted effect size; and (f) published in English (Graham & Gillespie, 2014). These inclusion criteria were appropriate based on their research questions. Their search process was thorough and they identified 281 documents. After using their inclusion criteria, the meta-analysis included 43 studies. The authors carefully coded each study for content and used seven quality indicators. The authors provide the readers with a table of the quality indicators and evaluation of each study. The first author coded all the studies and an additional 30% of randomly selected studies were coded by the second author of the study with an interrater reliability of 99%. Since not all of the results from the studies were homogenous, the authors used a random effects model when making calculations across studies (i.e., average weighted effect size). Additionally, they used two additional measures of heterogeneity to check if their calculations were greater than what could occur from sampling error alone. The limitations to this study were that only 30% of the studies were coded by a second reader. Additionally, the study's methods would be more easily reproducible if there was accesses to the coding sheet they utilized.

The next meta-analysis was conducted by Graham and Harris (in press). They conducted a meta-analysis of meta-analyses on evidence-based writing practices for students in first through 12th grade. Their inclusion criteria was appropriate based on their research question and included (a) the study was a meta-analysis; (b) the meta-analysis evaluated experimental, quasi-experimental, and single-subject design; and (c) meta-analysis examined specific writing interventions. The authors included 20 meta-analyses

in their meta-analysis. However, their search process was not thoroughly described so it is unknown how many documents they originally located compared to the 20 meta-analyses that met their inclusion criteria. The authors evaluated each meta-analysis for the description of the type of studies, practices assessed, and the outcomes evaluated. Unfortunately, there was no description of using a coding sheet, evaluating the quality of the meta-analyses included, or information about the number of readers of each meta-analysis and interrater reliability. The authors did address the combination of heterogeneous results by using a weighted random effects model and calculating two homogeneity of effects statistics. Overall, due to the lack of information, I found that the authors' methods were not reproducible.

Graham and Hebert (2011) conducted the third meta-analysis which evaluated the impact of writing on students' reading abilities across first through 12th grade. Their inclusion criteria for articles was that the study (a) was a true or quasi-experiment; (b) involved a treatment group that wrote; (c) evaluated the impact of writing on a reading measure; (d) involved students in grades first through 12th; (e) provided statistics needed to compute a weighted effect size; and (f) was published in English. These inclusion criteria were appropriate based on their research questions and yielded 95 studies. Their search process was thorough and they originally identified 752 documents before assessing documents based on inclusion criteria. Each article was read by both authors independently and coded for descriptors, 11 quality indicators, and variable to calculate effect size. The authors provided a description of the quality of the research analyzed in the meta-analysis. The coding process resulted in an initial agreement of 94.8% and conflicts were resolved through discussion and reexamining the study. The authors

managed heterogeneous results by using a weighted random effects model and calculating two measures of homogeneity. In general, the methods of this meta-analysis would be reproducible if there was access to the coding sheet.

Another meta-analysis by Graham and Perin (2007a) investigated the instructional practices that improve the writing quality of adolescents. The inclusion criteria for this meta-analysis was that the study (a) included studies about learning to write and writing to learn; (b) included students in grades fourth through 12th; (c) analyzed students in regular schools, no special schools included; (d) measured students' quality of writing; (e) utilized an experimental or quasi-experimental design; and (f) provided the data needed to calculate effect size. While a description of the search procedures were not provided, the authors did note that they originally found 582 documents of which 142 studies met the inclusion criteria. The authors indicated they coded each study for 7 variables, but no information about the quality of the studies were discussed. Additionally, the authors of the meta-analysis did not state whether the authors first coded the studies together or independently and if both authors coded every article. Reliability of coding was established by having a doctoral student code 15% of the studies with an interrater reliability of 94%. The authors used a weighted fixed-effects model and a homogeneity test due to the combining of some heterogeneous results. Overall, this review is reproducible due the specific inclusion criteria and the well described coding categories.

The final meta-analysis included in this section of the review of literature was by Rogers and Graham (2008). In their meta-analysis they evaluate effective writing practices that were tested using single case design studies. The inclusion criteria was

appropriate for the research question and was that the study (a) involved students in grades first through 12th; (b) was conducted in a regular school, private school, alternative school, summer program, clinic, or residential facility; (c) used single case design; and (d) provided the data needed to calculate percent of nonoverlapping data (PND). The authors conducted a broad search and originally identified 119 documents with 88 documents meeting the inclusion criteria. The authors coded each of the studies for 10 descriptive items and 11 quality indicators. The quality of the studies included in the meta-analysis was reported in the discussion of the paper. One of the researchers read and coded all of the articles and another researcher coded a randomly selected 20% of the articles. Their average percentage of agreement was 96%. The authors calculated the mean, median, and range for PND when there were four or more studies that evaluated the same treatment or similar outcome measure. Their meta-analysis model involved a nonparametric approach using the PND. Overall, the methods of this meta-analysis are reproducible.

On the whole, the meta-analyses included in this section of the review of literature were of high quality. They all had inclusion criteria that were aligned with research questions and most studies provided information about search procedures. Additionally, all the studies used coding to aggregate data and information from each of the studies included in their meta-analysis. To improve the replicability of these studies, it would have been beneficial to be provided with or have access to the coding sheets used when scoring the studies. While all of the reviews coded for descriptive information, only three of the meta-analyses coded studies for quality. Evaluating the quality of the included studies is important information for the reader to evaluate the quality of the meta-analysis

as a whole. Furthermore, four of the reviews provided information about reliability of coding and included interrater reliability information. However, only a small number of studies were typically coded by multiple people. It would be best to have all the studies analyzed by two people and have a process for comparing results and resolving conflicts. Finally, all of the reviews described methods for handling the combination of heterogeneous results.

One review of literature was included in this section because of its focus on writing interventions for high school students with disabilities (Cook & Bennett, 2014). The inclusion criteria for this study was appropriate based on the research questions and stated that each study (a) included high school students in ninth through 12th grade or who were 14 years or older; (b) was published in a peer-reviewed journal between 1965 and 2011, (c) used single case design, (d) included a writing intervention focused on writing expression, and (e) involved students with disabilities. The review of literature provided detailed information about search procedures which yielded 136 documents. After analyzing the studies against their inclusion criteria, only 14 studies were included in the review of literature. Both authors read and coded all of the studies using a coding sheet designed from the What Works Clearinghouse standards for single-case design studies. The interobserver agreement for coding the type of single case design, standards, and evidence of experimental effect was 100%. The interobserver agreement for visual analysis was 98%. The methods for this literature are reproducible and the authors provided a detailed review of the articles. In general, this review of literature was of high quality with a limitation being the small number of studies included due to the specificity of the research questions.

The meta-analyses and review of literature included here addressed many aspects of writing instruction including strategies instruction, editing, paragraph construction, pre-writing, collaborative writing, word processing, inquiry, process writing approach, exemplar models, writing to learn activities, sentence construction, goal setting, writing summaries, facilitating motivation, giving feedback, procedural facilitation, text structure, and connection between writing and reading.

Strategies instruction. Across four of the meta-analyses (Gillespie & Graham, 2014; Graham & Harris, in press; Graham & Perin, 2007a; Rogers & Graham, 2008) and the review of literature (Cook & Bennett, 2014), teaching students to write using strategies instruction was identified as being highly effective. In Graham and Harris' meta-analysis of existing meta-analyses (in press), teaching students in grades second through 10th general strategies for planning, drafting, revising, and editing through strategy instruction which involved description of the strategy, modeling, and practicing the strategy was effective in improving students' writing quality. Strategies instruction had an average weighted effect size of 1.26 with all studies producing a positive effect. Gillespie and Graham (2014) found similar results in their meta-analysis of writing interventions for students with learning disabilities. They identified an averaged weighted effect size of 1.09 for improving the quality of students in grades fourth through 10th with learning disabilities writing when taught using strategy instruction. In their review of single case design studies that implemented writing interventions with students with disabilities in high school, Cook and Bennett (2014) found strategies instruction to have a strong effect when using the What Works Clearinghouse standards. Of the 11 key elements of writing instruction, that were effective when teaching adolescent students,

identified by Graham and Perin (2007a), teaching students writing strategies had the largest effect size of 0.82.

Editing. Rogers and Graham (2008), in their meta-analysis of single case design studies, found that teaching average and struggling writers strategies for editing decreased the amount of errors in students' essays. A variety of editing strategies were used and studies examined different errors including spelling, grammar, and punctuation. For students in grades eighth through 12th, the median PND was 100%.

Paragraph construction. Rogers and Graham (2008) also found strategy instruction for paragraph construction improved the elements students included within their paragraphs. The median PND was 100%.

Pre-writing. Another effective practice to improve students' writing that was identified across all four meta-analyses was pre-writing. Teaching students to brainstorm and organize their generated ideas before writing improved the quality of students' writing. The calculated effect size was similar across studies with an effect of 0.32 (Graham & Perin, 2007a) and 0.48 (Graham & Harris, in press). Rogers and Graham (2008) found pre-writing also improved the quality of writing of struggling writers in grades third through fifth, eighth, and 12th, with a median PND of 55%. Gillespie and Graham (2014) found that students with learning disabilities writing quality also improved when taught pre-writing strategies with an averaged weighted effect size of 0.33.

Collaborative writing. Several important writing instruction elements were identified by both Graham and Harris (in press) and Graham and Perin (2007a). Having students collaboratively work through the writing process of planning, drafting, revising,

and editing with one another improves students' quality of writing. The effect sizes were similar for Graham and Harris (in press; effect size = 0.74) and for Graham and Perin (2007a; effect size = 0.75).

Word processing. Furthermore, having students write using word processing programs improved their writing quality. Graham and Perin (2007a) identified a moderate effect for average writers (effect size = 0.51) and a large effect for struggling writers (effect size = 0.70). When compared to having students write by hand, Graham and Harris (in press) found that students in grades first through 12th who wrote using word processing improved their writing quality with an effect size of 0.44.

Inquiry. Inquiry was another effective instructional writing practice where students participated in activities, such as gathering evidence or evaluating data, to help them generate ideas and develop content for their writing. Both studies also identified inquiry activities as effective writing practices with an effect size of 0.32 (Graham & Perin, 2007a) and 0.37 (Graham & Harris, in press).

Processing writing approach. Moreover, using a process writing approach was effective in improving students' writing quality. Students were encouraged to use the writing cycle of planning, drafting, revising, and editing. Students also wrote for a real audience, were provided multiple opportunities for writing, worked in a supportive writing environments, and were encouraged to self-reflect about their writing. The effect sizes were 0.32 (Graham & Perin, 2007a) and 0.34 (Graham & Harris, in press).

Exemplar writing models. Another effective writing practice was to provide students with exemplar models of writing. Students were then encouraged to emulate the essential elements of the model writing in their own work. Studying models of writing

was effective in improving students' quality of writing with an effect size of 0.25 (Graham & Perin, 2007a) and 0.30 (Graham & Harris, in press).

Writing to learn activities. An additional writing activity that increased students' learning was the use of writing to learn activities. This helped students with the learning of content material through writing across subject areas. Writing to learn activities had an effect size of 0.23 (Graham & Perin, 2007a) and 0.29 (Graham & Harris, in press).

Sentence construction. Writing instruction at the sentence level was also an effective practice. Both sentence construction (Rogers & Graham, 2008) and sentence combining (Graham & Harris, in press; Graham & Perin, 2007a) were found to improve students' ability to write complete and more complex sentences. When working with average and struggling writers in grades sixth through eighth and 10th through 12th instruction in sentence construction improved the percent of complete sentences in students' writing with a median PND of 83%. The effect size for teaching students in grades fourth through ninth sentence combining was 0.50 (Graham & Harris, in press; Graham & Perin, 2007a).

Goal setting. Another effective writing instruction practice was the use of goal setting. When working with average and struggling writers, setting goals helped increase students in grades eighth through 12th productivity with a median PND of 91% (Rogers & Graham, 2008). Graham and Perin (2007a) also found setting writing product goals to be effective in improving students' writing quality with an effect size of 0.70.

Writing summaries. Further, teaching students to write summaries about information they have learned had a positive effect on their summary writing abilities.

Summarization instruction in studies ranged from using strategies instruction to the use of model summaries. The effect size was 0.82 (Graham & Perin, 2007a).

Facilitating motivation. There were four additional evidence-based writing practices identified solely in the meta-analysis by Graham and Harris (in press). First of all, facilitating motivation with students in grades fifth through 12th helped improve students' writing quality with an averaged weighted effect size of 1.07. This was done through classroom activities to increase students' self-efficacy or intrinsic motivation about writing.

Feedback. Next, several forms of feedback improved the quality of students' writing. In second through ninth grade, peer feedback had an averaged weighted effect size of 0.77 (Graham & Harris, in press). Self-feedback, when students in grades second through 12th were taught how to evaluate their own work, had an averaged weighted effect size of 0.51. Students in grades sixth through 12th also benefited from machine feedback with an averaged weighted effect size of 0.34.

Procedural facilitation. Procedural facilitation, such as giving additional supports, hints, or guidance to help students work through the writing process, improved students' writing quality. The averaged weighted effect size was 0.52 (Graham & Harris, in press).

Text structure. Finally, teaching students in grades second through 10th about text structure had an averaged weighted effect size of 0.30 (Graham & Harris, in press). Instruction on text structure improved students' quality of writing.

Writing and reading connection. One additional meta-analysis focused on the connection between writing and reading (Graham & Hebert, 2011). To begin, they

identified that for students in grades second through 12th writing about information students had read improves students' reading comprehension on norm-referenced tests (effect size = 0.37) and research designed tests (effect size = 0.50). For students who were struggling writers and readers, writing about text improved reading comprehension with an effect size of 0.64. Subsequently, they found that for students in grades fourth through 12th receiving instruction in sentence construction or spelling (effect size = 0.66) and instruction in process writing, text structure, or paragraph/sentence development (effect size 0.22) improved students' reading comprehension.

Overall, the reviews identified evidence-based writing practices, such as strategies instruction, to average writers, struggling writers, and writers with learning disabilities. The meta-analyses provided 16 elements to include when teaching writing to students in high school. Additionally, Graham and Hebert (2011) examined how writing about text and writing instruction can improve students' reading comprehension. A challenge when interpreting information from these meta-analyses is that they analyzed evidence-based writing practices across grades levels from elementary through high school. A meta-analysis of high school evidence-based writing practices is needed in order to provide a clearer understanding of what is most effective with adolescent students. Developing high school students' writing abilities through the use of evidence-based practices is essential in preparing them to do well on high-stakes tests and college writing.

The findings from these reviews, however, provide support for the proposed study, showing that students' writing, including the writing of students with disabilities can be improved. They further demonstrated that teaching strategies for planning and drafting text is effective, the central ingredient in the instructional approach I will apply

in my study. Moreover, teaching procedures that I will apply in this study including, teaching text structure, providing feedback, providing procedural assistance, promoting motivation, self-assessment, goal setting, exemplar models, and pre-writing are also effective.

How are high school students being prepared for high-stakes writing tests and college writing? Three studies were located that addressed this question (Applebee & Langer, 2011; Moss & Bordelon, 2007; Olinghouse & Colwell, 2013). The studies examined preparing high school students for high-stakes test and writing in college through surveys, interviews, and observations of high school teachers' writing practices.

Description of studies. The quality of the first study by Applebee and Langer (2011) was reviewed in a previous section. The second study by Moss and Bordelon (2007) was a qualitative study with the clear purpose of learning how three teachers implement a rhetoric and writing class for seniors in high school. The authors provided a framework for the course and discussed its basis on genre theory. The research questions focused on teachers' practices, impact of the curriculum on the teachers' understanding of what students needed to learn, and the teachers' and students' perceptions of the course. There was a clear relationship between the research questions and the authors' methods of data collection which included accumulating course documents, interviewing teachers and students, and giving teachers a survey. The validity of the study was addressed by collecting rich data and triangulating the sources of information by conducting observations, interviews, and a survey. The authors also conducted member checks by gaining feedback from the participants about their data and conclusions. One limitation to the validity of the study was that there was not long term involvement by the

researchers. The researchers conducted only five observations per classroom over a three month period which provides more of a snapshot of the course versus examining the course throughout the entire school year. In general, this study was of high quality and validity, with the limitation of the amount of time spent observing the course.

The final study included in this section of the review of literature is a practitioner article (Olinghouse & Colwell, 2013). This article addressed the important and original topic of large-scale writing assessments by providing teachers with recommendation on how to prepare students with LD to take these tests. The article provided six research-based recommendations. The recommendations were supported by providing evidence and citing research reports and were clearly explained through vignettes of how a teacher might implement each recommendation. The content was valuable because there has been increased importance placed on students' performance on large-scales tests including students with LD. Practitioners were given six concrete ways to assist their students with LD on large-scale writing tests and were provided tools on how to implement the recommendations. Overall, this article meets the needs of many practitioners and the high quality of content and writing make the information easily accessible and applicable.

Preparing for high-stakes writing tests and college writing. A majority of high school English language arts, social studies, and science teachers (84%) strongly agreed that it is essential for students to be able to write effectively after high school (Kiuhara et al., 2009). More specifically, 78% of teachers reported that they thought writing skills were important for college success, whereas 77% thought writing was essential for the workplace.

A qualitative study by Moss and Bordelon (2007) examined the practices of three high school teachers that taught a reading and writing course to seniors. The two goals of the course were to 1) develop students' reading and writing skills for college and 2) help students earn a score on the English placement test that would place them in a college-level versus remedial English course. The teachers used scaffolding, direct instruction, and modeling to help students learn the writing skills that were emphasized within the course. A large majority of the time was spent teaching students the skill of argumentative writing, including incorporating evidence from source text. Additionally, students were taught to use writing to help them read critically through the use of pre-writing activities (i.e., quick writes, anticipation guides, and vocabulary activities). Students were also taught how to analyze the structure of text to strengthen their understanding of form and function of different types of writing.

An additional writing skill that students were taught was to help them prepare for the English college placement test (Moss & Bordelon, 2007). Many of the practice activities focused on assessing students' reading comprehension activities which involved students responding to short answer and multiple-choice questions. To prepare for the essay prompts on the English placement test, the teachers discussed and showed students the scoring rubric. Students also practiced responding to timed writing prompts. Applebee and Langer (2011) found that teachers reported similar test preparation for high-stakes tests including the use of scoring rubrics similar to those used to score the test, and had students practice responding to sample questions from previous exams or test preparation materials. Furthermore, Olinghouse and Colwell (2013) recommended

teaching students self-monitoring and self-evaluation skills for using rubrics to help them assess their own writing.

Applebee and Langer (2011) further found that teachers reported incorporating the types of writing that will be on the high-stakes test into their teaching curriculum. Integrating test preparation into the general curriculum was also one of the many research-based suggestions provided by Olinghouse and Colwell (2013). Moreover, to help students succeed on writing assessments, they recommended using evidence-based writing instruction that produces the strongest impact on students' overall writing abilities. For example, high school teachers can incorporate the evidence-based practice of collaborative peer revision as they teach test taking skills. They also recommended teaching students planning and revising strategies that can be used with a variety of different writing contexts (i.e., persuasive writing) and tests.

While all the instructional writing practices Olinghouse and Colwell (2013) recommended were effective with students with learning disabilities, they further emphasized that when working with students with disabilities teachers need to address students' affective needs associated with writing assessments. Students with disabilities often have increased test anxiety and believe they do not have the skills needed to do well on the test. Providing students with a writing curriculum that builds students' confidence in their writing capabilities, teaches them self-regulation skills, and familiarizes them with the test-taking strategies can help reduce anxiety and set students up for success. Finally, both Applebee and Langer (2011) and Moss and Bordelon (2007) found that teachers helped students develop test-taking strategies and become familiar with the testing format. This was also recommended by Olinghouse and Colwell (2013).

In summary, the papers reviewed in this section suggested that high school students can be prepared for high-stakes writing tests and writing in college through integrating test preparation and use of evidence-based writing practices into the curriculum. Teachers can emphasize argumentative writing and using writing to learn to help students get ready for college. Additionally, instructors can prepare students for writing tests by discussing the rubric for the test and having students take timed practice writing tests. These strategies familiarize students with the tests and build their confidence in writing.

Because the attention to preparing for high-stakes writing tests has been limited, more research is needed. The one study that specifically addressed preparing students for high-stakes tests and college writing (Moss & Bordelon, 2007) was a qualitative study that only looked at three teachers located in the same school district. The Applebee and Langer (2011) study only briefly addressed what teachers were doing to prepare students for high-stakes writing tests. Finally, Olinghouse and Colwell (2013) provided recommendations to help students on high-stakes tests, but did not provide any information on what strategies were being implemented within schools. More research is needed to learn how high school students are being prepared for high-stakes writing tests and success as a writer in college. This is the purpose of the proposed study.

Discussion

The articles reviewed in this section of the review of literature provided insight about teaching writing to high school students, writing interventions, and preparing students for high-stakes writing tests and college writing.

Current writing practices. Several key elements of current writing practices at the high school level were identified. First, high school students are most commonly assigned tasks that involve writing without composing, such as fill in the blank or short answer questions. As a result, it is no surprise then that across subject areas high school students compose a relatively small amount of text per week. Additionally, teachers use writing activities to help support students' learning. However, teachers reported directly teaching students how to implement writing to learn activity only about half of the time. One explanation for this could be that the most frequently used writing to learn activities involve very little composing, making such instruction unnecessary. It is also important to note that writing to learn activities rarely involved technology.

When technology was used, it was mostly used to access informational sources on the internet and to type drafts in word processing. Teachers also reported that teachers or peers were the most common audiences for students' writing. Finally, teachers applied evidence-based practices, but did so infrequently. For example, teachers spent only a small amount of time using direct instruction or discussing exemplar writing models. Rather, teachers focused more time on the content that needed to be included in the paper and how to use rubrics for scoring writing. Teachers did report using a process approach to teaching writing which involved student planning, drafting, revising, and editing. Unfortunately, little use of adaptations or interventions for struggling writers were reported by teachers.

Writing interventions. Reasons for limited writing or writing instruction are unknown, but it may be due to teachers' lack of knowledge about writing interventions for students at the high school level. This review identified 16 effective practices for

addressing the essential writing skills high school students need. The studies reported positive effects on students' writing for teaching strategy instruction, pre-writing, peer collaboration word processing, inquiry, process approach, emulating model text, writing to learn, sentence construction, sentence combining, goal setting, summarization, facilitating motivation, feedback, procedural facilitation, and text structure. Consequently, there are many tools for enhancing students' writing, the challenge is putting them into play.

High-stakes tests and college writing. There are a number of high-stakes tests, such as the ACT, SAT, or English placement test, that determine a students' acceptance and placement in college that involve writing. High school teachers are aware of the importance of preparing students for these high-stakes writing tests and for students to write well in college. Some teachers are incorporating preparation for the writing tests throughout their curriculum to help develop students' writing skills. This can help build students' confidence in writing and reduce text anxiety. Additionally, some teachers are discussing and examining writing test rubrics with students and having students take practice tests to familiarize them with the test. Some are also providing students with strategies for taking the writing test.

Limitations and further research. One limitation of this review is that there were relatively few studies examining some of the questions posed in this review. While most of the studies surveyed teachers about teaching writing in general, more research needs to be conducted to get a fuller picture of what teachers are currently doing to prepare high school students for college entrance writing exams and writing in college. Furthermore, the meta-analyses used to provide information about evidence-based

writing practices and key elements for writing instruction reported effect sizes across grade levels, but not specifically at the high school level. The one study that focused solely on high school students with disabilities was a review of the literature, and it did not provide effect sizes for the different interventions implemented (Cook & Bennett, 2014). A problem in conducting a meta-analysis at the high school level though is the paucity of writing research in this area. As a final point, no experimental studies were identified for preparing students to succeed on college entrance exams. Further research needs to be conducted to develop and test the effectiveness of strategies to improve students' abilities on high-stakes tests (as I am proposing here).

To conclude, the goal of this section of the review of literature was to identify the writing practices of high school teachers, evidence-based writing interventions that are effective with high school students, and how teachers are preparing students for high-stakes writing tests and writing in college. The studies revealed that more research is needed to help high school students be successful on high-stakes writing tests and to be prepared for the writing expected of them once they reach college.

SRSD and Writing Strategies with High School Students with Disabilities

The purpose of this section of the review of literature was to examine the research on the effectiveness of SRSD for writing with high school students with disabilities, specifically examining what strategies have been taught with SRSD and with what types of writing they were used. I was interested in determining if SRSD is effective in general with these students and whether it has been applied to teaching high school students with disabilities do better on college entrance exams like the ACT. To discover what writing interventions have been tested and for what purposes with students with disabilities in

this age range, a synthesis of empirical studies of writing interventions using SRSD for students with disabilities in high school was conducted and is presented in this section of the review of literature.

Students in the studies reviewed were taught strategies via SRSD for one of the following writing tasks: (a) writing persuasive essays or (b) writing Individualized Education Plan (IEP) goal paragraphs. This review examined the effectiveness of using SRSD to accomplish each of these tasks. I did not find any SRSD studies that focused on college entrance exams.

Writing was evaluated in the studies obtained in this review in many ways, including assessing number of essay parts, number of transition words, descriptive words, length, quality, generalization quality, time planning, time writing, and total composing time. These researchers further examined SRSD instruction with a variety of types of high school students including students with LD, Attention Deficit Hyperactivity Disorder (ADHD), Emotional Disturbance (ED), Developmental Delay (DD), Speech and Language Impairment (SLI), Anxiety Disorder, Orthopedic Impairment, Educable Mental Disability (EMD), Physical Disability, and Multiple Disabilities.

Many of the studies taught the same set of writing and self-regulation strategies, but involved students with different learning characteristics. This provided a test of whether SRSD instruction using those strategies produced generalized effects for high school students with a variety of learning characteristics. The following research question was addressed in this review: Is SRSD writing instruction effective for high school students with disabilities for different writing genres?

Review Method

The studies reviewed in this section of the review of literature were retrieved through an electronic search of the literature, Google Scholar, and by obtaining relevant references from a comprehensive review of SRSD writing studies conducted by Graham, Harris, and McKeown (2013) which synthesized writing studies using SRSD with students with disabilities across all age ranges. The search process in this section of the review of literature was narrowed by limiting it to journal articles from scholarly peer-reviewed publications. Additional hand searches for studies on writing using SRSD instruction were done within major educational journals including *The Journal of Educational Research, Educational Psychology, American Psychological Association, Journal of Learning Disabilities,* and *Exceptional Children.* For the electronic search of Google Scholar, the descriptions "writing AND self-regulated strategy development AND high school AND disability" were applied. After a few variations of these terms were used (i.e. using the word secondary instead of high school), only eight studies were located. No date restriction was set because only eight studies were found that met the criteria. The studies in this section of the review were published between 2005 and 2013.

A coding form was used to review each obtained study. The items within the coding form were based on the recommendations from the *Council for Exceptional Children Standards for Evidence-Based Practices in Special Education* (Council for Exceptional Children, 2014) and the National Reading Panel's report *Methodology: Processes Applied to the Selection, Review, and Analysis of Research Relevant to Reading Intervention* (2001). Each article was read a minimum of three times. The articles were first read to gain an overall understanding. Next, the articles were read and

the information was coded according to 63 criteria. The 12 overarching categories included reference, research study information, sample of student participants, setting, design of study, independent variables, dependent variables, non-equivalence of groups, results, results matching conclusions, constructs operationalized, and limitations. The coding sheet provided a systematic way to analyze each study. The third reading of the articles occurred right before writing the first draft of the synthesis to ensure an accurate discussion of each study. Many of the articles were also read or reviewed additional times to provide precise information.

Results

The research articles reviewed for this section of the review of literature included seven studies using single case research design and one international study using an experimental design. For all of the studies, the independent variable was the SRSD writing treatment. The dependent variable was always a writing score on some aspect of writing that students produced independently. The writing samples were based on writing prompts administered before and after SRSD instruction. For seven of the studies, writing involved persuasion. In one study students wrote IEP goal and objective paragraphs. The most common outcome measures to evaluate writing across the studies, included number of essay elements, number of transition words, total number of words, and writing quality.

The studies that used single case research design measured the effectiveness of the writing intervention based on the percentage of nonoverlapping data (PND). PND is calculated by the percent of data points taken during the intervention, post-intervention, or at maintenance that show an increase over the highest score recorded during the

baseline phase of the study. An intervention that has a PND of 90% and above is considered to have a large effect, 70 – 90% a medium effect, and below 70% a small effect (Scruggs, Mastropieri, & Casto, 1987).

In the studies reviewed, all participants were in high school with grade-levels ranging from ninth through 12th. All of the studies were conducted with students with diagnosed disabilities.

In this review, the articles are discussed in chronological order based on the different strategies used to help instruct students in completing the writing task. This included STOP + DARE, goal setting, and POW + TREE. STOP stands for (a) Suspend judgment, (b) Take a side, (c) Organize ideas, and (d) Plan more as you write. DARE stands for (a) Develop your topic sentence, (b) Add supporting ideas, (c) Reject at least one argument for the other side, and (d) End with a conclusion. POW stands for (a) Pick an idea or side of a topic, (b) Organize ideas, and (c) Write and say more by modifying and improving the original plan. TREE stands for (a) Topic sentence, (b) at least three Reasons, (c) Explanations to support each reason, and (d) Ending sentence. Table 5 provides a summary of each study within this review.

Table 5

Overview of Reviewed Studies for SRSD and Writing Strategies Section

Authors, Publication Date	Location, Sample *N*	Grade	Type of Student	Strategies	Type of Writing	Writing Outcomes and Results for Post-Instruction
Chalk, Hagan-Burke, & Burke (2005)	Southeastern U.S., *N* = 15	10th	LD	DARE	Persuasive	Quality 100% PND; Number of words 100% PND

Eissa (2009)	Egypt *N* = 67	9th	LD	DARE	Persuasive	Quality effect size 5.06
Hoover, Kubina, & Mason (2012)	Eastern U.S., *N* = 4	11th – 12th	LD	POW + TREE	Persuasive	Elements 55.83% PND; Number of words 21.67% PND
Jacobson & Reid (2010)	Midwestern, U.S., *N* = 3	11th – 12th	ADHD	STOP + DARE	Persuasive	Elements 100% PND; Quality 95% PND; Number of words 100% PND; Transition words 100% PND; Planning time 100% PND
Jacobson & Reid (2012)	Midwestern, U.S., *N* = 4	10th – 11th	ADHD	STOP + DARE	Persuasive	Elements 100% PND; Quality 100% PND; Number of words 100% PND; Transition words 100% PND; Planning time 100% PND; Composing time 100% PND

Kiuhara, O'Neile, Hawken, & Graham (2012)	Western, U.S., *N* = 6	10th	LD; ADHD; ED; DD; SLI; Anxiety	STOP + AIMS + DARE	Persuasive	Essential elements 100% PND; Functional elements 100% PND; Quality 80.55% PND; Planning time 100% PND; Composing time 100% PND; Total writing time 100% PND
Konrad, Trela, & Test (2006)	Southeastern, U.S., *N* = 4	Ages 15 - 18	Orthopedic, Physical, Multiple Disabilities	GO 4 IT…NOW	IEP Goals and Objectives Paragraph	Elements 100% PND; Quality 100% PND; Generalization quality 21.60% PND
Mason, Kubina, & Hoover (2013)	Eastern, U.S., *N* = 3	9th & 11th	ED	POW + TREE	Persuasive	Elements 68% PND; Quality 79% PND; Number of words 68% PND

Note. PND = Percent nonoverlapping data. 90% is considered a large effect, 70% - 90% is considered a medium effect, and 50% to 70% is considered a small effect. SW = struggling writer; LD = Learning Disability; ADHD = Attention Deficit Hyperactivity Disorder; ED = Emotional Disturbance; DD = Developmental Disability; SLI = Speech and Language Impairment.

In the mid-1980s the instructional method of SRSD was developed by Karen R. Harris for elementary school students (Harris & Graham, in press) and revised over the years to make it more effective. Soon after, SRSD began to be tested with middle school students (Harris, Graham, Mason, & Friedlander, 2008). By 2005, studies were

conducted using SRSD instruction with high school students (e.g., Chalk, Hagan-Burke, & Burke, 2005). The first published SRSD studies with high school students used DARE (Chalk et al., 2005).

STOP + DARE. The strategy STOP + DARE for persuasive writing was developed by De La Paz and Graham (1997) for fifth through seventh grade students with LD.

DARE. The first study to incorporate this strategy by itself with high school students with LD was published in 2005 by Chalk et al. In this study, the researchers utilized the writing strategy DARE for persuasive writing where students followed four steps (a) Develop your topic sentence, (b) Add supporting ideas, (c) Reject at least one argument for the other side, and (d) End with a conclusion. A few years later, another study was published using DARE with high school students with LD (Eissa, 2009). This study marked the expansion of SRSD instruction into high schools internationally. The studies by Chalk et al. (2005) and Eissa (2009) taught DARE without STOP and students in the studies improved their persuasive essay writing abilities.

More specifically, the study by Chalk et al. (2005) was a repeated measures design study conducted in a suburban high school in the southeastern US. There were 15 participants (four female and 11 male) and all the students were in the 10^{th} grade. Students were selected to be a part of this study based on (a) a diagnosis of LD, (b) a score between 80 and 115 on the Wechsler Intelligence Scale for Children-Revised, (c) achievement scores 2 years or more below grade level in an academic area, (d) no other disabling condition, and (e) regular school attendance. The students were taught in one of three instructional groups for 20 to 25 minutes a day for five total days by the lead author.

The instructor used lesson plan checklists while teaching students the DARE strategy for writing persuasive essays using SRSD. The persuasive essay topics used were generated by three language arts teachers and taken from previous writing exams used in other classes. After the teacher stated the topic, students were told to write an essay and they had 15 minutes to complete their persuasive essay.

All of the persuasive essays were scored for length and quality (Chalk et al., 2005). All the essays were scored by the lead author and a special education teacher. Reliability was 80% for essay length. For quality, if their scores did not align, a third qualified rater scored the essay; less than 2% of the essays required a third rater. The PND for mean number of words written and quality of essay probes were 100% across pre-skill training, modeling, controlled practice, independent practice, post-instruction, maintenance, and generalization probes, with significant changes in scores starting at controlled practice. Thus, the SRSD instruction for persuasive writing using DARE resulted in an increase in the number of words and quality of students' writing. Care must be taken in interpreting the results of this study as students only received 100 to 125 minutes of instruction and results of fidelity were not reported.

The study conducted by Eissa (2009), replicated and extended the study by Chalk et al. (2005). In this randomized control trial study, Eissa (2009) used SRSD to teach students DARE in their first year of high school. The study was located in a school in Egypt's Baltim sector, Kafr El Sheik Governorate. The students were randomly split into two groups, treatment and control and matched on age, IQ, and writing performance. The selection restrictions included a diagnosis of LD, an IQ between 90 – 118, writing performance at least two years below grade level, and absence of any other disabling

conditions. The treatment students (N = 34) were taught the strategy DARE through SRSD instruction three times a week for 40 to 45 minutes to improve persuasive writing skills. The students were taught by a classroom teacher, and to ensure that instructional procedures were followed; lessons plans and writing prompts were developed by the author. The control students (N = 33) received the writing instruction traditionally taught within the school. All students took a persuasive writing pretest and posttest.

The students' essays were scored for writing quality; interrater reliability was not reported (Eissa, 2009). An analysis of covariance (ANCOVA) revealed a statistically significant difference in mean posttest scores of treatment and control groups with the pretest as the covariate. The mean score on quality of the SRSD treatment condition (M = 33.45, SD = 3.40) was significantly higher than the control condition (M = 17.63; SD = 2.94). The effect size for quality was 5.06. After receiving SRSD instruction using the strategy DARE, the students in the treatment group had better writing performance scores on the posttests than the control students. Caution is needed when interpreting the results of this study, because reliability of the outcome measure was not established. Nevertheless, these two studies (Chalk et al., 2005; Eissa, 2009) provide support for teaching DARE using SRSD instruction for persuasive essay writing to ninth and 10th grade students with LD.

STOP + DARE. In 2010, a study was published using the strategy STOP + DARE for persuasive writing with high school students (Jacobson & Reid, 2010) The SRSD instruction not only used the strategy DARE, but also added the composition strategy STOP which teaches students to (a) Suspend judgment, (b) Take a side, (c) Organize ideas, and (d) Plan more as you write. The study also expanded the population being

instructed to students with ADHD. Jacobson and Reid conducted an additional study that was published two years later in 2012. This replication study helped provide further evidence and support for STOP + DARE because they taught the same strategies and worked with a similar population. They further extended upon their previous investigation by examining if students would spend more time writing and would include more transitions words when taught STOP + DARE.

In their 2010 research study, Jacobson and Reid ran a multiple baseline across participants design with multiple probes in baseline in a Midwestern city in the US. They worked with three male students in grades 11^{th} through 12^{th}. The students were included in the study if they had a medical diagnosis of ADHD, an IQ of 80 or above, and their teacher indicated that they struggled with writing. The SRSD instruction taught students the strategy STOP + DARE for persuasive writing and occurred three times a week for two weeks with 40 minutes per session. The instructor was trained in SRSD instruction through a three-credit hour course in strategy instruction and had administered lessons using SRSD in a previous study with students with ADHD. Fidelity was checked using a lesson plan checklist and 20% of the lessons were observed; fidelity was 99%. The writing prompts used in this study were used in a previous study by De La Paz and Graham (1997). The researchers changed some of the wording to be appropriate for high school students (e.g., changed “kids” to “students” and changed “toys” to “video games”). The format of the prompt was also changed to imitate the district’s graduation demonstration exam.

Students’ persuasive essays in the Jacobson and Reid study (2010) were scored for number of essay parts, number of words, holistic quality, and number of transition

words. Each essay was read and the number of transition words were tallied. A random selection of 20% of the papers was checked for inter-observer agreement; this was 91%. The PND for the post-instruction essays was 100% for number of essay parts, number of words, and holistic quality. Additionally, none of the students planned during baseline testing, but they spent an average of 30.43 minutes planning during posttesting. After receiving SRSD instruction using STOP + DARE, the students in this study also wrote essays that included more transition words.

Jacobson and Reid ran another multiple baseline across participants with multiple probes study in 2012 that utilized the strategy STOP + DARE for persuasive writing. The study included four students (three male and one female) from a high school in the Midwest. The students were in 10th and 11th grade and were medically diagnosed with ADHD. The selection restrictions for the study included (a) a diagnosis of ADHD, (b) a score of 80 or below on the WIAT – II, (c) ADHD presence on a teacher rating scale, and (d) an IQ of 80 or above. The intervention involved a pullout program that occurred during the school day. Students worked one-on-one with a trained SRSD instructor. Sessions were three times a week for 40 minutes and continued until students met criterion. The materials used to teach the strategy were the same as those used in the previous study. An observer watched 20% of the lessons using a procedural checklist; fidelity was 99%. The persuasive writing prompts were the same as the ones in the previous study by Jacobson and Reid (2010).

Students were scored while writing persuasive essays for time spent planning and time spent writing (Jacobson & Reid, 2012). Their persuasive essays were scored for number of transition words, number of essay parts, quality, and number of words. The

number of essay parts was a researcher developed measure that coincided with the strategy DARE. The interrater reliability for scoring the number of parts was 90%. The post-instruction persuasive writing essays had a PND of 100% for time spent planning, time spent writing, number of essay parts, quality, and number of words. The students also wrote essays that included more transition words. Thus, after receiving SRSD instruction using STOP + DARE, students spent more time planning and writing, included more transition words, wrote longer essays, had higher quality essays, and included more persuasive essay parts. While these studies (Jacobson & Reid, 2010, 2012) support the use of STOP + DARE with 10th through 12th grade students with ADHD, caution must be exercised in judging their overall impact due to the small number of students in each study and only one of the seven total participants was female.

STOP + AIMS + DARE. A final expansion of this strategy for persuasive writing was conducted by Kiuhara, O'Neile, Hawken, and Graham in 2012 which used STOP + AIMS + DARE. The strategy AIMS helps students to (a) Attract the reader's attention, (b) Identify the problem of the topic so the reader understands the issues, (c) Map the context of the problem or provide background information needed to understand the problem, and (d) State the thesis so the premise is clear. This study also expanded upon the type of high school student being taught the strategy through SRSD instruction and the writing outcomes examined.

This multiple probe, multiple baseline design study took place in a high school located in a suburban area in the western portion of the US (Kiuhara et al., 2012). In the study, the researchers worked with six participants, two female and four male students, across three groups. The students were in 10th grade and experienced a variety of high-

incidence disabilities. The students were selected by the following criteria (a) scoring at or below the 25 percentile on the Test of Written Language, 3rd Edition (TOWL – 3), (b) being identified as a struggling writer by the student's special education teacher; and (c) producing three or less persuasive elements on a writing prompt. The duration of the instruction averaged six and one-half hours, as students were instructed until they met criterion level. The SRSD instruction, administered by the first author, occurred in a one-to-two teacher-to-student ratio. The instruction fidelity was checked by the teacher completing a lesson checklist and 25% of lessons were listened to by an observer using a tape recording. The instructional fidelity was 91%. The content-related persuasive writing prompts in this study were developed by two language arts teachers in the school.

Students' essays were scored for the number of functional essay elements, total essential elements, total words written, and holistic quality (Kiuhara et al., 2012). All essays were scored by two raters; interrater reliability was 93% for elements, 100% for number of words, and 85% for quality. The average PND for post-intervention was 100% for essential and functional elements and 81% for quality. The authors also scored the amount of time students spent planning, writing, and total composing time. Planning time was defined as the number of minutes students spent making notes. The number of minutes students wrote their essay was the writing time measure. Planning and writing were differentiated by asking students to make notes on the inside cover of a booklet and writing their essay on the page of lined paper. Composing time was the total number of minutes spent planning and writing. The results for amount of writing time were reported for students as a group average score. Students' average writing time from baseline to post-intervention increased from 23 seconds to 8 minutes and 10 seconds for planning,

from 8 minutes and 32 seconds to 27 minutes and 43 seconds for composing, and from 9 minutes and 1 second to 35 minutes and 49 seconds for total composing time. Overall, the students' average amount of time planning, writing, and total composing time increased and the number of functional essay elements, total essential elements, total words written, and holistic quality increased after receiving SRSD instruction for persuasive writing using STOP + AIMS + DARE.

The five studies that taught some form of the strategy STOP + DARE (Chalk et al., 2005; Eissa, 2009; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012) support the use of this strategy with high school students with disabilities. They also provide support for my study as I will be teaching students with disabilities how to write an argumentative text (a form of persuasive writing).

Even though four out of the five studies employed a single-case research design, a total of 62 students received SRSD instruction using a form of STOP + DARE in these five studies. All of the students had improved writing scores. There were some differences in these studies in writing outcomes and test administration procedures, but the consistent positive findings across studies demonstrate the effectiveness of SRSD instruction using STOP + DARE. Future research needs to examine the use of STOP + DARE with different groups of students with disabilities and grade levels. Additionally, studies should be conducted using STOP + DARE with high school students with disabilities in different content areas and for different types of writing prompts and tests. A final suggestion for future research is to teach students to use STOP + DARE in conjunction with a reading strategy to assist students in writing persuasively from source text or with an editing strategy. STOP + DARE is not the only strategy tested with high

school students with disabilities, goal setting strategies have also been tested for writing IEP goal paragraphs.

Goal setting. There was only one study that focused on goal setting strategies within the SRSD instructional framework (Konrad, Trela, & Test, 2006). The study was conducted by Konrad, Trela, and Test (2006) with four male students ages 15 to 18. This multiple baseline across participants design study was conducted in the southeastern US. To be included in this study, students had to have low writing performance and had to be eligible for special education services due to an orthopedic impairment, physical disability, EMD, or multiple disabilities. The students received one-on-one instruction on the strategy GO 4 IT…NOW! using SRSD instruction (Konrad et al., 2006) for 11 sessions each lasting 45 minutes. The instructor was a doctoral student and had 28 years of experience teaching students with multiple disabilities. Six of the instructional sessions were observed for procedural fidelity; this was 96%. The IEP goal setting strategy provided students with a mnemonic device which taught them how to write paragraphs about their IEP goals and objectives and taught them to self-regulate by checking their work. The mnemonic used was GO 4 IT…NOW! which stood for: (a) Goals, (b) Objectives (c) 4 objectives, (d) Identified Timeline (e) Named their topic, (f) Ordered their steps, and (g) Wrapped it up by restating the topic. The writing prompts applied in this study were student written IEP goal paragraphs. Students also wrote daily writing paragraphs which served as a generalization probe.

Students' IEP goal paragraphs in the Konrad et al. study (2006) were scored at pre-intervention and post-intervention for writing quality and elements. Additionally, students' daily writing paragraphs were measured for quality at pre-intervention, post-

intervention, and two weeks after intervention. Prior to the study, students had received instruction on writing a paragraph with a main idea, details, and a concluding sentence. As part of their daily writing routine, students wrote in class to a daily prompt about recent classroom topics. The daily paragraphs were measured using the same quality scoring guide used to measure the IEP goal paragraphs. A selection of 20% of the essays were scored by a second person to determine interrater reliability; the agreement for quality, content, and daily paragraph quality were 94%, 90%, and 87% respectively. The PND for post-instruction IEP paragraph quality and content was 100%. The average PND was 21.60% for post-instruction daily paragraph quality; however, the researchers reported each individual student's pretest, posttest, and maintenance mean scores, which increased from pretest to posttest and further increased from posttest to maintenance for generalization paragraphs. Overall, when the students received writing instruction using SRSD for the strategy GO 4 IT NOW!, the content and quality of their IEP paragraph and daily paragraph writing improved and students maintained their skills over time.

Because there was just one study testing the teaching of goal setting strategies with SRSD, it is difficult to draw any definitive conclusions about the use of goal setting strategies with high school students who are struggling writers. As a result, there is a need to conduct additional studies examining goal setting strategies for writing taught via SRSD. First, replication studies need to be conducted using the goal setting strategies from the study by Konrad et al. (2006). Additionally, studies using goal setting strategies need to be conducted with students with different disabilities and across a variety of grade levels. Future studies with high school students should also test strategies where students develop their own goals and that expand the goals to include planning, revising,

and writing different genres. Finally, goal setting strategies need to be studied for different tasks and writing tests. Beyond goal setting, other strategies taught using SRSD instruction have been used with high school students to help develop their writing skills, including POW + TREE for persuasive writing.

POW + TREE. There are currently two published studies that assess the effects of the POW + TREE strategy for persuasive writing with high school students. The first part of the strategy introduces students to a general three step planning strategy POW: (a) Pick an idea or side of a topic, (b) Organize ideas, and (c) Write and say more by modifying and improving the original plan. Students then learn the persuasive writing strategy TREE: (a) write a convincing Topic sentence, (b) write at least three Reasons why you believe, (c) write Explanations to support each reason, and (d) wrap it up with a good Ending sentence.

The two studies used POW + TREE to instruct students on persuasive quick writes, where students were given a prompt and had 10 minutes to compose their essay (Hoover, Kubina, & Mason, 2012; Mason, Kubina, Hoover, 2013). Hoover et al. (2012) conducted a multiple baseline across participants design study in a suburban high school in the eastern region of the US. They worked with four female students in grades 11th and 12th with LD. The selected students had an IEP, English teacher recommended that the student had the potential to benefit from writing instruction, and the student was willing to arrive at school early or stay after school to receive SRSD writing instruction. The POW + TREE writing intervention included five instructional lessons and a repeat of the fifth lesson using new prompts, as needed, until the student achieved independent performance. The instruction was administered in a one-to-one setting by a researcher

trained in SRSD for POW+TREE for writing persuasive quick writes. Fidelity was assessed by a high school teacher, unfamiliar with the purpose of the study, who listened to tapes for 30% of the lessons and checked off steps in the lesson outline. Treatment fidelity was 100%. Writing prompts were persuasive quick writes where students had 10 minutes to compose a response.

Students' persuasive quick writes in the Hover et al., (2012) study were scored for number of TREE response parts and number of words. The quick writes were scored by two trained raters; interrater reliability was 64% for number of TREE response parts and 100% for number of words. The PND for post-instruction essays was 56% for TREE response parts and 22% for number of words. Overall, the SRSD for POW + TREE writing intervention improved the number of response parts students incorporated in a 10 minute persuasive quick write. This study needs to be interpreted with caution because of the low interrater reliability when scoring for the number of TREE response parts in students' essays. Additionally, there were not especially strong results. This was particularly the case for the outcome measures TREE response parts and number of words.

The second study using POW + TREE for quick writing was conducted by the same research team (Mason et al., 2013). This multiple baseline across participants study was conducted in the eastern US in a suburban high school. This study expanded upon the research team's previous study by teaching to a new population within the high school setting. They taught three male participants who were diagnosed with ED. In order to participate, students had to be classified as ED and needed to improve self-regulation during writing. SRSD instruction was administered by a doctoral student who was a

special education teacher and trained in SRSD. The students worked one-on-one with the instructor for five to seven sessions each lasting 30 minutes. The instructional fidelity was checked using an instructor checklist and observations of videotaped lessons; fidelity was 100%. The students had 10 minutes to respond to the persuasive writing prompt.

Students' persuasive quick writes in the Mason et al. study (2013) were scored for quality, number of persuasive parts, and number of words written. The reliability of the quality measure was 86% exact agreement and 95% agreement within 1 point between two trained raters. The interrater reliability for persuasive parts was 81% for exact agreement and 98% for within 1-point agreement. Post-instruction persuasive quick write essays had a PND of 79% for quality, 68% for number of response parts, and 68% for number of words. In general, after receiving SRSD instruction for persuasive essay quick writes, students' writing quality, number of response parts, and number of words improved.

The two studies assessing the impact of POW + TREE for persuasive writing using SRSD instruction (Hoover et al., 2012; Mason et al., 2013) provide evidence that the instruction and strategy improved students' persuasive writing abilities. However, these studies involved a small number of students, PND was variable depending on the study and measure, and reliability of measures could have been stronger in Hoover et al. (2012). Further replication is needed using the strategy with high school students with LD and ED. Additionally, further research is needed using SRSD instruction with the strategy POW + TREE to examine the effectiveness with different populations including individuals at different age levels and with varying disabilities. Researchers also need to

expand POW + TREE for high school writers so that it more fully addresses more sophisticated persuasive writing, such as writing from source text.

Discussion

I now respond to the research question posed at the start of this section and then discuss the limitations found when reviewing the articles. I also highlight the most significant implications for practice based on the three writing strategies analyzed: STOP + DARE, goal setting, and POW + TREE. These implications are used as a springboard for future research suggestions. Lastly, overarching concluding remarks are provided. It should be noted that I do not address the effectiveness of SRSD for college entrance exams, as no such studies have been conducted.

Is SRSD writing instruction effective for high school students with disabilities for different writing genres? The answer to this question is yes, as research shows that there is currently effective SRSD instruction for improving students' persuasive writing and IEP goal paragraph writing. One of the strategies for persuasive writing was POW + TREE. This strategy taught students to write a persuasive essay that included a clear topic, provided supporting reasons and explanations, and an ending sentence. The other persuasive writing strategy was STOP + DARE, as well as STOP + AIMS + DARE. This was a slightly more sophisticated strategy than POW + TREE that taught students to include a topic sentence, supporting ideas, a counterargument, and a conclusion in their persuasive essays. There were seven total studies that evaluated the effectiveness of teaching SRSD strategies for persuasive writing; all the studies resulted in improvements to students' writing.

Moreover, SRSD with a goal setting strategy was an effective strategy for teaching students how to write IEP goal paragraphs. The strategy GO 4 IT…NOW! taught students to write a paragraph based on an IEP goal that included at least four objectives and a timeline. It is important to note though that any conclusions drawn about the effectiveness of this strategy must be tempered by the limitations within the study.

Limitations in studies reviewed. There were several limitations I identified with SRSD studies with high school students. The first was that a majority of the studies instructed students in a one-on-one setting (Hoover et al., 2012; Jacobson & Reid, 2010, 2012; Konrad et al., 2006; Mason et al., 2013) and one study instructed students in a one-to-two ratio (Kiuhara et al., 2012). For teachers who are responsible for teaching a large group of students, these findings may not be applicable.

Another limitation was that most of the studies had a small number of participants. Six of the studies had only three to six participants (Hoover et al., 2012; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Konrad et al., 2006; Mason et al., 2013) and one studies had 15 participants (Chalk et al., 2005). These seven studies involved single case research design. Only one study, a randomized control experiment, had a relatively large number of participants ($N = 67$; Eissa, 2009). While a large number of participants is not required for studies using a single case research design, greater replication of studies is needed to increase the generalizability of the findings. Furthermore, across the studies that provided information on the gender of participants, 62.5% of the students were male.

An additional limitation was that only one study looked at SRSD using the strategy of goal setting. The writing tasks for this study were very different from the other

studies, with Konrad et al. (2006) focusing on high school IEP goal writing. Thus, generalizing the effectiveness of this strategies is not possible. Moreover, seven of the studies did not include a generalization measures. Collecting information about how the writing skills taught using SRSD instruction generalizes to other writing tasks is important (Graham & Harris, 2014).

A few studies also included students with inconsistent attendance (Hoover et al., 2012; Mason et al., 2013). This is a challenge because it is harder for students to learn when they miss instructional time or there are several days between instruction. The study conducted by Eissa (2009) was limited as it only assessed writing quality. A final limitation was that the researcher was the teacher in many studies. This occurred in the studies by Chalk et al. (2005), Hoover et al. (2012), and Mason et al. (2013). Students may perform differently or try harder for their classroom teacher. Nevertheless, the findings overall are strong enough to make a strong claim that SRSD can be used to teach writing strategies to high school students with disabilities (as will be done in the proposed study), and that such instruction improves their writing performance, including their skills at writing persuasive text (which is a focal point of this study).

Future research. Finally, after conducting this review of literature, it was clear that more research testing the effectiveness of SRSD writing interventions for high school students is needed with students with disabilities. A majority of studies to date have been conducted with elementary school students with disabilities (Graham et al., 2013). Additionally, only one randomized control study testing SRSD writing strategies with high school students with disabilities was located. More randomized control trials are needed because they allow for greater validation and a more rigorous test of SRSD with

larger groups of students. Additional replications of the single case research design studies in this review are also needed in order to better generalize the results (Council for Exceptional Children, 2014). Furthermore, research needs to be conducted using writing strategies and SRSD instruction with students who have a variety of different disabilities and in different classroom settings, such as whole class instruction. Studies also need to be conducted with writing strategies used in conjunction with reading strategies to incorporate information from source text or with editing strategies. Finally, future research should include examining the effectiveness of SRSD instruction with strategies for different writing purposes including writing tests (i.e., such as college entrance exams), writing in different content areas, and writing longer essays. Nevertheless, there is enough research on SRSD with high school students with disabilities to confidently use this method to teach the planning and composing strategy nested in the proposed investigation.

Concluding remarks. Even though SRSD can help high school students who are struggling with writing, especially students with disabilities (ACT, Inc., 2015a) write better, more writing interventions need to be developed and validated to help high school and college students with disabilities. SRSD helps students develop strategies and skills such as planning, drafting, revising, and editing. While these skills are important, these students also need to become more adept with sentence construction skills, use of vocabulary when writing, transcription skills, knowledge of genre, and so forth (Graham, Collins, Rigby-Wills, 2017).

College Entrance Exam Preparation

Tests to gain college admission began with the written examination of the College Boards in 1901 (Atkinson & Geiser, 2009). Twenty-five years later, the SAT was created using multiple choice questions that evaluated students' abilities. The final test developed was the ACT in 1959 with the focus on testing students' achievements. Over the years, the SAT and ACT have become the two competing college admissions tests and have each undergone many changes including the addition of a written essay test. Since these tests are an essential part of admission to college, this section of the review of literature's purpose is to synthesize the information known about strategies tested to improve high school students' abilities on college entrance exams. This section of the review of literature answers the research question: What are effective activities for improving high school students' performance on college entrance exams?

Review Method

An electronic search of literature was conducted to obtain the studies reviewed in this section of the review of literature. The search process included journal articles from peer-reviewed publications and dissertation studies. Search terms primarily included "college entrance exam preparation," "test preparation AND SAT/ACT," "college admissions." After a few variations of the terms were implemented (i.e., using the word test instead of exam), only one peer-reviewed study and two dissertations were located. A majority of the literature found revolving around college admissions tests studied testing inequalities for students from diverse ethnic backgrounds and students from low-socioeconomic backgrounds. These studies were not included because the focus of my review was on strategies to help improve college entrance exam performance of students

in general. No date restriction was set due to the small amount of studies. The three studies in this section were from 2009 to 2014. The intervention study was reviewed using the intervention coding form described in the SRSD section of the review of literature. The two survey studies were reviewed using the survey coding form described in the teaching writing section of the review of literature. All studies were read a minimum of three times for: 1) general understanding of the study, 2) identifying information within coding sheet, and 3) accurate understanding before writing review of literature. The entire study or sections of the study were read additional times to gain further information as needed.

Results

The three studies provided a variety of information about preparing students for college entrance exams.

Intervention study. Only one study was identified that implemented an intervention with the goal of improving student performance on the multiple choice sections of the ACT test (Lane, Robertson, Mofield, Wehby, & Parks, 2009). This study used a researcher developed intervention that provided students with background information about the ACT test and covered key material on the English, math, reading, and science sections of the ACT. This quasi-experimental design was conducted in middle Tennessee in a rural high school. The intervention was taught to all 11th grade students within the school which included 126 students (66 males and 60 females). There was no inclusion criterion, as all 11th grade students were included. The majority of students were Caucasian (94.24%) and 14.29% of the students received special education services. The students were taught in their homeroom class by their teacher who had been

trained in the ACT preparation curriculum by the research staff. The students received 26 intervention sessions each lasting 30 minutes. The instructional fidelity was checked using a checklist completed both by the teacher and an observer; the mean of the instructional fidelity scores was 82.96%.

The comparison group was the 11th grade students from the previous academic year who received no intervention. There were no significant differences in GPA, ethnicity, or special education participation between the treatment and comparison group. Students' actual ACT scores were used for analysis. There were small increases in mean scores between the intervention and comparison group with the intervention group receiving higher scores. There were small effect sizes for each of the subject tests and overall ACT score with the English test effect size of .09, math test effect size of .04, reading test effect size of .08, science test effect size of .02, and total score on ACT test effect size of .06. The authors discussed that even though the effect sizes were small they were meaningful because there was an increase in mean scores for students in the treatment condition. Additionally, the district's goal was for students to earn an ACT score of 22 or higher, the amount of students earning this score at the school increased by 10% during the intervention year. Finally, the school mean ACT scores was below the state mean during the no intervention year. During the intervention year, the science and total scores were at the state mean and English and math scores exceeded the state mean. Caution is needed when interpreting the results of this study because the study was conducted within only one school. Replication is needed to verify the effects of the instruction on ACT exam scores.

Surveys. The first survey investigating what instructional practices and academic behaviors predict students' SAT reading and writing and ACT English scores was a dissertation (Nedelkow, 2014). This survey study was conducted across two high schools in southern California. The researcher surveyed 12th grade students towards the end of the school year. The survey involved a convenience sample. Across the two high schools, there were 703 students in 12th grade. Students who had a signed consent and assent form and were present during the week the survey was administered responded to the survey equaling a response rate of 68% (N = 477). Of the responders, 50% were male, 47% female, and 3% did not respond to the question about gender. The researcher was unable to make any comparison of responders to nonresponders.

The author first ran a stepwise multiple regression analysis to identify instructional practices that would predict reading and writing SAT scores and English ACT score (Nedelkow, 2014). However, none of the independent variables were statistically significant in predicting scores. Next, the author conducted a multiple regression analysis on the student behaviors that would predict SAT writing score. Two behaviors were statistically significant predictors: reading fiction outside of school and taking notes in class. These two variables accounted for 7.7% of the variance. Another overall regression analysis was run to examine students' behaviors that would predict ACT English scores. There were three statistically significant student behaviors including reading nonfiction outside of school, taking notes in class, and playing music. These three independent variables accounted for 19.7% of the variance in ACT English scores. In general, students that read outside of school, took notes during class, and played music performed better on language portions of college entrance exams.

The second study, also a dissertation, examined the correlation between college entrance test scores and various forms of preparation for the test including self-paced manuals, online preparation courses, school sponsored test courses, and private tutoring (Donaldson, 2013). The survey study was conducted with college freshmen at a private university in Virginia. The convenience sample consisted of a 674 students enrolled in a college freshmen seminar who signed consent forms. No descriptive information was collected on the responders. Thus, no comparison between responders and nonresponders were provided.

The author conducted an analysis of variance to determine if there were significant differences between students' scores who reported preparing for college entrance exams and students who did not prepare (Donaldson, 2013). There were no significant differences between the two groups of students. The author then ran a series of t-tests to analyze if there were any significant differences between the different types of preparation and students who did not use any form of preparation. There were no significant differences between the groups for any form of preparation and all the mean scores were higher for students who reported not using any form of preparation. Overall, the study found that there was no evidence that self-paced manuals, online preparation courses, school sponsored test courses, and private tutoring predicted college entrance exam scores.

The two survey studies (Donaldson, 2013; Nedelkow, 2014) sought to identify predictors for student performance on college entrance exams. These studies were limited in several ways. First, they asked students to self-report classroom instructional practices, personal behaviors, or forms of preparation for a college entrance exam. Additionally,

both samples were convenience samples that gathered information from students at one or two schools. The sample from the Donaldson (2013) study is most concerning because it surveys college freshmen who were admitted and attending a specific college. The results may be biased because colleges set a minimum college entrance test score for admission which reduces the variance among the reported scores. Furthermore, the Donaldson (2013) article utilized multiple t-tests to analyze the data which increases the chances of making a Type I error. While these studies provide us with some initial information about what can help students improve on college entrance exams, the findings must be interpreted with caution and more research is needed.

Discussion

The articles reviewed in this section of the review of literature mostly provided an awareness of the types of activities that researchers predict will help improve high school students' abilities on college entrance exams. While one study (Donaldson, 2013) did not find any improvements in students' college entrance exam scores for students who used any form of preparation, the other two studies identified activities related to improvements in students' scores. The study by Lane et al. (2009) found that students who participated in a schoolwide ACT preparation program consisting of 13 hours of instruction had better scores on the ACT multiple choice sections than students who did not receive the instruction. This intervention focused on orienting students to the ACT exam and reviewing the key concepts and knowledge for the four subject area tests. The survey study by Nedelkow (2014) found that reading outside of school and taking notes during class predicted improved scores on the SAT writing test and ACT English test. An additional predictor for the ACT English test was playing music. These studies provide

initial findings that instruction specifically designed to prepare students for a college entrance exam and students' behaviors can impact and improve students' performance on the ACT or SAT.

Limitations and further research. One limitation of this review is that there were only three studies identified to help answer the question posed in this review. Furthermore, there was not consistency in the findings due to the variety of methods and variables utilized. Thus, it is difficult to draw conclusions across the studies. A final limitation is that only one study (Lane et al., 2009) assessed an intervention designed to help improve students' scores on the multiple choice sections of the ACT exam. Further research needs to be conducted to develop and test the effectiveness of interventions or study programs designed to improve students' abilities on college entrance exams.

In conclusion, the goal of this section of the review of literature was to identify the types of activities that improve students' scores on college entrance exams. A final point, no studies were identified examined the effectiveness of an intervention for the essay composition portion of the college entrance exam. This additional point and the studies reviewed reveal that more research is needed to identify how to help students in high school be successful on the various aspects of college entrance exams. This supports the need to conduct the proposed study as the study aims to identify instruction that will help improve students' abilities on the ACT essay exam.

Review of Literature and Current Study

The three sections of this review of literature (current high school writing instruction, SRSD and writing strategies with high school students with disabilities, and college entrance exam preparation) each provided important information for the current

study. The first section examined the current practices of teaching writing to high school students. To a large degree, teachers assign high school students writing assignments that do not involve composing. Also, teachers frequently use writing activities to help support students' learning. However, teachers only directly instruct students on how to implement these activities half of the time. Additionally, teachers most often have students write for their peers and infrequently apply evidence-based writing practices. This section of the review of literature also identified 16 effective interventions for improving students' writing skills including positive effects on students' writing for teaching strategy instruction, pre-writing, peer collaboration, word processing, inquiry, process approach, emulating model text, writing to learn, sentence construction, sentence combining, goal setting, summarization, facilitating motivation, feedback, procedural facilitation, and text structure. Finally, to prepare students for college entrance writing exams and college writing, some teachers reported incorporating writing test preparation and discussion of test rubrics into their curriculum.

The next section of this review of literature reviewed SRSD writing intervention studies and found that SRSD is an effective form of instruction for improving high school students with disabilities persuasive writing and IEP goal paragraph writing abilities. The final section reviewed studies that examined college entrance exam preparation practices. This section identified that an intervention designed to improve student scores on a college entrance exam can effectively improve students' scores. Also, an increase in students' college entrance exam scores can be predicted by students' behaviors including reading outside of school, taking notes during class, and playing music.

This chapter provides a foundation of knowledge about the types of instruction high school students currently receive in writing and effective interventions for high school students who are struggling with writing. One of the most effective interventions was strategy instruction, specifically SRSD. The chapter offers support for the rationale of using SRSD instruction for high school students with disabilities who are struggling writers, as the SRSD studies were highly effective in improving these students' writing. Finally, this chapter identified information about instruction that can be used to improve students' abilities on a college entrance exam. Despite a thorough literature search, no study was found evaluating instruction or an intervention for improving students' writing abilities on a college entrance exam. Overall, these findings are relevant and support the current study, as I will examine the effect of SRSD instruction with high school students with disabilities on the ACT writing exam, an area that has not been explored in the literature. The methods of this study are identified and explained in Chapter 3.

CHAPTER 3

METHODOLOGY

Overview of Study

Getting into college is important for all students, including students with high-incidence disabilities. Part of the college admissions process includes students' scores on college entrance exams. These high-stakes tests, the ACT and SAT, assess students' abilities in several subject areas including writing. Students with high-incidence disabilities often have significant writing problems which prevent them from doing well on the ACT. I hypothesize that teaching an argumentative writing strategy (HIT SONGS[3]) and self-regulation strategies, for completing the ACT writing exam using the validated instructional approach of Self-Regulated Strategy Development (SRSD) will improve the ACT writing performance of high school students with high-incidence disabilities. My prediction is based on the results of my pilot study and previous studies that used SRSD instruction with less skilled high school writers which found similar positive results (Chalk et al., 2005, Eissa, 2009, Hoover et al., 2012; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Mason et al., 2013).

This chapter describes the methodological approach used to test this hypothesis. First, an overview of the pilot study will be discussed. This is followed by an introduction to the current study and how it was influenced by the pilot study. Next, the participants and setting will be presented. Additionally, details of the general procedures for instruction as well as the outcome measures are discussed. The chapter ends with a description of the experimental design and analysis procedures.

Pilot Study

A pilot study was conducted in the fall of 2015 and examined the effectiveness of argumentative writing instruction for the ACT writing exam using the SRSD model with high school students experiencing difficulty with writing. Using a multiple baseline across participants design, four 10th grade students (three males, one female) who planned to apply to college were taught to analyze ACT prompts, and then use this information to plan; and write an argumentative essay using SRSD instruction. The students all attended a private high school in a suburban area of the Southwestern United States. Each student was considered a less skilled writer according to the following criteria (a) recommendation by the student's language arts teacher that the student had writing difficulties, (b) produced 8 or less argumentative elements on a practice ACT pretest, and (c) scored below the 25th percentile on the essay composition portion of the Wechsler Individual Achievement Test – Third Edition (WIAT – III). Two of the students in the study self-disclosed that they had a disability. However, they had not officially reported their disability to the school. The other two students did not have diagnosed disabilities, but were considered at-risk for writing difficulties.

The study piloted the ACT argumentative writing strategy HIT SONGS^3. The strategy was taught using the following SRSD instructional stages: (a) develop background knowledge, (b) discuss the strategy, (c) model the strategy, (d) memorize the strategy, (e) support the strategy, and (f) independent performance. The instruction was highly interactive and discourse-rich. For each instructional stage, students were taught to initial criterion before moving on to the subsequent stage of instruction. Self-regulation strategies were also taught to students as they learned to use the HIT SONGS^3 strategy.

Self-regulation strategies help students learn to manage the writing process and themselves as writers. This included goal setting, self-instructions, self-evaluation, and self-reinforcement. The instruction occurred during the schools last classroom period which was a time dedicated to students receiving extra assistance in any subject area of need. The classes were 30 minutes each and students received 10 to 14 lessons.

ACT writing prompts were used to assess performance at baseline, posttest, and maintenance. Following instruction, students increased the quality of their plans, the number of argumentative elements, overall ACT essay score, number of words, and number of transition words in their ACT essays. Specifically, students incorporated an average of 5.5 argumentative elements on their baseline essays. After criterion-based instruction, students improved with the average score of 17.9 at posttest and 16 at maintenance. Additionally, after completing instruction students were interviewed and all students were positive about the strategies, learning process, and its impact on their writing.

Current Study

In the current study, students were taught the HIT SONGS^3 writing strategy for the ACT using the SRSD instructional framework. A randomized control trial was used to test the effectiveness of this instruction with students with high-incidence disabilities and struggling writers. The instruction occurred over a two-week after school or summer school ACT preparation program. There were three after school and one summer school sessions that occurred. The after school sessions occurred in a Southwestern state. The summer school session occurred in a Midwestern state. The students attended the two-week after school or summer school session five days a week for three hours a day,

totaling 15 hours in the writing setting and 15 hours in the math setting. Each week the students spent 660 minutes (11 hours) of the time in instruction, 160 minutes completing pretests and posttests, 30 minutes participating in an interview, and taking a break 10 minutes per day (totaling 50 minutes of break time).

Students voluntarily registered for the program, with parent consent, and were randomly assigned to the two instructional groups: SRSD ACT writing and ACT math. Then each instructional group was randomly assigned to either treatment or control. The students who were assigned to the treatment group received SRSD instruction for the ACT writing test during the first week. The students who were assigned to the control group received instruction for the ACT math test during the first week. A second week of instruction occurred where students received the opposite subject of instruction (i.e., the control students received ACT writing instruction during week two). This second week of instruction occurred to help increase student registration to the program because then each student was provided with both writing and math instruction.

Impact of the Pilot Study on the Proposed Study

Based on the pilot study's results the following changes were made in the current study. First, the inclusion criteria was modified. In the current study students had to have a diagnosed disability or score below the 33%tile on the WIAT-III writing test and would be likely to benefit from writing instruction. In the pilot study, students were struggling writers who would likely benefit from instruction. This was determined by them having 8 or less argumentative elements when writing the ACT essay prior to instruction. In the proposed study, this changed to 10 or less argumentative elements before instruction for two reasons. The first reason is that students who include 10 or less argumentative

elements can still make meaningful gains from instruction as the writing goal for students is to include 18 or more argumentative elements in each ACT essay. The second reason is that due to the nature of the summer school format, it was not logistically possible to have students complete the ACT writing pretest before the first day of the summer school program. Overall, increasing the threshold allowed for the inclusion of more students who could still make meaningful improvements in their writing.

Second, instruction in the proposed study was provided in a small group setting of no more than five students per classroom (versus either one-on-one or one-on-two instruction in the pilot study). This allowed for partner and group collaboration activities to be incorporated into lesson plans. Such collaborative activities have been shown to be effective (Graham & Perin, 2007a). Next, due to the after school and summer school formats, instructional time changed to five days, three hours a day. This extended period of time required adjusting pilot study lesson plans, and increasing student interaction to keep students' interest during each three hour time block. The increase from working with one or two students at a time to a group of no more than five students also supported the need to increase instructional time. The students in the pilot study received five to seven total hours of instruction. The students in the current study received 11 hours of instruction. This increase in time is important because it allowed for the instructor to provide support for all students.

Finally, methodological concerns were addressed through the design of the study that either were not possible or did not occur to the same degree as in the pilot study. First, external and internal validity were controlled for by random assignment at the student and group level. Students were randomly assigned to a group. Then each group

was randomly assigned to the ACT writing instruction treatment group or to the ACT math instruction control group. Random assignment was not part of or pertinent to the single case design study. Second, all instructional sessions were recorded and assessed for instructional fidelity to eliminate possible Hawthorne effects. In the pilot study, 36% to 42% of the lessons for each group were observed and assess for instructional fidelity which was 100% across all groups.

The structure of the study is discussed in the following sections. First, the selection of the participants and the settings is described. Next, the framework of the task, materials, and instructional procedures for each condition are presented. Finally, an overview of the outcome measures, experimental design, and data analysis procedures are examined.

Participants and Setting

Participant Characteristics

The participants were 9th through 12th grade students from three public schools and one charter school. Inclusion criteria included (a) having a diagnosed high-incidence disability as specified on an Individualized Education Plan or 504 Plan or being a struggling writer as categorized by scoring in the lower 33%tile on the WIAT-III writing test, (b) teacher nomination that the student will benefit from writing instruction, and (c) a score of less than 10 elements on the ACT writing pretest. To obtain student participants, registration packets were sent home to students, with high-incidence disabilities or struggling writer that their general or special education teacher felt would benefit from writing instruction. The registration packets were sent home through the school administration, special education teacher, special education case manager, or

school counselor. The registration packet included the following components: (a) flyer including an overview of the program, (b) registration form, (c) parental consent form, and (d) student assent form. Due to the nature of the after school and summer school programs, ACT pretests were not administered until the first day of the after school or summer school program. Students whose ACT writing pretest scores were above 10 elements were given the opportunity to discontinue the program or to continue the program. If they decided to do the latter, their data was not included in the analysis. Participant inclusion steps are included in Table 6.

Table 6

Participant Inclusion Steps

1. School personnel identify students with high-incidence disabilities.
    a. Students are considered having a high-incidence disability if they have a current Individualized Education Plan or 504 Plan that specified one of the following diagnoses: Attention Deficit Hyperactivity Disorder (ADHD), Learning Disability (LD), Speech and Language Impairment (SLI), or mild Emotional and Behavioral Disorder (EBD). A student is considered to have a mild EBD when he or she is able to attend and participate in an inclusive classroom without disturbing the learning or safety of other students within the class.
2. School personnel identify students who will benefit from ACT writing instruction.
3. School personnel sends home registration packets to students who meet the criteria in both steps 1 and 2.
4. Students will voluntarily register for the ACT writing and ACT math program by completing the registration form, parents signing the consent form, and students signing the assent form.
5. Students will turn registration packet (registration form, parental consent form, and student assent form) into the school's main office.
6. Students will take the ACT writing test.

7. If students score below 10 elements on the ACT writing test, they will be included in the study. If students score above 10 elements on the ACT writing test, they will be given the option to continue in the study or to discontinue the program. Additionally, their data will not be used.

Registration packets for student participation were sent to parents and/or guardians of students who meet the initial inclusion criteria. A second round of registration packets were sent to students who did not register approximately two weeks after the initial packets were sent. Students who were consented and assented were randomly assigned to either the ACT writing treatment condition or the ACT math control condition. Information on students' birthdate, ethnicity, gender, and incoming grade level were collected from students' registration packets. Information on students' cumulative GPA as of spring 2015, previous ACT scores, and disability for each condition were collected from students' files.

Setting

Instruction took place in three public schools and one charter school. School A was a public school located in a suburban area of a Southwestern state. Approximately 1,880 students in ninth through 12th grade were enrolled in this Title 1 school with 2% of students from economically disadvantaged backgrounds. The majority of students identified either as Hispanic (41%) or Caucasian (36%). School B was also a public school located in a suburban area of a Southwestern state. The school had an enrollment of approximately 3,100 students in ninth through 12th grade. The majority of the students were Caucasian (63%) or Hispanic (15%). School C did not receive Title 1 funding and none of the students were from low socio-economic backgrounds. School C was a public school located in a rural area of a Midwestern state. The school served students in ninth

through 12th grade and enrollment was approximately 1, 466 students and 7.9% of students have disabilities. The school received Title 1 funding with 43.9% of the students coming from economically disadvantaged backgrounds. The school served mostly Caucasian (81%) or Hispanic (15%) students. School D was a charter school located in a suburban area of a Southwestern state. The school enrollment was about 681 students in fifth through 12th grade. The majority of students at the school identified as Asian (67%) or Caucasian (22%). As School D was a charter school, Title 1 funding information is not applicable.

At each school, students in the treatment and control conditions received small group instruction with no more than five students in each small group. The writing and math instruction occurred in separate classrooms equipped with desks, chairs, and a whiteboard. All procedures were approved through the Institutional Review Board before recruiting or instructing students.

Sample Size

A power analysis was conducted to identify the number of students needed to find a medium effect size of 0.5 with two measures ($\alpha = 0.05$). This effect underestimates the overall effect of SRSD in a meta-analysis looking at the impact of SRSD studies, where an average weighted effect size if 1.14 is obtained (Graham & Perin, 2007a). The minimum number of students needed would be 16. The underestimation of effect size also helps plan for attrition by overestimating the minimum number of students needed to see effects from the instruction. When working with students, it is best to recruit more students than necessary in the case that some students discontinue participation in the study. A medium effect size was selected for the power analysis because the results of the

pilot study demonstrated that when students received SRSD instruction for the strategy HIT SONGS[3] they made significant improvements on their ACT writing test performance.

Instructional Procedures

Instructional procedures are discussed next. First, the qualifications of instructors is presented. The procedures for assessing fidelity of instruction are also described. Then, the instructional procedures for the writing and math conditions will be discussed.

Instructors

The writing instruction was conducted by, Amber Ray, a doctoral student and the author of this dissertation. She has a bachelor's degree in special education, secondary education, and English literature. She has a master's degree in education with a literacy specialist endorsement. She was a former high school special education teacher and co-director of special education. She has been trained in SRSD and taught many groups of students using SRSD for various types of writing. Additionally, she has helped lead SRSD professional development for teachers.

The math instruction was conducted by three different teachers. First, the instruction at School A was conducted by a former high school mathematics teacher who is now getting his Ph.D. in Learning, Literacies, and Technology at ASU. He has worked with students with a range of abilities and was a math tutor for students needing extra help in math. Second, the math instruction for School B was conducted by a former high school math teacher who is now getting his Ph.D. in Mathematics Education. He has experience working with students with disabilities as well as four years of collegiate mathematics teaching experience. Third, the instruction at Schools C and D, the

Midwestern school and charter school, was conducted by a current high school teacher. He has his bachelor's degree in civil engineering and a master's degree in education. He has taught high school students for 11 years. He has taught physics, chemistry, and math. He has also taught several advanced placement courses where students earn college credit. Additionally, he has experience teaching students with a range of disabilities in a pull-out classroom and inclusion setting.

Fidelity of Instruction

Fidelity of instruction was assessed in two ways. First, all the writing and math lessons were audiotaped. The writing lessons were listened to by a person unfamiliar with the design of the study and the math lessons were listened to by Amber Ray. Using a fidelity checklist for each lesson, the observer checked any step completed on the list. Second, each instructor, in both the writing and math setting, used an instructional checklist while teaching. As the teacher completed an instructional task, he or she checked the step off the list. The purpose of this was to ensure that students were being taught according to the lesson plans and to help with the improvement of teaching these lessons in the future.

Instruction Overview

The main assessment task for this study involved writing an argumentative essay in response to an ACT writing exam prompt. The writing strategy was developed by examining several ACT writing prompts, the ACT writing rubric, and examining model essays for each score on the ACT website. After analyzing the task, I developed a strategy, HIT SONGS^3, for students to utilize to help them when writing the ACT essay. The lesson plans were created using the SRSD framework to teach students the strategy.

This study is evaluating the combination of the strategy HIT SONGS^3 with the instructional model of SRSD. SRSD was selected for the instructional model because it is effective in improving the writing abilities of high school students with disabilities (Chalk et al., 2005; Eissa, 2009; Hoover et al., 2012; Jacobson & Reid, 2010, 2012; Kiuhara et al., 2012; Konrad et al., 2006; Mason et al., 2013). While SRSD is a validated instructional model, this study adds further data to the validation of the SRSD model while testing a new strategy that no one else has used before. This is common for SRSD research as new strategies need to be developed based on the writing tasks students are being required to complete.

The math writing lessons were developed by using the math section of the Kaplan ACT Premier 2016 study book. This was chosen because Kaplan is a leading company for test preparation and had test preparation materials for the revised ACT test. In each condition, instruction occurred with no more than five students in each group. Each group received five days of instruction for three hours each day for each subject area (writing and math).

ACT Writing Instruction

SRSD instruction for the ACT writing exam involved three central components (a) an argumentative writing strategy, (b) self-regulation of writing strategies, and (c) six stages of SRSD instruction for teaching writing and self-regulation strategies.

Argumentative writing strategy. The argumentative writing strategy taught in this study was represented by the mnemonic HIT SONGS^3. The strategy was designed to help students successfully complete the newly modified ACT writing test (ACT, Inc., 2015c) and improve their scores on this assessment. The strategy aided students by

providing them with a mechanism for analyzing the ACT writing prompt; creating a quick plan for composing their argument; and using the plan, expanding it, and checking their work as they draft their essay. A mnemonic served as a reminder to carry out the mental operations included in the strategy. The first word of the mnemonic, HIT, outlined the essential introduction paragraph elements; (a) **H**ook, (b) **I**ntroduce the topic, and (c) **T**hesis. The next part of the mnemonic, SONG, was repeated three times to analyze each of the perspectives stated in the prompt; (a) **S**tate the perspective, (b) **O**utlook on the perspective, (c) **N**eed examples, and (d) **G**ive your opinion. The final portion of the mnemonic, S^3, reminded students what needed to be included in the conclusion paragraph; (a) **S**upport your thesis, (b) **S**tate the relationships between your thesis and the perspectives given in the prompt, and (c) **S**ummary. Beyond the specific aspects of the mnemonic, embedded in instruction students were taught to include transition words, use good word choice, consider the reader, and know how their writing will be assessed.

Self-regulation strategies. Self-regulation strategies were also taught to students as they learned to use the HIT SONGS^3 strategy. This included goal setting, self-instructions, self-evaluation, and self-reinforcement. Students worked with the instructor to set writing goals for each essay. This included creating essays with all the necessary argumentative elements. It also included other goals that were individualized for students as they progressed through the lessons. For instance, students could set the goal of adding an additional example within their essay or using different transitions words at the beginning and within paragraphs. When working through the writing process, students were taught to use self-instructions to assist them in thinking of good ideas, composing their essay, and to check their work. Students created their own self-instructions based on

their needs. For example, a student who tended to rush through work, instructed himself to take his time when writing. Moreover, students self-evaluated their essays each time they completed writing an essay collaboratively or independently. Students assessed whether they analyzed the prompt, planned using the strategy, and wrote a quality essay that made sense, and used all the argumentative elements. After students evaluated an essay, they graphed their progress on a chart to help them see if they achieved their goals. Lastly, students were taught to self-reinforce their progress. After completing each step of the writing process, students were encouraged to compliment themselves. They were further taught to celebrate their hard work when they completed an essay.

Six stages of instruction. The argumentative writing and self-regulation strategies were taught using the SRSD instructional model which included six stages of instruction (Harris & Graham, in press). The instructional stages were applied recursively according to individual student's needs. Moreover, the instruction was highly interactive and discourse-rich. Such instruction is an essential component when teaching students with disabilities and struggling students. When students with disabilities and struggling writers are only provided with strategies for writing, such as a graphic organizer with minimal to no instruction, the procedures are not effective in helping students with their writing (Gillespie & Graham, 2014). This is not the case when they are provided with explicit, systematic, and interactive instruction on how to use strategies that structure how they engage in the process of writing.

For each instructional stage of SRSD, students were taught to initial criterion before moving on to the subsequent stage of instruction. The first stage of SRSD was to develop and activate background knowledge. The instructor worked with the students to

advance understanding of argumentative writing elements through a discussion about the elements within argumentative essays. The instructor also discussed with the students the structure and requirements of the ACT writing test, and they conjointly analyzed an ACT writing prompt. The criteria for completing this stage was the ability to articulate the following basic elements of a quality ACT test argumentative essay: introduction of the topic, thesis, stating and analyzing each perspective given in the prompt, supporting your thesis, relating your thesis to other perspectives, and summarizing key points. This was determined by having students share with a partner or the instructor the elements of a quality ACT test argumentative essay.

Discussing the strategy was the second stage of SRSD instruction. Here the instructor presented the strategy, HIT SONGS^3, and discussed with the students the importance of each part of the strategy and how to implement it during the writing process. The strategy was further explored by reading and identifying the parts of HIT SONGS^3 in exemplar ACT argumentative essays. Low quality ACT argumentative essays were also analyzed, with the teacher and students working together to improve the poorly written essay by using the strategy to rework it. For this stage, students met the criteria when they could identify the parts of the strategy within a sample essay and identify the purpose of the strategy and when to use it. This was determined by students labeling the parts of the strategy in the margins of a sample essay.

The third stage was modeling the strategy. The instructor modeled how to use the writing strategy while analyzing and ACT writing prompt, engaging in planning, writing, and evaluating what was written. To make these processes more visible, the instructor thought aloud, making her thinking visible as she engaged in these activities. While

modeling this process, the instructor applied self-regulation strategies involving self-instructions, self-evaluation, and self-reinforcement. For instance, when thinking aloud during the writing process, the instructor modeled getting overwhelmed after reading the prompt and used the following self-instruction, "There is a lot I need to do to respond to the prompt, but I know I can use HIT SONGS^3 to help me write a good essay." The instructor also modeled self-evaluation by changing ideas from the notes to make a stronger argument when composing the essay and by rereading the completed essay and correcting any mistakes. When the instructor finished, she modeled self-reinforcement by saying, "Wow! When I use the strategy HIT SONGS^3 I write a great essay." After modeling, the teacher discussed and analyzed with students the writing strategy and self-instructions she used. The instructor also discussed setting writing goals with students; the starting goal for each student was to write an essay that included all the parts of HIT SONGS^3. The criterion for this stage was students developing personalized self-instructions that were helpful to them when writing. This was determined by students writing self-instructions in their writing folder.

Memorizing the strategy was the fourth stage of instruction. However, memorizing the strategy actually began once the strategy was introduced in the discussing the strategy stage. The instructor worked with students to memorize the strategy, and discussed that the students needed to be able to remember the strategy because they cannot bring the strategy page with the meaning of HIT SONGS^3 with them when taking ACT test. The criterion for this stage of instruction was being able to state each step of the strategy correctly from memory and the importance of why each step

helps the student create better writing. This was determined by students reciting each step of the strategy and its importance from memory to a partner or the instructor.

The fifth stage was supporting the student's use of the strategy and self-regulation procedures. During this stage, the students worked with the teacher to use self-instructions and self-reinforcement when working through the writing process and evaluated and graphed their progress on the goal setting sheet. During this stage, the instructor and students worked collaboratively using the writing and self-regulation strategies. The instructor and students continued to write together as the instructor gradually shifted control of the writing process to the students. The students worked toward independence while receiving prompts from the instructor. The criteria for this stage was that the students were able to analyze the ACT writing prompt, create a plan, compose an essay, and evaluate their essay while using self-regulation strategies with minimal prompts from the instructor. This was determined by students completing a practice ACT essay exam with minimal support from the instructor.

Independent performance was the last stage in SRSD instruction. During this stage the students independently wrote an essay responding to an ACT writing prompt using writing and self-regulation strategies. Students' criteria for completing this stage was being able to independently use the writing and self-regulation strategies and produce an essay with at least 18 argumentative elements. This was determined by students completing a timed practice ACT essay exam with an essay that includes at least 18 argumentative elements without instructor assistance.

Absences. Lesson four consisted of collaborative student writing, independent student writing, and a practice ACT writing test. During this instructional day, students

who were absent on previous instructional days received make-up instruction. The teacher worked with the students who had absences and the other students worked in small groups or pairs to write an essay during the collaborative writing practice. If students needed further make-up instruction, they could work with the teacher while the other students completed an independent practice essay. Students' data was not included in the study if they missed more than two days of instruction, or a total of 6 hours of instruction.

ACT Math Instruction

The math instruction was from the Kaplan ACT Premier 2016 textbook. This math instruction taught students to ask themselves four questions when answering each problem, reviewed 100 key math concepts, and provided an in-depth review of the eight topics covered in the ACT math test.

Math questions. Students were first taught four questions to ask themselves when answering each math question. The first question is, "What is the question?" The students were taught to read the question stem and identify and circle exactly what the question is asking of them. The next question was, "What information am I given?" During this step students were taught to identify and underline key information provided in the question. The third question was, "What can I do with the information?" Here students were instructed to choose a plan of attack: straightforward math, picking numbers, backsolving, or guess strategically. The final question was, "Am I finished?" Students learned to look back at the objective of the question that they circled and make sure they have fully answered the question.

100 key math concepts. During the next part of instruction, students reviewed the most frequently tested math rules. Some of these rules included undefined expressions, factors, reducing fractions, percent formula, setting up a ratio, average formula, counting the possibilities, multiplying and dividing powers, evaluating an expression, factoring out a common divisor, solving a linear equation, solving a quadratic equation, finding the distance between two points, intersecting lines, interior angles of a triangle, Pythagorean theorem, special quadrilaterals, circumference of a circle, surface area of a rectangular solid, and sine and cosine of acute angles. These top 100 math concepts were the pieces of knowledge students need to be successful on the ACT math test.

ACT math topics. The eight topics that were covered on the ACT math test included plane geometry; variable manipulation; proportions and probability; coordinate geometry; operations; patterns, logic, and data; number properties; and trigonometry. Each of these topics were reviewed in relation to the top 100 key math concepts. The teacher worked through practice problems and then had the class complete practice problems related to each topic. When answering the practice problems, the teacher and students asked themselves the four questions to help them work through each problem. Practice problems that students worked through in small groups, pairs, or as individuals were reviewed as a whole class to ensure students know the correct solution and how to solve the problem. Students also worked through a complete practice ACT math test. The answers and explanations were reviewed as a class.

Outcome Measures

The following measures were given in the respective order during pretesting and posttesting: genre knowledge, ACT writing exam, self-efficacy for writing, and

generalization writing task of the WIAT-III. The genre knowledge test was given first to discover what students already knew about the format and directions of the ACT writing exam. If the ACT had been given before the genre knowledge measure, then students could have used information learned through reading the directions and taking the ACT writing exam. Next was the ACT writing exam followed by the self-efficacy for writing measure. The self-efficacy for writing came after taking the ACT writing exam to provide students with a point of reference when being asked about writing. Finally, the generalization task of the WIAT-III essay composition test was given to gain a general understanding of students' writing abilities. Table 7 provides an overview of what tests were administered.

Table 7

Pre and Post Testing Order and Days

Day 1 (Pretesting)	Genre Knowledge
	ACT Writing Exam (Endangered Species)
	Self-Efficacy for Writing
	Generalization Writing Task (WIAT – III)
Day 5 (Posttesting)	Genre Knowledge
	ACT Writing Exam (Experiential Education)
	Self-Efficacy for Writing
	Generalization Writing Task (WIAT – III)
	Social Validity Interview

The genre knowledge, self-efficacy for writing, and generalization writing task each provided one outcome measure. The ACT writing exam outcome measures included a planning score, overall ACT score, number of argumentative elements, number of words, and number of transition words. Each of the ACT writing exam outcome measures will be described in further detail later in this section.

Before the essays were scored, all identifying information was removed and all essays were typed into a word processing program in order to reduce presentation effects (such as poor handwriting) that could have influenced judgments made by raters about the quality of the text written by the student (see Graham, Harris, & Hebert, 2011). No corrections were made when typing student essays. All essays were scored independently by the first author and a trained rater who was blind to the design and purpose of the study. The scores by the rater blind to the purpose of the study were used in analyses. Interrater reliability for each measure was determined by Pearson product moment coefficient between the two scores.

ACT Writing Exam

The argumentative writing prompts that were used during testing and instruction were from practice ACT writing tests and were designed to be relevant for high school students (e.g., topics included intelligent machines, public health and individual freedom, bilingual accreditation, endangered species, and experiential education). The intelligent machines prompt was used during instruction because it was the prompt on the ACT webpage. The ACT webpage provided sample essays in response to the intelligent machines prompt at varying score levels that were analyzed and discussed during instruction. The rest of the prompts were selected at random from the 22 prompts used

during the pilot study. Each of the writing prompts were formatted and structured in the same way in order to maintain consistency and prepare students for the ACT writing test (See Tables 8 and 9 for testing writing prompts). Each prompt included a heading which stated the overall topic of the prompt as well as an introductory paragraph that gave a brief overview of the topic and expressed that there were various perspectives on the topic. The prompt then provided the following instructions (this example is for the topic intelligent machines), "Read and carefully consider these perspectives. Each suggests a particular way of thinking about the increasing presence of intelligent machines" (ACT, Inc., 2015e). The prompt next provided three perspectives on the topic. For instance, one of the perspectives for the prompt intelligent machines is: "Perspective One: What we lose with the replacement of people by machines is some part of our own humanity. Even our mundane daily encounters no longer require from us basic courtesy, respect, and tolerance for other people" (ACT, Inc., 2015e). Finally, students were directed to write their essay using the following directions (illustrated for intelligent machines):

> "Write a unified, coherent essay in which you evaluate multiple perspectives regarding intelligent machines. In your essay, be sure to: (a) analyze and evaluate the perspectives given, (b) state and develop your own perspective on the issue, and (c) explain the relationship between your perspective and those given. Your perspective may be in full agreement with any of the others, in partial agreement, or wholly different. Whatever the case, support your ideas with logical reasoning and detailed, persuasive examples" (ACT, 2015e).

Table 8

Endangered Species ACT Writing Prompt

Endangered Species

Conservation status systems help governments and policy organizations prioritize and allocate resources to support the survival of imperiled species. In the United States, laws such as the Endangered Species Act provide a policy framework for implementing efforts to protect at-risk wildlife and ecosystems. These laws are often directly focused on mitigating the negative man-made effects of commercial expansion and land use. However, some activist groups support the broader goal of preventing the extinction of any species, regardless of whether or not humans are the cause of endangerment. Should regulatory efforts to protect endangered species be limited to offsetting the role of humans in placing wildlife at risk? Considering the global scope of conservation issues, the careful consideration and coordination of advocacy priorities could lead to improved policy outcomes.

Read and carefully consider these perspectives. Each suggests a particular way of thinking about the protection of endangered species.

Perspective One	**Perspective Two**	**Perspective Three**
Humans have the unique ability, through technological capability and scientific progress, to benefit the environment through protection of wildlife and ecosystems. Conservation efforts should be open to any at-risk species, regardless of the known causes of endangerment.	Conservation policies are regularly met with the challenge of an ever-increasing number of species to save. With limited conservation resources available, funding priorities are too often biased in favor of publicly well-known animals and plants. Conservation decisions should instead be driven by scientific models that pinpoint sources of risk and identify high-value targets for species protection.	To shape effective policy, a distinction should be drawn between species at risk due to human and nonhuman factors. Well-intentioned conservation programs often carry unintended consequences that can create new environmental hazards despite successful species protection. Conservation policy should therefore be focused in a narrow way to repair the known negative effects of human activities on an ecosystem.

Essay Task

Write a unified, coherent essay in which you evaluate multiple perspectives on polices designed to protect endangered species. In your essay, be sure to:

- Analyze and evaluate the perspectives given
- State and develop your own perspective on the issue
- Explain the relationship between your perspective and those given

Your perspective may be in full agreement with any of the others, in partial agreement, or wholly different. Whatever the case, support your ideas with logical reasoning and detailed, persuasive examples.

Planning Your Essay

Your work on these prewriting pages will not be scored.

Use the space below and on the back cover to generate ideas and plan your essay. You may wish to consider the following as you think critically about the task:

Strengths and weaknesses of the three given perspectives
• What insights do they offer, and what do they fail to consider?
• Why might they be persuasive to others, or why might they fail to persuade?

Your own knowledge, experience, and values
• What is your perspective on this issue, and what are its strengths and weaknesses?
• How will you support your perspective in your essay?

Table 9

Experiential Education ACT Writing Prompt

Experiential Education

Experiential education is a philosophy that holds that students learn best through direct experience. Hands-on learning is said to promote deeper understanding because students are able to apply concepts and theories to physical situations. Rather than memorizing facts, students who are given the opportunity to create physical evidence of logical reasoning are better equipped to apply the same reasoning to new situations. Since all teachers aim to impart critical thinking in their classrooms, should they be expected to provide more hands-on learning opportunities? As educators aim to continuously improve the quality of the education they offer to students, consideration should be given to better incorporating hands-on learning.

Read and carefully consider these perspectives. Each suggests a particular approach regarding experiential education.

Perspective One	**Perspective Two**	**Perspective Three**
Some argue that to accept a theory without experiencing it is to learn nothing at all. Teachers need to provide opportunities for experiential involvement if they expect students to truly comprehend each lesson plan objective.	Experiential education is an integral part of readying students to pursue careers in the science, technology, engineering, and math fields, but not all disciplines. If students are expected to perform skill-based tasks in these fields after they graduate, they should be provided a strong foundation on which to build their careers. However, teachers should not be expected to supply experiential learning where it is not appropriate.	Schools cannot be expected to offer hands on learning for students. Not only is it costly, but also it may not be effective for all learners. Students will be better served if schools invest money in other educational models and opportunities.

Essay Task

Write a unified, coherent essay in which you evaluate multiple perspectives on experiential education. In your essay, be sure to:

- Analyze and evaluate the perspectives given
- State and develop your own perspective on the issue
- Explain the relationship between your perspective and those given

Your perspective may be in full agreement with any of the others, in partial agreement, or wholly different. Whatever the case, support your ideas with logical reasoning and detailed, persuasive examples.

Planning Your Essay

Your work on these prewriting pages will not be scored.

Use the space below and on the back cover to generate ideas and plan your essay. You may wish to consider the following as you think critically about the task:

Strengths and weaknesses of the three given perspectives
• What insights do they offer, and what do they fail to consider?
• Why might they be persuasive to others, or why might they fail to persuade?

Your own knowledge, experience, and values
• What is your perspective on this issue, and what are its strengths and weaknesses?
• How will you support your perspective in your essay?

Students wrote argumentative essays in response to practice ACT prompts at pretest and posttest. The students were given the prompts in sample ACT books and provided the same directions used during ACT test administration. Students had 40 minutes to complete the essay test, per ACT test guidelines. The order of prompts for testing were randomly assigned and counterbalanced by student. The tests were administered by a person who was not involved in instruction. This was done so that the instructor did not serve as a prompt to use the taught strategy. All ACT writing exam

essays were scored for planning, argumentative elements, overall ACT writing score, number of words, and number of transition words.

Planning. Students were provided a separate page on which to plan their essay. Plans were scored using a 0 to 5 point scale adapted from Harris, Graham, Ray, and Houston (2017; See Table 10 for planning scoring rubric). Students received a score of 0 if no plan was evident, a score of 1 if they wrote their essay on the planning sheet and then copied it onto the essay paper, a score of 2 if they wrote an essay or words related to their essay on the planning sheet and made changes between their plan and essay, a score of 3 if words were listed related to developing a plan (i.e. HIT SONGS[3]), a score of 4 if a strategy was used but there were no changes between their plan and essay, and a score of 5 if a strategy was used and there was a change between their plan and essay. This was a reliable measure as the interrater reliability from the pilot study was 1.00.

Table 10

Scoring ACT Essays for Planning

Operational Definition of a Change:	expand, add ending, add linking words, shorten, change order, or replace word choice
Decisions for Scorer to Make	1. No plan evident <u>OR</u> Plan evident 2. What is a strategy? A. Name Strategy: Name of strategy and/or steps listed B. Use Strategy: Name strategy/steps + Any words relating to the topic 3. If plan evident A. No strategy used / strategy used B. No change between plan & essay / change between plan & essay

Scores	0. No plan evident 1. No strategy used / no change between plan & essay 2. No strategy used / change between plan & essay 3. Words listed related to developing plan 4. Strategy used / no change between plan & essay 5. Strategy used / change between plan & essay

Overall ACT writing score. The ACT scoring rubric was used to analyze the overall ACT writing score of students' essays. This measure evaluated the holistic quality of the student's writing. Students received an overall ACT writing score ranging from 2 to 12. This total score was the combined average of four subscores from the two raters. The ACT writing rubric subscores categories were: (a) ideas and analysis, (b) development and support, (c) organization, and (d) language use. Each subcategory was scored on a scale ranging from 1 to 6 (with 1 representing a lower score). Ideas and analysis examined if the paper analyzed multiple perspectives and established a clear argument and thesis. Development and support evaluated use of rationale and examples to support students' claims. Organization assessed arrangement of paragraphs and use of transition words between and within paragraphs. Language use addressed word choice, voice, sentence structure, grammar, and spelling within the paper. The interrater reliability when scoring this measure in the pilot study was .98.

Argumentative elements. There were twelve essential elements identified for writing an argumentative essay in response to an ACT prompt including: a hook, introducing the topic, stating a thesis, stating the perspectives from the prompt, stating the outlook on each perspective, discussing each perspective using examples, giving an

opinion on each perspective, restating the thesis, providing rational for the thesis, stating the relationship between the thesis and perspectives, summarizing key ideas, and leaving the reader thinking. See Table 11 for a complete description of each element and scoring guide. Students received 1 point for each element presented in their essay. Additional points were given when students provided more than one element for a category (e.g., restating all three perspectives from the prompt resulted in 3 points). There was an interrater reliability of .98 when scoring this measure in the pilot study.

Table 11

Scoring ACT Essays for Argumentative Elements

Argumentative Essay Element	**Points Possible**	**Points Earned**
Hook: The writer catches the reader's attention with a questions, exclamation, interesting fact, or short anecdote.	1 point	
Introduce Topic: The writer establishes context for analysis of the issue.	1 point	
Thesis: Writer clearly states his/her view on the topic.	1 point	
State the perspectives from the prompt: Writer restates in his/her own words each perspective from the prompt.	3 points – 1 per perspective	
Outlook on each perspective: The writer describes the strengths and weaknesses of the perspective.	3 points or more – 1 per analysis of a perspective	
Need to examples: The writer provides reasoning and examples to support the perspective.	3 points or more– 1 per reason or example	
Give your opinion: The writer states whether they agree or disagree with this perspective.	3 points – 1 per perspective	
Restate thesis: The writer restates their thesis.	1 point for restating thesis	

Rational for thesis: Writer provides rational for their thesis by providing evidence and reasoning that conveys the significance of the argument.	1 point or more – 1 per piece of evidence/reasoning to support thesis
State relationships: The writers states the relationships between his/her thesis and perspectives from the prompt.	1 point
Summary: The writer summarizes key ideas from the essay.	1 point
Leave the reader thinking: The end of the essay should provide an expansion on the ideas that looks toward the future.	1 point
	TOTAL Points

Number of words. The total number of words in an essay was identified using the Microsoft Word Count feature.

Number of transition words. Transition words were identified by looking at the first words or phrases at the beginning of each sentence. Words or phrases were considered a transition word if they were on the list of acceptable transition words from the WIAT-III scoring protocol. Each transition word identified received 1 point. Students were not penalized if the words following the transition were an error such as a run-on sentence or sentence fragment. The pilot study had an interrater reliability of .98 for the number of transition words.

Generalization Measure

The Wechsler Individual Achievement Test – Third Edition (WIAT – III) essay composition test was administered as the generalization measure because the task involved students writing an opinion essay. The prompt stated, “Write about your favorite game. Include at least 3 reasons why you like it.” Administration of the WIAT-III followed the standardized procedures outlined in the testing manual. The reliability for

the WIAT-III essay composition in the pilot study was .99. The reliability of the alternative form for this test for grades sixth through 12th is 0.85 (Psychological Corporation, 2009).

Genre Knowledge

The genre knowledge measure was adapted for high school students preparing to take the ACT essay exam from a previous writing study (Olinghouse, Graham, & Gillespie, 2015). The percentage of exact agreement between independently scored responses for this measure was 86% in the Olinghouse et al. (2015) article. The prompt stated, "Suppose you had a friend who has to take the ACT writing test. The teacher told your friend they would write a practice ACT essay and each student would be sharing their ACT essay with the other students in the class. The other students would be reading or listening to it. If your friend asked you what kind of things are included in the ACT essay, what would you tell your friend? What are the parts of this type of essay?" Students had 10 minutes to complete the genre knowledge measure. The purpose of this measure was to see how much students understand and have learned about the genre specific contents of writing the ACT essay. An assumption underlying this measure was that the more a student can state about a genre through writing the more they know about that genre. While what a student states about a genre through writing is not likely to reflect all they know, neither does an oral recitation (Olinghouse, Graham & Gillespie, 2015). Nonetheless, this restricted exposition still predicts individual differences in writing.

The genre knowledge measure was scored by identifying the unique idea units within each student's response. Each unique idea unit counted as one point.

Self-Efficacy

The self-efficacy measure questions were adapted from the study by Bruning, Dempsey, Kauffman, McKim, and Zumbrunn (2012) which was conducted with high school students. This study conducted a factor analysis of the self-efficacy questions. A three factor model resulted in the best model fit with questions loading onto ideation, conventions, and self-regulation factors. The measure was further adapted from the study by and Graham, MacArthur, and Schwartz (1993). The measure used in this study asks students eight questions about ideation and two questions about using self-regulation when writing. The self-efficacy questions about writing conventions from the Bruning et al. (2012) study were not asked of students in this study because conventions were not a focus of the intervention. This measure was included because SRSD was designed to directly address self-efficacy through the task, instruction, and self-regulation components. The elements of SRSD including modeling, collaborative writing, supported writing, graphing of student progress, and self-statements were designed as mechanisms that should lead to more confidence as a writer. The purpose of this measure was to see if after learning the writing and self-regulation strategies for the ACT writing exam students become more efficacious about their writing ideation and self-regulation abilities (See Table 12 for Self-Efficacy for Writing Questions).

Table 12

Self-Efficacy for Writing Questions

Ideation
1. I can write an argument that will receive a high score on college writing tests like the ACT.
2. I can write an argument that provides a hook at the beginning of the paper that will catch my reader's attention.

3. I can write an argument that provides a strong introduction to my topic.
4. I can write an argument that clearly states my thesis.
5. I can write an argument that clearly organizes my ideas.
6. I can write an argument that provides strong support for my thesis.
7. I can write an argument that provides strong examples that support my thesis.
8. I can write an argument that provides a strong concluding paragraph to my paper.

Self-Regulation

9. I can easily get started when writing an argument.
10. I can keep writing even when writing is difficult.

Social Validity

Each group of students in both the writing and math conditions were interviewed by the instructor after the completion of instruction. The instructor audio recorded the interview and took notes as students responded (Mason, Kubina, Kostewicz, Cramer, & Datchuk, 2013). Students were asked the following questions (a) Before you started this instruction, how did you feel about taking the ACT writing test? Why? If you haven't taken the ACT, how did you feel about tests that involved writing?, (b) After taking this class, how do you feel about taking the ACT writing test? Why?, (c) Now that you have completed this class, what is it about the instruction that helped you become better prepared to take the ACT writing test? Can you be specific? What skills are better?, and (d) As a result of completing this class, what have you learned about writing a strong argument? Where could you use the skills you learned in the future?. As time allowed, two additional questions were asked including (a) If you were the teacher, is there anything you would do differently to help students learn these writing strategies? and (b) Is there anything else you think I should know about the instruction for the ACT writing

test?. The questions for the math students were very similar, but all inquired about the ACT math test and instruction.

Experimental Design and Analysis

The possible differences in the performance of the ACT writing and math groups were examined using a randomized control trial (specifically a pretest/posttest experimental group design). The students were randomly assigned to groups and the groups were randomly assigned to the writing treatment or math control condition (See Figure 3). The use of randomization at the student and group level controlled for internal validity. The math comparison condition controlled for testing and instrumentation. Because students were taught in small groups, the unit of analysis for all statistical tests was the mean performance for each small group in each condition. The statistical tests applied in this study involved ANOVA, which is based on the assumption that all observations are independent (Field, 2000). Thus, *N* for each condition was four. For all measures, however, means, standard deviations, and effect sizes were calculated at both the individual and group level. Hedge's *g* was used to calculate effect size as it controls for small sample size. All effect sizes were first adjusted for pretest differences by subtracting pretest scores from posttest scores. The resulting difference was then divided by the pooled standard deviation.

All measures were checked to determine if there were scores that fell outside Tukey's definition (1977) of an extreme outlier (i.e., mean performance plus or minus three times the difference of the score between the 25^{th} and 75^{th} percentile). Transition words was the only outcome measure with an outlier score. This score was winsorized to

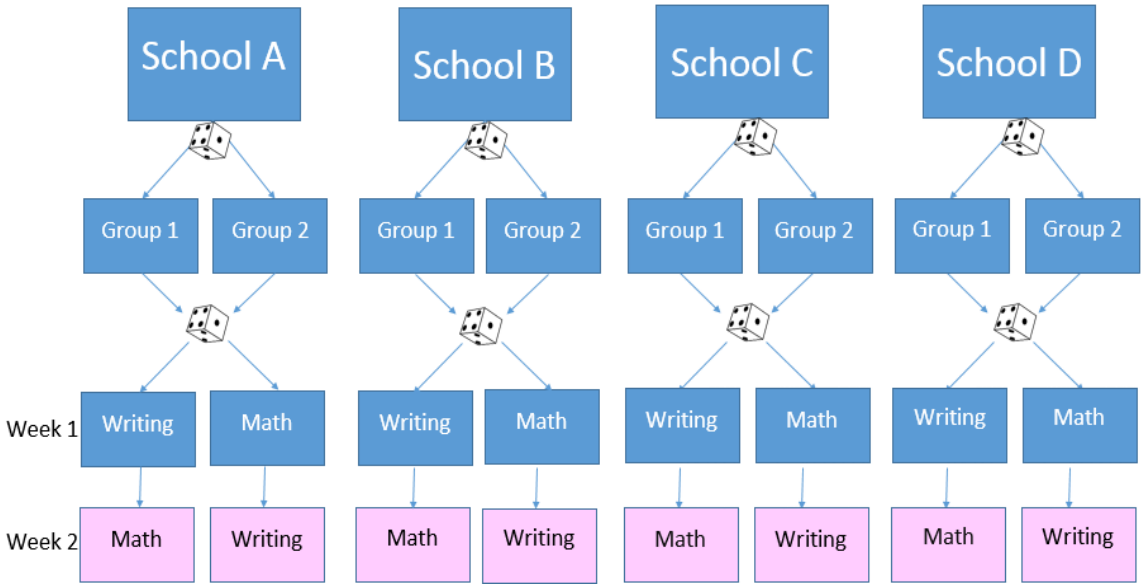


Figure 3. Randomized Control Trial Design.

make it equal to the lowest score for an outlier as determined by Tukey. All other assumptions underlying ANOVA were tested and met prior to analysis.

To examine the effects of SRSD instruction, a 2 (condition) X 2 (time of testing) ANOVA with repeated measures was conducted with each variable separately. The independent variable was treatment condition (SRSD versus control) and the dependent variable was pretest and posttest performance. To examine if students maintained the effects of treatment over time (one week later), a series of one-way ANOVAs with repeated measures were conducted. The repeated measures were treatment students' scores at pretest, posttest, and maintenance. Control students were not included because they had already begun to receive the SRSD writing instruction. To reduce the Type I error rate, tests of the eleven dependent variables were conducted using Bonferroni adjusted alpha levels of .0045 (.05/11).

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Survey Study Coding Sheet **Reference:**		
Research Question(s):		
Clearly Specified Population		
Target Population	Survey (Actual) Population	
Explicitly stated Unit of Analysis		
Individual or Group Level (individual students, groups of special interest, classroom, school, etc.)		
Specification of Determining a Desired Sample Size		
How was desired sample size calculated?		
Informative Description of the Selection Procedures		
How was the sample selected? (random, convenience sample, etc.)		
Description of Response Rate and Nonrespondence Treatment		
Total N	Treatment of Non-responders	
Demonstration of Appropriate Estimation Procedures		
Weighting (adjust for unequal selection probabilities or for total nonresponse)	Complex Variance (when cluster sampling is used, variance estimation is not appropriate)	Nonresponse Adjustment (investigating estimation bias due to nonresponse)
Findings:		
Additional Notes:		
Coder: Amber Ray	**Time:**	

Meta-Analysis Coding Sheet **Reference:**		
Research Question(s)		
Research Question(s)	Population	
Article Inclusion Criteria		
Criteria	Is the criteria appropriate?	Number of Studies Included
Missing Studies		
Is it unlikely that important, relevant studies were missed?		
Assessment of Study Quality		
Did the authors carefully read and rate the quality of each study?	How do the authors use the information about the quality of each study?	
Data Abstraction		
How were data abstracted? (should have at least two people analyzing each study, comparing results, and resolving conflicts)	Are the methods reproducible?	
Homogeneity of Results from Study to Study		
Were the results similar from study to study?	Did the authors still combine the results even if the studies found varying results (some find benefit, some do not)	If the authors combined heterogeneous results, did they use a random effects model?
Findings:		
Additional Notes:		
Coder: Amber Ray	**Time:**	

<table>
<tr><td colspan="5">Intervention Study Coding Sheet

1. Reference
Click here to enter text.</td></tr>
<tr><td colspan="5">2. Research Study
Research Question(s)
Click here to enter text.</td></tr>
<tr><td colspan="3">Purpose of Study
Click here to enter text.</td><td colspan="2">Theoretical Perspective
Choose an item.
Click here to enter text.</td></tr>
<tr><td colspan="5">3. Sample of Student Participants</td></tr>
<tr><td>Location
Click here to enter text.</td><td>Number of Schools
Click here to enter text.</td><td>Number of Classrooms
Click here to enter text.</td><td>☐Urban
☐Suburban
☐Rural</td><td>SES
Choose an item.</td></tr>
<tr><td>Ethnicity
Click here to enter text.</td><td>Number of Participants
Click here to enter text.</td><td>Number of Participants per Group
Click here to enter text.</td><td>Age of Participants
Click here to enter text.</td><td>Grade(s)
Click here to enter text.</td></tr>
<tr><td>Learning Characteristics
Click here to enter text.</td><td colspan="2">Selection Restrictions
Click here to enter text.</td><td>Sample Obtained
Click here to enter text.</td><td>Attrition

Attrition by Group</td></tr>
<tr><td colspan="5">4. Setting</td></tr>
<tr><td colspan="3">Study Setting
Choose an item.</td><td colspan="2">Classroom Setting
Choose an item.</td></tr>
<tr><td colspan="5">5. Design of Study</td></tr>
<tr><td colspan="5">Design of Study
Choose an item.</td></tr>
<tr><td colspan="5">6. Independent Variables</td></tr>
<tr><td colspan="3">Treatment(s)
Describe:
Instruction:
Choose an item.
Unit of Analysis:</td><td colspan="2">Control Conditions
Describe:
Instruction:
Choose an item.
Unit of Analysis:</td></tr>
<tr><td>Duration
Minutes per session:

Sessions per week: Click here to enter text.
Number of</td><td>Teacher to Student Ratio
Click here to enter text.</td><td>Properties of teachers/trainers
Click here to enter text.

Type of Trainer
Choose an item.</td><td>Qualifications of Trainers
Click here to enter text.

Number of trainers
Click here to enter text.</td><td>Length of Training for Trainers
Click here to enter text.</td></tr>
</table>

weeks: Click here to enter text. **Total sessions:**			**Fidelity Checked** ☐**Yes** ☐ **No** Click here to enter text.	
Source of Training Click here to enter text.	**Assignment of Trainers to Groups** Choose an item.	**Cost Factors** Click here to enter text.	**Moderator Variables** Click here to enter text.	
7. Dependent Variables				
Process taught during training/ measured at end of training Click here to enter text.			**Outcomes Measured** Choose an item. Choose an item.	
8. Non-equivalence of groups				
Any reason to believe that treatment/control group might not have been equivalent prior to treatments? ☐**Yes** ☐**No**			**Were steps taken in statistical analyses to adjust for lack of equivalence?** ☐**Yes** ☐**No**	
9. Result				
Name of the Measure Click here to enter text. **Design of Measure** Choose an item. Click here to enter text.	**Treatment mean minus control mean** ☐**Positive** ☐**Negative** **Number of People Providing Effect Size Info** Click here to enter text.	**Effect Size** Click here to enter text. **Type of Summary Statistics Effect Size Was Derived** Click here to enter text.	**Reliability of Measures** Choose an item. Click here to enter text.	**Validity of Measures** Choose an item. Click here to enter text.
10. Results and Conclusions – Do the results match the conclusions made? ☐**Yes** ☐**No** Click here to enter text.				
11. Constructs Operationalized Click here to enter text.				
12. Limitations Click here to enter text.				
13. Coding Information				
Length of time to code study			**Name of Coder** Amber B. Ray	