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# USING POSITIVE REINFORCEMENT TO INCREASE ATTENTIVE BEHAVIOR AND CORRECT TASK PERFORMANCE IN PRESCHOOLERS DURING EXTRA CURRICULAR ACTIVITIES

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**Abstract** This study researches the effects of attentive behavior in preschool-aged children on the correct task performance during an extra curricular activity. An increase in attentive behavior, by use of a positive reinforcer, is viewed as the precursor to correct task performance by preschool-aged children. Using a positive reinforcer for preschool-aged children is thought to show an increase in attentive behavior. Thus, an increase in attentive behavior is thought to show an increase in correct task performance during an extra curricular activity. A sample of three, four-year olds were observed during a baseline phase and intervention phase over a period of four months. A multiple baseline design was used to measure both the subjects' attentive behavior and their correct task performance. These subjects were observed through a partial-interval system: ten-minute sessions, broken down into fifteen-second intervals. Results showed an increase in attentive behavior when children received a positive reinforcer, sticker sheet intervention. As attentive behavior increased, so did the amount of correct task performance during an extra curricular activity. These findings show that when children's attentive behavior is reinforced in a positive manner, children will show an increase in attentive behavior. The findings also show that when children's attentive behavior is increased, their correct task performance during an extra curricular activity also increases.

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**Keywords:** attention, preschool, positive reinforcement, teacher action research

## Introduction

There is recognition in the field of early childhood that increased use of technology has had a negative impact on the attention of young children (Weiss, Baer, Allan, Saran & Schibuk, 2011). In Bandura's sociocultural theory, he suggests that attention is one of four required necessary component for learning to occur (Bandura, 1977). Similarly, Vygotsky's social learning theory spoke about the benefits of social interaction as it relates to the acquisition of new skills (1980). Children can benefit from interaction with a *more knowledgeable other* (MKO), which Vygotsky defined as anyone who has a better understanding or ability with respect to a particular task, which could be a coach or another more advanced student. Children who pay attention can benefit from the direct instruction provided by the gymnastics coach, but also from the MKO through observations of peers. The identified problem in this study was the children's lack of attention to the gymnastics coach and the other students in the class while they were waiting to perform tasks at the various stations within the gymnastics class. The focus of this study was to determine if children in an extracurricular gymnastics program might benefit from an intervention aimed at increasing their attention to tasks.

## Literature Review

Attention is defined as, "developmentally and contextually appropriate behavior reflected by visual fixation, manipulation, vocalization, approach, or affect" (de Kruif, McWilliam, Ridley, & Wakely, 2000, p. 254). For a child to learn appropriate skills, he must be focused on what is important and screen out or ignore distractions (Boersma & Das, 2008). The National Center for Early Development and Learning reports that 46% of kindergarten teachers identified more than one half of the children in their classes as lacking the self-regulatory skills and social competencies to function productively and learn in kindergarten (Rimm-Kaufman, Pianta, & Cox, 2000; Webster-Stratton, Reid, & Stoolmiller, 2008). "The inability to attend impacts a child's ability to learn new skills from peers, the teacher, and materials in the environment," (DiCarlo, Pierce, Baumgartner & Harris, 2012, p.1), therefore making the development of attention an important task for children.

As children grow and develop, attention progresses and becomes more advanced (Miller, 2011). In early childhood positive reinforcement and scaffolding of attention from an adult will assist in a child's ability to developing attention (Berk, 2012). Attention is the first of four steps that Bandura proposed in his social learning theory (1989). In order for children to learn, they must attend to verbal directions and also observe the actions of others. Therefore, for children to benefit from gymnastics instruction, they must attend to the instructor's behavior. The goal of this research study was to determine if positive reinforcement of targeted attentive behaviors would increase accurate performance of tasks during gymnastics class.

## Methodology

*Subjects.* The subjects for this study were three 4-year-old children (pseudonyms Vicki, Sally and Walter) enrolled in a preschool gymnastics class who had a difficult time paying attention during gymnastics class. The subjects were assessed using the Ages and Stages Questionnaire (Bricker & Squires, 1999). The Ages and Stages Questionnaire is a parent-completed screening tool designed to help parents check their child's development across communication, problem solving, fine motor, gross motor and personal-social skills. All children were determined to be functioning within the normal limits for their chronological age.

*Setting.* The setting for this research study was at a private gymnastics complex. Each class was one-hour in duration and consisted of five to seven children with one teacher. During each class period, the children participated in different events: warm-up (stretching), floor, bars, vault, miniature trampoline, rope, foam pit, and trench. Children stayed at each event for approximately ten minutes and rotated through the events when instructed.

*Behavior Definitions.* In order to determine the relationship between child attention and correct task performance, data were collected on child attention, inattention, and task performance.

- *Attentive behaviors.* Attentive behaviors were defined as those behaviors that led to successful completion of events during gymnastics class. The first attentive behavior was *waiting (W)*. This indicated a child waited for their turn/sat or stood in spot designated by instructor. The second attentive behavior was *taking turn (TT)*. This indicated that a child took their turn on the specific activity without instruction. The third attentive behavior was *looking (L)*. This indicated that the child looked at the instructor when directions were being given or at other classmates who performed tasks. The fourth and final attentive behavior was *proper equipment (PE)*. This indicated that the child used equipment identified for a specific activity.
- *Inattentive behaviors.* Inattentive behaviors were defined as those behaviors that hinder or distract from ones' ability to successfully perform the events of gymnastics class. The first inattentive behavior was *running (R)*. This indicated that children ran around the gym/specific area, and/or were not sitting/standing in the area designated by the instructor. The second inattentive behavior was *out of turn (OT)*. This indicated that the child did not wait for his turn moving ahead of other children. The third inattentive behavior was *not looking (NL)*. This indicated that children were not looking at the instructor when instructions were being given, or looking at classmates who performed specific tasks. The fourth and final inattentive behavior was *improper equipment (IE)*. This indicated that the children touched equipment not permitted during gymnastics class.
- *Task performance.* Task performance was defined as the outcome the child produced once their turn was complete. The first task performance behavior was

*performed correctly (PC)*. This indicated that the opportunity existed for the child to perform and the child performed the specific task correctly. The second task performance behavior was *opportunity presented (OP)*. This indicated that the opportunity to perform the task was presented, but the child did not complete the task correctly. The third and final task performance behavior was *no opportunity (NO)*. This indicated that there was no opportunity for the child to perform the task.

*Observation Procedure.* Data were collected through video recordings, in an unobtrusive manner, so as to not disrupt the gymnastics class. Subjects attended gymnastics class once a week, for an hour. During this hour, three different sessions were conducted. Ensuring that the events remained constant throughout the duration of the study ensured stability of results. Data were collected over a four-month period across both baseline and intervention.

*Baseline.* Baseline data were collected during typical gymnastics class conditions. Children moved through the gymnastics events and behaviors were observed during that period. For this study, three events were targeted for observation: warm-up, floor, and bars. These three events were chosen because they were mandatory in the gym class schedule; the other events were chosen by the teacher and varied each gymnastics class period.

Each event was set up prior to class time and children went through the different activities at each event in a rotational sequence. For warm-up, there were carpet squares placed on the floor in the shape of a circle. Children came to this event first, and were able to choose a carpet square where they would stretch for the ten-minute warm-up period. A teacher instructed children on what stretches to perform, and children were to follow the specific directions. Next, the floor event was set up with a mat to practice forward rolls, a raised beam to practice walking, a second mat to practice back-rolls, a bouncy surface to practice jumps, and finally a flat beam to practice walks again. Finally, the bar station was set up with a pit for children climb through, a series of circles for children jump through, a bar where children practiced back or front flips, and an area of blank wall where children practiced their hand-stands.

*Sticker sheet intervention.* The intervention utilized in this research study was a positive reinforcement method using a sticker sheet to keep track of children's progress during gymnastics class. The Sticker Sheet Intervention was introduced to each class before instruction began. Children received a card with their name and the date across the top. The three events: warm-up, floor, and bars, were located in a column on the left hand side of the card. Across the top of the card (under the child's name and the date), the attentive behaviors (look at teacher, wait for turn, listened to directions, and performed skill) were listed along with a space labeled, *Stickers Earned*. Each child was handed a card and they were also shown the stickers they were working toward at the beginning of class. All the

children were reminded of the attentive behaviors they were to display, and told that in order to earn a sticker for that event, they must receive at least three check marks (80% attentive behavior) in three of the four behavior columns. Children would leave their card in a designated space indicated by the teacher, while they performed their tasks at each given event. As children left the event, they would collect their card, receive check marks in the proper place, and stickers were distributed accordingly.

*Figure 1. Sticker sheet intervention apparatus used as positive reinforcement of attentive behavior.*

Name:					
Date:					
	Look at Teacher	Wait for Turn	Listed to Directions	Performed Skill	Stickers Earned
Warm-Up					
Floor					
Bars					

*Data Collection.* Interval recording was used to continuously score child behavior from the videotapes across the three events (warm-up, floor, and bars). Each session was ten minutes in duration divided into 15-second intervals. The recording sheet was broken into boxes where four attentive behaviors and four inattentive behaviors were listed. Data was collected for each subject over a baseline phase and an intervention phase. All behaviors were scored on a partial interval basis, with the exception of no opportunity, which was scored on a whole interval basis. Consistent with guidelines set forth by the *What Works Clearinghouse on Single Case Design* (Kratochwill, Hitchcock, Horner, Levin, Odom, Rindskopf, & Shadish, 2010) each subject's phases differed in duration and had a "minimum of 5 data points"; intervention was implemented when baseline levels of behavior documented a "need for change" and were stable (p. 19).

*Experimental Design.* For this research study, a multiple-baseline design across subjects was used to document the children's attentive behavior in response to the sticker sheet intervention. Kazdin (2011) defines this method as, "examining performance across several different baselines," (p.144). Reactive experimental arrangements, a threat to external validity, were addressed by ensuring the subject's behaviors were videoed in a discrete manner. The camera was never placed/held in their direct line of sight.

*Interobserver Agreement.* Interobserver agreement was calculated on “20% of the observation sessions” across the baseline and intervention phases (Kratochwill, et al., 2010, p. 15). Point-by-point agreement was calculated by dividing the number of agreements, by the number of agreements plus disagreements, and multiplying the product by one hundred to determine occurrence, non-occurrence, and overall reliability. The standard agreement should be a minimum of 80% (Kratochwill, et al). Occurrence reliability for attentive behavior was 94% (range, 82-97%). Non-Occurrence reliability for attentive behavior was 90% (range, 82-96%). Overall reliability for attentive behavior was 97% (range, 93-98%). Occurrence reliability for correct task performance was 94% (range, 83-100%). Non-Occurrence reliability for correct task performance was 88% (range, 80-100%). Overall reliability for correct task performance was 96% (range, 90-100%).

## Results

Each of the three subjects of this research study had a difficult time paying attention during gymnastics class. In efforts to increase attentive behavior, the behaviors that must be displayed in order to successfully travel through the events of gymnastics class; a positive reinforcement intervention was implemented. It was believed that once that as the display of attentive behaviors increased, correct task performance would also increase.

*Attentive Behavior.* Vicki’s baseline data for attentive behavior was 39% (range, 25-50%). Sally’s baseline data for attentive behavior was 48% (range, 43-66%). Walter’s baseline data for attentive behavior was 35% (range, 28-40%). Vicki’s intervention data for attentive behavior was 85% (range, 75-93%); this represents an increase of 46 percentage points. Sally’s intervention data for attentive behavior was 86% (range, 75-93%); this represents an increase of 38 percentage points. Walter’s intervention data for attentive behavior was 89% (range, 78-100%); this represents an increase of 54 percentage points.

*Correct Task Performance.* Vicki’s baseline data for correct task performance was 38% (range, 26-60%), when the sticker sheet intervention was applied her correct task performance was 77% (range, 67-85%); this represents an increase of 39 percentage points. Sally’s baseline data for correct task performance was 38% (range, 29-46%), when the sticker sheet intervention was applied her correct task performance was 83% (range, 68-92%); this represents an increase of 45 percentage points. Walter’s baseline data for correct task performance was 32% (range, 25-40%), when the sticker sheet intervention was applied his correct task performance was 87% (range, 71-100%); this represents an increase of 55 percentage points. It seems reasonable that as child attention increases that the number of opportunities for subjects to perform tasks correctly would increase because the children would move through events more quickly as a result of being on task. This may not be reflected in the collection of correct task performance because it was calculated on correct performance divided by opportunities presented.

## Discussion

A child's ability to attend impacts his ability to learn from any environment (Bandura, 1989); therefore, instructors should investigate interventions that assist in increasing child attention. Consistent with previous research (Hattie & Timperly, 2007), this study demonstrated that children increased their attentive behavior when they received feedback in the form of the sticker sheet intervention. Furthermore, all children in their correct task performance made gains, which is consistent with previous research stating that children demonstrate a growth in task performance when children's attentive behaviors are positively reinforced (Lysakowski & Walberg, 1981).

Children's increased attention appeared noticeable to both parents and other gymnastics teachers, who remarked on children's ability to wait their turn, participate, and perform tasks correctly. Additionally, several parents reported that they noticed a difference in their child's confidence level. The intervention appeared to assist the children in paying attention, which led to better performance and possibly an increase in their confidence in their ability.

## Clinical Implications

The present study supports the notion that "positively reinforced behaviors tend to be repeated" (Daft, 2017, p. 238). Positive reinforcement and scaffolding of attention by instructors and teachers will assist in a child's ability to develop their own attention (Berk, 2012); Ribot was the first to postulate "attention develops from the external to the internal" (Rieber, 1987, p. 158). This means that adults should support children's learning by identifying strategies to assist them in developing attentive behavior and providing feedback on their performance. Attention enhances a person's learning, developmental and academic, and their social skills, therefore playing a role in all aspects of life (Copple & Bredekamp, 2009).

## Conclusion and Future Research

Future research should investigate the effects of the quality of teacher feedback on child behavior, in relation to child attention. In the present study, we did not record the content of the teacher's feedback; only the use of the sticker sheet intervention cards. More research can be done to observe teacher behavior, and the role it plays on child attentive behavior during extra-curricular activities, such as gymnastics.

As children progress through life, their attention becomes increasingly more developed (Miller, 2011). The results of this research study demonstrate that a sticker sheet



intervention was effective in increasing child attention, which had a positive affect on the target children's correct performance on specific gymnastics skills. This is a low labor-intensive intervention that was relatively simple to implement and may show positive effects in other similar occurrences.

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# LESSONS LEARNED: AN ACTION RESEARCH PROJECT IN SELF-REGULATED STRATEGY DEVELOPMENT WRITING INSTRUCTION FOR SECONDARY STUDENTS WITH EMOTIONAL AND BEHAVIORAL DISORDERS

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**Abstract:** Secondary students with emotional and behavioral disorders (EBD) often struggle in various academic areas, specifically in written expression. Researchers have found that when culturally diverse learners with EBD learn effective writing strategies, students can effectively express themselves. Self-regulated strategy development (SRSD) is a systematic instructional model designed to address many difficulties associated with writing, including motivation, attitudes, and beliefs about the writing process (Harris, Graham, Friedlander, & Laud, 2013). The present study investigated the effect of an SRSD intervention on the persuasive writing skills of culturally diverse secondary students with EBD. Results of the study support that the SRSD intervention contributed to varied increases in total words written and in essay quality. The researchers encountered many challenges during the action research project. This manuscript documents the challenges and reflects on possible solutions for the readers to consider when engaging in action research.

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**Keywords:** action research, SRSD, emotional and behavioral disorders, secondary, special education, writing

## Introduction

Students with emotional and behavioral disorders (EBD) often struggle in various academic areas (Ennis, Jolivet, & Boden, 2013; Graham & Perin, 2007; Mason, Kubina, Kostewicz, Cramer, & Datchuk, 2013). These students often have average intelligence; however, their internalizing and externalizing challenging behaviors prohibit them from being successful in academic skills including written expression (Losinski, Cuenca-Carlino, Zablocki, & Teagarden, 2014). The Individuals with Disabilities Improvement Act (IDEIA; 2004) uses the term *emotional disturbance*, also known as EBD, and defines it as:

A condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:

- (a) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
- (b) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
- (c) Inappropriate types of behavior or feelings under normal circumstances.
- (d) A general pervasive mood of unhappiness or depression.
- (e) A tendency to develop physical symptoms or fears associated with personal or school problems ((§300.8(c)(4)(i)).

Emotional disturbance includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance (§300.8(c)(4)(ii)).

Specifically related to writing, students with EBD often lack knowledge of strategic elements needed to produce a cohesive, quality writing sample (Losinski et al., 2014). Researchers have found that when students with EBD learn effective writing strategies, they can effectively express themselves and, consequently, receive favorable feedback from their peers, families, educational professionals, and other individuals in their communities (Tindal & Crawford, 2002).

## Literature Review

***Action research to improve teaching practice.*** This present study was initiated when the director of an educational program for students with EBD approached the first author, who also serves as research partner with this educational program, regarding research-based writing interventions specifically designed for students with challenging behaviors. He expressed a dire need for writing interventions among this student population. The director stated that the students with EBD within this educational program often failed the writing section of their state assessments. Knowing that that self-regulated strategy development (SRSD) is a research-based strategy for teaching writing to students with challenging behaviors (Ennis & Jolivet, 2014; Lane, Harris, Graham, Weisenbach, Brindle, & Morphy,

2008; Mason, Snyder, Sukhram, & Kedam, 2006), the authors decided to conduct an action research project using SRSD. Through engaging in action research, the authors hoped to bridge the ubiquitous “research to practice gap”. Teachers often cite concerns that educational research is not adequate to meet the daily challenges of teaching and that research findings are not presented in terms that are easy to understand (Mills, 2014). The researchers developed a plan for an action research project designed to improve students’ abilities to write persuasive essays. The purpose of this article is twofold. The authors present information about the writing intervention and the results of the intervention. The researchers also discuss challenges and lessons learned throughout the action research process in the Results and Future Directions sections.

***Self-regulated strategy development.*** Developed in 1982, SRSD is a systematic instructional model designed to address many difficulties associated with writing, including motivation, attitudes, and beliefs about the writing process (Ennis & Jolivette, 2014). The model incorporates techniques for setting goals, self-monitoring, self-instruction, and self-reinforcement. When taught to mastery, the strategies may be generalized across settings and retained over time (Harris, Graham, Mason, & Friedlander, 2008).

SRSD is comprised of six stages: (a) develop background knowledge, (b) discuss it, (c) model it, (d) memorize it, (e) support it, and (f) independent performance (Harris et al., 2013). During the first stage, *develop background knowledge*, the teacher and students work together to develop skills related to writing instruction (Ennis & Jolivette, 2014). Activities for this stage include reading writing samples of the genre to be taught (e.g., persuasive, narrative, expository) and teaching relevant vocabulary. Students also learn about setting goals and self-monitoring. During stage two, *discuss it*, the teacher and students discuss the importance of writing and the students learn the importance of using strategies when they write. Students may evaluate their current writing performance using rubrics and graphs. Lastly, the students are introduced to a strategy, often a mnemonic, to help guide their writing. Stage three, *model it*, involves the teacher modeling the use of the strategy; explicit instruction is provided regarding how to use the strategy. Additionally, students are taught how to use self-talk as they move through the writing process. In the fourth stage, *memorize it*, students memorize the strategy they learned during the *discuss it* stage. During this stage, the students are taught strategies to help them internalize the importance of the strategy. In stage five, *support it*, teachers monitor students’ use of the strategies in their writing. *Support it* is typically the longest stage, and teachers should provide ample amounts of support and reminders so that students are successful in utilizing the strategy. A gradual increase of individual criterion levels should be incorporated in this stage, and opportunities for generalization should be provided. During the final stage, *independent performance*, students implement the strategy independently and self-regulate their own writing. Opportunities for generalization of the skills learned should continue to be provided (Harris et al., 2013).

**SRSD and secondary students.** Chalk, Hagan-Burke, and Burke (2005) used a six-step SRSD model among high school students with learning disabilities to determine if length and quality of essays would improve. The steps of the intervention were as follows (a) step one: develop background knowledge, (b) step two: initial conference and discussion of strategy goals, (c) step three: model the strategy, (d) step four: memorize the strategy, (e) step five: collaborative practice, and (f) step six: independent practice. Results of the study indicated that both length of essays and quality of essays improved over time.

Another study examining SRSD among high school students with learning disabilities produced similar results. A study by Hoover, Kubina, and Mason (2012) utilized the SRSD strategy known as POW+TREE (Pick my idea, Organize my notes, Write and say more, Topic sentence, Reasons – three or more, Examine, Ending) to teach persuasive quick writes. Four high school students with learning disabilities participated in the research and results demonstrated increases in the number of words written and in the number of response parts written.

**SRSD and youth with EBD.** SRSD is shown to be effective in teaching writing to students with challenging behaviors (Ennis & Jolivette, 2014; Mason et al., 2006; Lane et al., 2008). A study found significant gains in the persuasive writing of secondary students with EBD when an SRSD intervention was implemented twice per week (Ennis, Jolivette, Terry, Frederick, & Alberto, 2015). Additionally, a SRSD intervention used to teach story writing to second grade students at risk for EBD was found to produce long-term improvements in areas including story completeness, length, and quality (Lane et al., 2008). Additionally, SRSD instruction has been found to positively impact participants' ability to transfer the strategies from story writing to personal narratives (Adkins & Gavins, 2012). With empirical studies supporting SRSD as an effective intervention for both secondary students with disabilities and students with EBD, the researchers felt confident moving forward with an SRSD intervention for the purposes of this action research project.

## Methodology

**Research questions.** For the purpose the current study, the authors chose to focus on two primary areas of concern in written expression: fluency and quality. The research questions are as follows:

1. When culturally diverse secondary students with EBD are taught how to write a persuasive essay using SRSD in English Language Arts (ELA), does the total words written (TWW) increase?
2. When culturally diverse secondary students with EBD are taught how to write a persuasive essay using SRSD in ELA, does essay quality improve?

**Setting and participants.** The study was conducted in two high school classes and one middle school class in schools for students with EBD in the southeastern United States. There were approximately five to eight students per classroom. To be eligible for the study, participants had to demonstrate difficulty with written expression and score in the average range of intelligence. Eligibility criteria were determined for 12 participants, and informed consent and assent were obtained. The participants ranged grade levels from 6<sup>th</sup> grade through 11<sup>th</sup> grade. All participants identified themselves as African American, and all participants were of low socio-economic status (i.e., they were eligible to receive free lunch). Thirteen of the fourteen participants were male. Pseudonyms are used in lieu of the participants’ true names. Participant information is presented in Table 1.

*Table 1: Participant Information*

Participants’ Pseudonyms	Gender	Race	Grade
Ms. Oak’s Students			
Devon	Male	African American	10th
Jasmine	Female	African American	10th
Trevor	Male	African American	10th
Ms. Christopher’s Students			
Casey	Male	African American	7th
Paul	Male	African American	7th
Justin	Male	African American	7th
Deandre	Male	African American	7th
Jermaine	Male	African American	7th
Steven	Male	African American	7th
Ms. Gaines’s Students			
Calvin	Male	African American	11th
Chris	Male	African American	10th
Allen	Male	African American	11th

The director recruited three English Language Arts (ELA) teacher participants for the study. The teacher participants exhibited varied levels of teaching experiences (e.g., beginning special education teachers, teachers of students from various disability categories, teachers of students from various age levels). For example, one teacher participant was a former

general education literacy teacher. Another teacher participant was a third-year teacher of students with EBD with limited knowledge of teaching writing strategies to students with disabilities. Teacher participants gave consent to participate in the study and, as with the student participants, pseudonyms are used for the participating teachers.

**Intervention.** The ELA teacher participants received training comprised of six scripted SRSD lesson plans to be presented over six weeks. The researchers informed the teachers of the data that would be collected, and teachers were given specific instructions about their involvement regarding data collection. The researchers gave the teachers binders with all materials needed for the intervention: (a) teacher training presentation; (b) SRSD intervention timeline; (c) lesson plans; (d) SRSD resources including graphic organizers, rubrics, writing prompts, and transition word charts; (e) TREE flash cards; (f) POW+TREE mnemonic charts, and (g) self-talk statements. Student participants received folders containing POW graphic organizers, mnemonic charts, self-talk statements, TREE flash cards, and graphing sheets. After baseline data collection, the teachers implemented the intervention by teaching one SRSD lesson per week for six consecutive weeks. The researchers sent weekly emails to the teachers with details of the study expectations for the week. The researchers also maintained continuous contact, via email and in person, with the teachers to encourage an open dialogue about the status of the intervention and data collection.

**SRSD and culturally responsive teaching.** Culturally responsive teaching is defined as “using the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant to and effective for them” (Gay, 2010, p. 31). Understanding the significance of culturally responsive teaching, the researchers integrated culturally responsive practices throughout the intervention. For example, writing instruction for students from culturally diverse backgrounds should be accompanied by the writings of authors that reflect diversity (Callins, 2006; Fox, 1992; Gay, 2010). Therefore, in the introductory lesson, student participants were asked to brainstorm and discuss examples of individuals from their culture using persuasive speech or writing in social media. The exercise presented student participants with an opportunity to reflect on the writings and speech of individuals from their own backgrounds and culture.

Another tenant of culturally responsive writing instruction supports that allowing students to choose their own topics and demonstrating how writing can be used to affect change can be particularly motivating for students from diverse backgrounds (Callins, 2006; Hornick, 1986). Also, students benefit when teachers integrate students’ social contexts into writing instruction (Callins, 2006). For each writing lesson in the intervention, participants were supported in generating topics for writing that were of personal significance. This was accomplished as teachers assisted the participants in brainstorming current events about which they were interested. Doing so ensured that the subject matter of the writing



resonated authentically with participants. Lastly, culturally responsive classrooms encourage cooperative learning to support individual learning within a group context (Cartledge & Kourea, 2008; Ladson-Billings, 1994). Therefore, a lesson for the intervention was developed in which students worked in small groups to compose an essay. The activity allowed the students to practice writing in a group setting before writing an essay independently.

**Data collection and data analysis.** Baseline and intervention data consisted of participants' scores on persuasive writing probes. For each probe, the researchers encouraged the teacher participants to work with the student participants in developing culturally relevant prompts. Researchers also gave the teacher participants the option of using a previously generated prompt (e.g., Should the driving age be increased to 21 years old?). For each writing prompt, participants had 30 minutes to respond in writing to the prompt. Each writing probe required participants to compose a position on a topic and write reasons supporting their position. The researchers evaluated the probes using two measures: essay quality and length of writing response indicated by TWW. Essay quality was determined using a rubric ranging in scores from one to eight (Appendix A; Mills, 2012). The rubric encompassed aspects of writing including (a) number of essay components per writing sample, (b) presence of introduction sentences, (c) presence of concluding sentences, and (d) whether explanations were provided for the reasons. The highest score of eight included the following criteria,

- "Persuasive essay includes topic sentence, more than three reasons with at least three explanations, and an ending sentence. Essay is written in a logical sequence that strengthens the writer's argument. The writer uses more than one counter argument/point in the essay."
- A lower score of five was assigned to persuasive essays that included a topic sentence, three reasons supporting the argument, and an ending sentence, but was lacking other elements listed in the criteria for a score of eight. Each researcher scored each probe individually. In instances where a discrepancy between scores was evidenced, the essay was assigned an average score of the two.

**Inter-rater reliability.** Prior to scoring participant essays, the researchers independently scored two sample essays using the coding rubric (Mills, 2012). Then the researchers met to compare how they scored each of the essays and discrepancies were discussed. A third sample essay was scored by each of the researchers, and full inter-rater agreement was achieved.

## Results and Discussion

The researchers anticipated and experienced high rates of missing data in the present study based on the category of disability of the participants. Students with EBD often demonstrate high rates of absenteeism due to living in situations where multiple risk factors are present

including multiple children with disabilities and maternal depression (Ennis, Harris, Lane, & Mason, 2014). Additionally, because of the severity of their disability, students who demonstrate significant challenging behaviors are frequently suspended and expelled from school settings. The elevated rates of missing data in the present study had multiple repercussions for the researchers. First, the intervention may have had marginal efficacy for participants who were not present for each lesson of the intervention. The second consequence of the missing data relates to the data analysis. Of the nine writing probes, or data collection points, only two of the 12 participants were present on each day of data collection. The researchers engaged in dialogue regarding how to navigate the issue of missing data in future projects. As the current study was nine weeks long, with data collected once per week, the researchers discussed the possibility of developing interventions designed to be implemented over a shorter period, with data collection occurring multiple times per week.

The goals of the SRSD intervention were to improve students' essay quality and increase students' TWW. Results suggest that there were increases in the students' TWW for the participants who received intervention, but very little increase in the quality of the essays. Ms. Gaines did not implement the SRSD intervention. Even though her students did not receive the intervention, two of three students showed some improvement in essay quality. For TWW, the participants' averages decreased over time. Calvin began with an average of 34 TWW and ended with an average of 32.75 TWW, a difference of -1.25 words. Chris began with an average of 139 TWW and ended with an average of 82.75 TWW, a difference of -56.25 words. Allen started with an average of 307 TWW and ended with an average of 50.50 words, a difference of -256.50 words.

Ms. Oak and Ms. Christopher implemented the intervention. In these classes, many participants demonstrated increases in essay quality and TWW. In Ms. Oak's class, Trevor was the only participant who showed an increase from baseline data to intervention data regarding essay quality. Devon demonstrated a decrease in essay quality over time. Jasmine's baseline data was a zero and intervention data was a two. In Ms. Christopher's class, Paul and Justin were the only two students to show an increase from the baseline data and intervention data for essay quality. Jermaine and Steven did not have a baseline data and they had missing data. The missing data made it difficult to determine if the intervention helped them increase essay quality. Casey did not show an increase from the baseline data to the intervention data.

The intervention appears to have been more effective in increasing in TWW. In Ms. Oak's class, Jasmine's baseline data was an average of 0.33 TWW and increased by 42.17 words after receiving the intervention. Trevor's TWW increased by an average of 29.53 words from his baseline data. Devon demonstrated a decrease in TWW. In Ms. Christopher's class, Paul increased his TWW by an average of 50 words, Justin increased his TWW by an average of

148 words, and Deandre increased his TWW written by an average of 95 words. Casey showed a decrease of 16.67 TWW. Progress regarding Jermaine and Steven’s TWW was difficult to determine due to a large amount of missing data. Changes over time in participants’ essay quality scores and TWW are graphed in Figures 1 through 6, and numerical data detailing the changes are presented in Tables 2 and 3.

Figure 1. Essay Scores for Participants in Ms. Oak’s High School Classroom

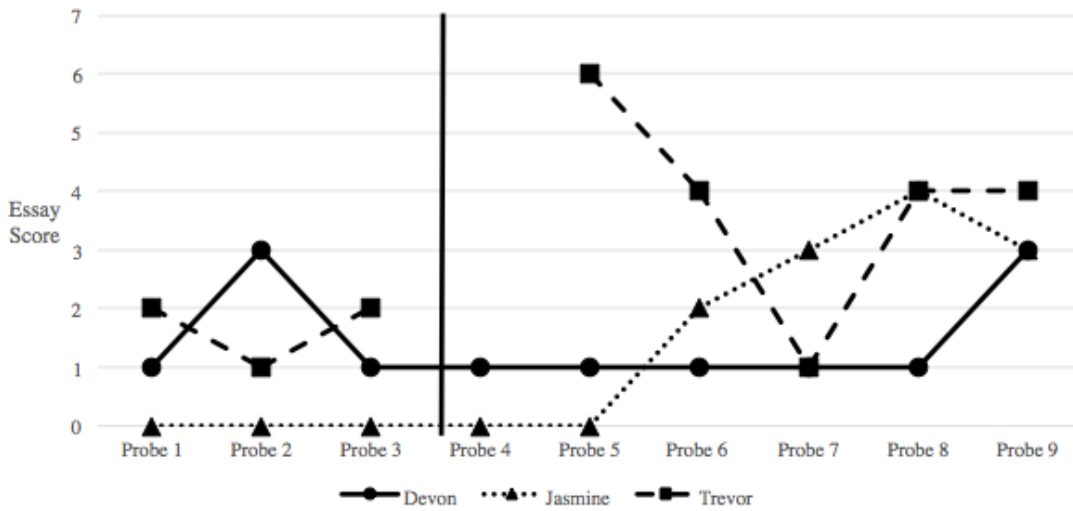


Figure 2. Total Words Written for Participants in Ms. Oak’s High School Classroom

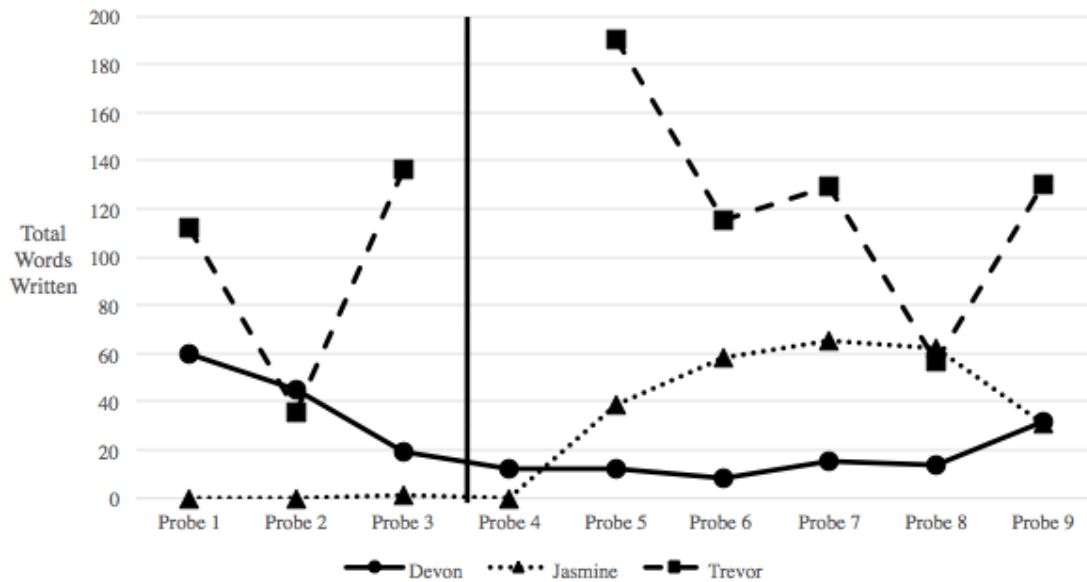


Figure 3. Essay Scores for Participants in Ms. Christopher’s Middle School Classroom

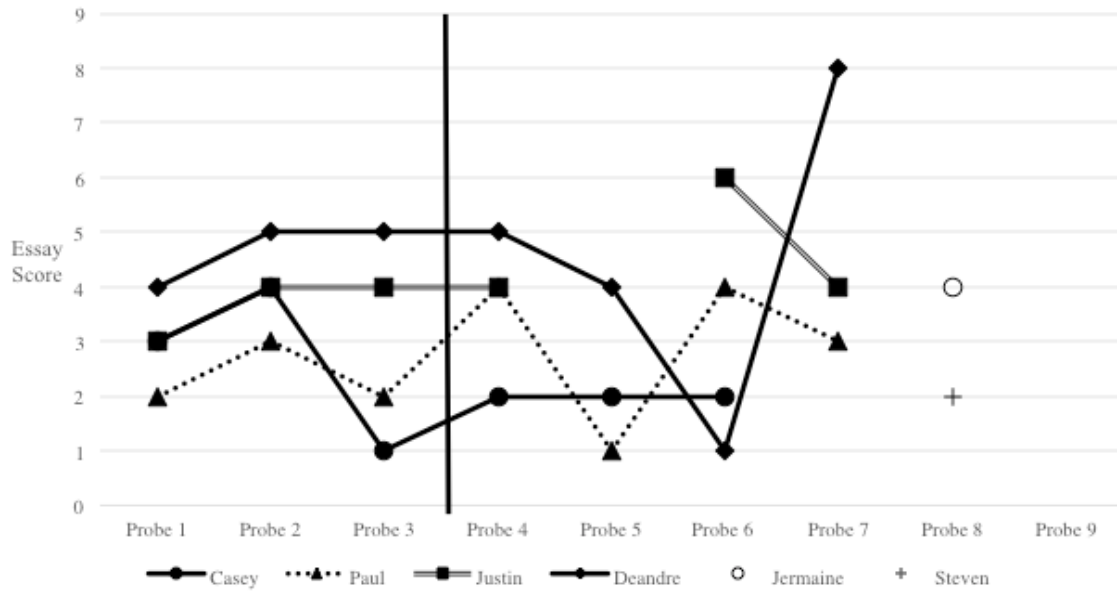


Figure 4. Total Words Written for Participants in Ms. Christopher’s Middle School Classroom

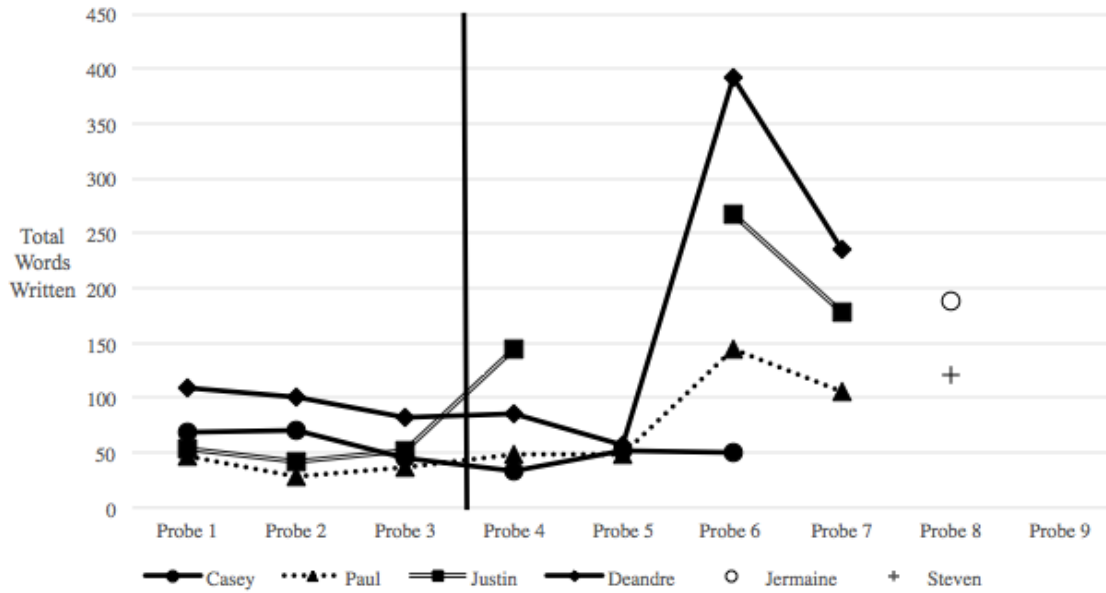
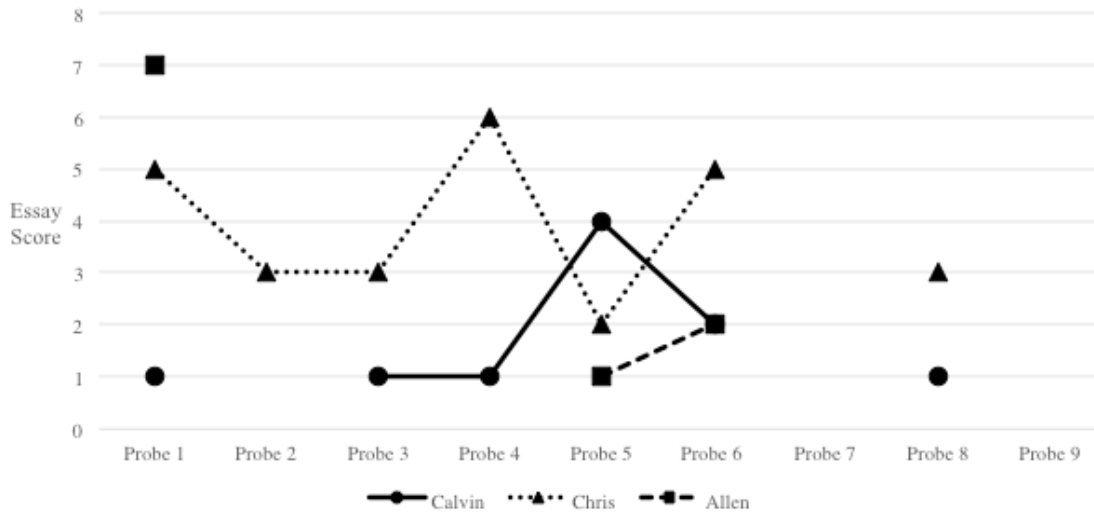
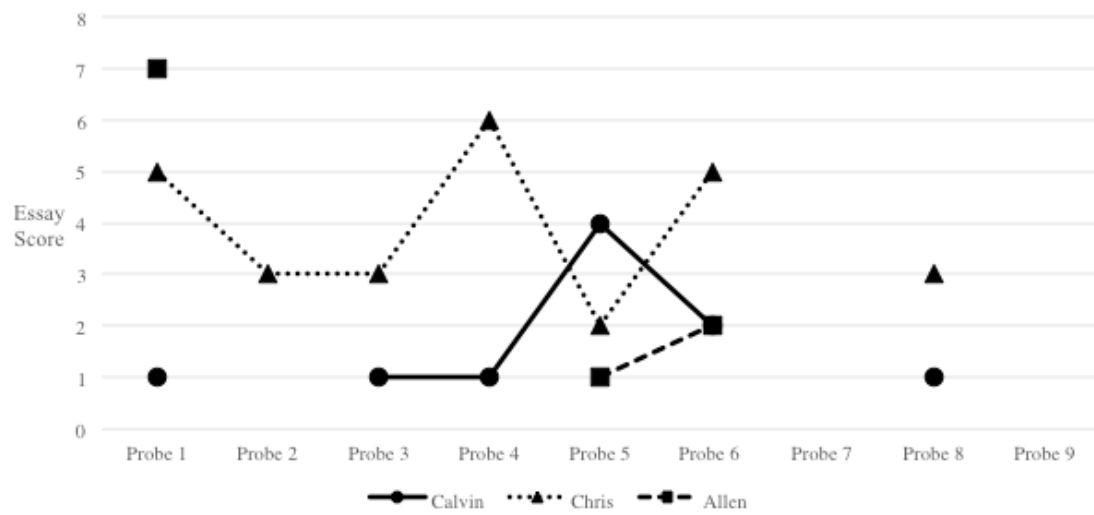


Figure 5. Essay Scores for Participants in Ms. Gaines’s High School Classroom



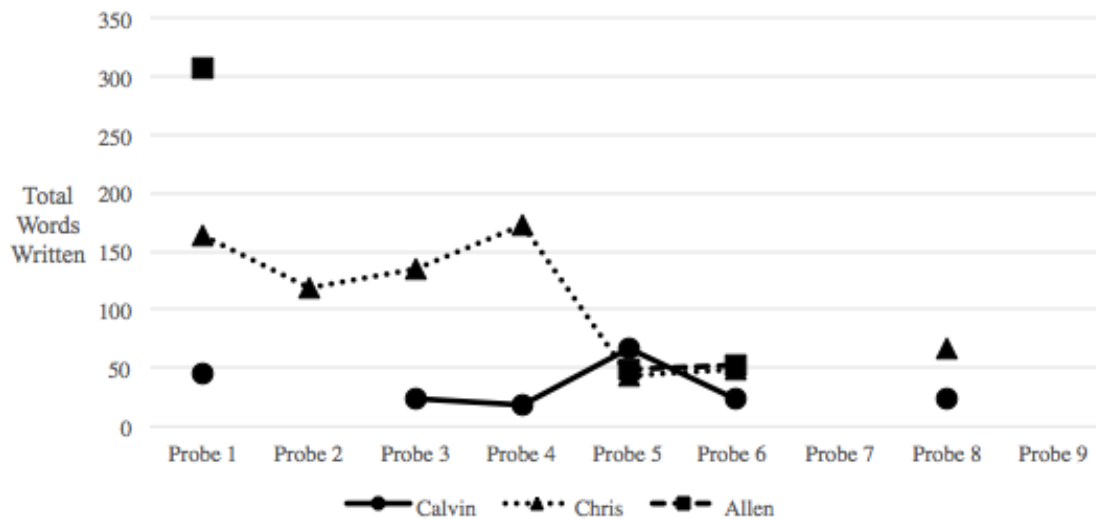
Note. Ms. Gaines did not implement the SRSD intervention; therefore, the participants’ essay scores in her classroom function as the control group.

Figure 5. Essay Scores for Participants in Ms. Gaines’s High School Classroom



Note. Ms. Gaines did not implement the SRSD intervention; therefore, the participants’ essay scores in her classroom function as the control group.

Figure 6. Total Words Written for Participants in Ms. Gaines's High School Classroom



Note. Ms. Gaines did not implement the SRSD intervention; therefore, the participants' total words written for her classroom function as the control group.

In Ms. Oak's class, Trevor demonstrated the greatest gain regarding essay quality. During baseline data collection, Trevor averaged 1.67 and after the intervention, he averaged 3.80 in essay quality. Ms. Oak reported that Trevor enjoyed the SRSD lessons and stated he felt successful with his writing for the first time in his school career. Ms. Oak motivated Trevor with verbal praise and tangible reinforcements also called positive behavior interventions and support when he completed his writing prompts. Trevor's TWW also increased from pre-intervention to post intervention, from an average of 94.67 words written to an average of 124.20 words.

In addition to promoting academic success, practitioners are using positive behavior interventions and supports (PBIS) as a framework to encourage behavioral success of students in schools. PBIS is useful for educators seeking prevention and intervention strategies for students' problematic behaviors (Bradshaw, Koth, Bevens, Jalongo, & Leaf, 2008). Furthermore, it is based on a problem-solving model preventing inappropriate behavior through teaching and reinforcing appropriate conduct (Office of Special Education Programs Technical Assistance Center on PBIS, 2012). PBIS emphasizes educating at-risk students in the least restrictive environment utilizing appropriate educational supports (Lewis, Jones, Horner, & Sugai, 2010).

As evidenced in Tables 2 and 3, Jasmine demonstrated the most positive gains from the intervention. This may have been the result of actions taken by her teacher participant, Ms. Oak, who took an unconventional approach to Jasmine's emotional issues and her academic work. Jasmine demonstrated writing skills approximately four grade levels below her actual grade level. In addition to the significant academic deficit, significant trauma that Jasmine experienced several years prior resulted in Jasmine exhibiting selective mutism. However, Jasmine would often speak if the subject matter was related to classwork. Because of her limited writing skills, Jasmine struggled with the SRSD lessons. Ms. Oak sought ways to accommodate the lessons for Jasmine, and found that when Jasmine dictated her SRSD responses, instead of writing her own responses, Jasmine's anxiety seemed to lessen and her productivity increased. The researchers met and discussed this unconventional situation. Although the goal of the intervention was for students to construct essays independently, the researchers felt it was necessary to report the progress Jasmine had made and disclose to the reader that Ms. Oak transcribed Jasmine's responses.

Table 2: Averages for Essay Quality and Amount Changed

Participants	Average Essay Quality		
	Pre-Intervention (Probes 1-3)	Post Intervention (Probes 4-9)	Difference (After - Before)
<b>Ms. Oak's Class</b>			
Devon	1.67	1.33	-0.33
Jasmine	0.00	2.00	2.00
Trevor	1.67	3.80	2.13
<b>Ms. Christopher's Class</b>			
Paul	2.33	3.00	0.67
Justin	3.67	4.67	1.00
Deandre	4.67	4.50	-0.17
Jermaine	N/A	4.00	N/A

Steven	N/A	2.00	N/A
<b>Ms. Gaines's Class</b>			
Calvin	1.00	2.00	1.00
Chris	3.67	4.00	0.33
Allen	7.00	1.50	-5.50

*Table 3: Averages for Total Words Written and Amount Changed*

Participants	Average Total Words Written		
	Pre-Intervention (Probes 1-3)	Post Intervention (Probes 4-9)	Difference (After - Before)
<b>Ms. Oak's Class</b>			
Devon	41.33	15.50	-25.83
Jasmine	0.33	42.50	42.17
Trevor	94.67	124.20	29.53
<b>Ms. Christopher's Class</b>			
Casey	62.00	45.33	-16.67
Paul	37.00	87.00	50.00
Justin	49.00	197.00	148.00
Deandre	97.00	192.50	95.50
Jermaine	N/A	188.00	N/A



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Steven	N/A	121.00	N/A
<b>Ms. Gaines's Class</b>			
Calvin	34.00	32.75	-1.25
Chris	139.00	82.75	-56.25
Allen	307.00	50.50	-256.50

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*Note. Ms. Gaines did not implement the SRSD intervention; therefore, the participants' essay scores in her classroom function as the control group*

### **Difficulties Related to the Study**

***Difficulties in implementation of SRSD after a pilot study.*** Upon analyzing data from the current study and finding erratic scores and marginal effectiveness of the intervention, the researchers engaged in dialogue to generate ideas about how the intervention might be improved upon. Approximately one year earlier, the authors had conducted a pilot study of the SRSD intervention among secondary students with EBD at a different site. The researchers agreed that a tremendous amount had been learned from the preliminary study. Likewise, the researchers concurred that a significant amount of troubleshooting had been resolved since the preliminary study and that the present study had been carried out in a much more efficient manner. For example, the researchers implemented lessons with greater fidelity than had taken place in the preliminary study and the data collection procedures had been improved upon. The researchers were surprised that despite improvements made to fidelity and data collection procedures, data analysis of the current study showed inconsistent effects in persuasive writing quality and TWW for the participants.

***Difficulties related to specific lessons and implementation of SRSD.*** The researchers continued participating in dialogue regarding the possible reasons for the lack of efficacy of the intervention. The researchers reviewed the writing samples again. The researchers, who all have experience teaching written expression to children and youth with a variety of disabilities, determined that a plausible reason for the ineffectiveness of the intervention is that it simply was not a "good fit" based on the participants' current written expression skills. For example, many participants demonstrated significant difficulty writing a complete sentence, yet the goal of the intervention was for participants to use mnemonics to produce entire persuasive essays. The researchers contemplated their previous experiences teaching writing to students with EBD, and concluded that, perhaps the intervention goals exceeded

the participants' current abilities. It was discussed that many of the participants would likely have benefitted more from explicit instruction in basic writing skills (e.g. sentence structure, grammar, punctuation), than from an intervention that aimed to teach participants how to draft essays. The investigators learned a valuable lesson in intervention research: ensure that the intervention matches the participants' ability levels. First assessing the abilities of the participants, and then selecting an intervention for empirical study can accomplish this.

***Difficulties related to teacher participants and implementation of SRSD.*** Another set of challenges involved a teacher participant. Ms. Gaines originally agreed to participate in the study by implementing the intervention. However, during the week of the fourth SRSD lesson, she informed the researchers that she no longer wished to participate. Ms. Gaines stated that her students' behaviors were too unpredictable for her to follow through with weekly lessons. Ms. Gaines later told the researchers that she only gave her students the independent writing prompts, and that she had not taught any of the SRSD lessons. The researchers learned from this situation that relationships with partners in action research can be tenuous, and that great care should be taken in supporting the partners.

***Difficulties related to data collection and implementation of SRSD.*** The lead author conducted weekly fidelity checks throughout the course of the intervention. Data collection began the first week of October of the fall semester. Three weeks of baseline data were collected, followed by six weeks of SRSD intervention data. Due to the academic school year schedule, the SRSD intervention was implemented as the winter holiday season approached. Research has shown that students' inappropriate behaviors often escalate before and during the winter holiday season (Lastrapes, 2014); therefore, it was no surprise that the teacher participants reported that their students' behaviors were unusually challenging during the mid-November and December months. In fact, the lead researcher observed five physical altercations at one high school on the Friday before the Thanksgiving holidays. All three of the classroom teachers chose not to work on the SRSD intervention the week before the Thanksgiving holiday based on their students' challenging behaviors. The researchers concluded that careful attention must be given to the scheduling of the intervention. When developing timelines for action research in school settings, researchers should take into account how extraneous factors may impede the performance of not only the student participants, but the teacher participants as well.

***Difficulties related to teaching expectations and implementation of SRSD.*** Another challenge encountered by the researchers was the difficulty of ensuring that each lesson was taught with fidelity. The director who recruited the teacher participants for this research study and the teacher participants exhibited varied levels of teaching experiences. For example, one teacher participant was a former general education literacy teacher. Another teacher participant was a third-year teacher of students with EBD, but had limited knowledge of teaching writing strategies to students with disabilities. It was impossible for

the researchers to observe and provide feedback for each lesson that each teacher participant taught; however, the researchers collected information on treatment integrity for three random lessons during the intervention as well as field notes while visiting the classrooms each week. The lessons may have been delivered with greater fidelity if the research design included a plan for providing the teacher participants with significantly more support in lesson delivery, including modeling and coaching.

### **Future Implications**

The inconsistent results of current study should be interpreted in light of several limitations. As previously mentioned, the participants' attendance and challenging behaviors may have impacted their responsiveness to the intervention. Some students missed class due to consequences of problematic behaviors. The researchers also want to bring attention to the fact that when coding these writing passages, the coding is subjective. The scorers calibrated their coding among each other; however, it is impossible to remove all biases when coding. Furthermore, as mentioned previously, the researchers were unable to observe and provide critical feedback for every writing lesson. However, the researchers collected information on treatment integrity and recorded field notes during data collection.

While the results of this study are promising, additional research in academic interventions for students with EBD is essential. Research in intensive, individualized writing interventions designed for culturally diverse learners with challenging behaviors is warranted. It is also recommended that research continue to replicate and extend the body of literature on SRSD instruction for students with EBD across grade levels. Finally, the researchers encourage more research to be conducted with teachers as intervention agents in classroom settings.

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## About the Authors

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## Appendix A: Scoring Rubric

**Score of 10.** Persuasive essay includes: (a) a topic sentence that is a complete sentence that addresses the topic, (b) more than 3 reasons, (c) at least 3 explanations, (d) more than 1 counter argument/point in the essay, and (e) an ending sentence that is a complete sentence that relates to the writer's position on the topic. Essay is written in a logical sequence that strengthens the writer's argument.

**Score of 9.** Persuasive essay includes (a) a topic sentence that is a complete sentence that addresses the topic, (b) more than 3 reasons, (c) at least 3 explanations, (d) 1 counter argument/point in the essay, and (e) an ending sentence that is a complete sentence that relates to the writer's position on the topic. Essay is written in a logical sequence that strengthens the writer's argument.

**Score of 8.** Persuasive essay includes (a) a topic sentence that is a complete sentence that addresses the topic, (b) more than 3 reasons, (c) at least 2 explanations, and (d) an ending sentence that is a complete sentence that relates to the writer's position on the topic. Essay is written in a logical sequence that strengthens the writer's argument.

**Score of 7.** Persuasive essay includes (a) a topic sentence that is a complete sentence that addresses the topic, (b) three reasons, (c) at least 2 explanations, and (d) an ending sentence that is a complete sentence that relates to the writer's position on the topic. Essay is written in a logical sequence that strengthens the writer's argument.

**Score of 6.** Persuasive essay includes (a) a topic sentence that is a complete sentence that addresses the topic, (b) 3 reasons, (c) least 1 explanation, and (d) an ending sentence that is a complete sentence that relates to the writer's position on the topic. Essay's sequence is weak, therefore limiting the writer's argument.

**Score of 5.** Persuasive essay includes (a) topic sentence that is a complete sentence that addresses the topic, (b) 3 reasons, and (c) an ending sentence that is a complete sentence that relates to the writer's position on the topic.

**Score of 4.** Persuasive essay includes 4 of the following parts: (a) a topic sentence that is a complete sentence that addresses the topic, (b) reasons, or (c) an ending sentence that is a complete sentence that relates to the writer's position on the topic.

**Score of 3.** Persuasive essay includes 3 of the following parts: (a) a topic sentence that is a complete sentence that addresses the topic, (b) reasons, or (c) an ending sentence that is a complete sentence that relates to the writer's position on the topic.

**Score of 2.** Persuasive essay includes 2 of the following parts: (a) a topic sentence that is a complete sentence that addresses the topic, (b) reasons, or (c) an ending sentence that is a complete sentence that relates to the writer's position on the topic.

**Score of 1.** Persuasive essay includes one of the following parts: topic sentence that is a complete sentence that addresses the topic, reason(s), or an ending sentence that relates to the writer's position on the topic.

**Score of 0.** No essay parts.

# INSTRUCTIONAL STRATEGIES TO ENHANCE ALPHABET KNOWLEDGE IN KINDERGARTEN

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**Abstract** The purpose of this action research study was to investigate whether two new instructional strategies would improve kindergarten students' recognition of letters and sounds. According to the National Early Literacy Panel (2008), alphabet knowledge is a key factor influencing reading development. The instructional strategies included using an alphabet book to identify sounds and letters and direct instruction and practice in handwriting. Ten students who were unable to identify more than ten upper or lowercase letters at the beginning of the school year were selected to participate. Significant improvements were made in letter and sound recognition. Results indicate that students who struggle with letter and sound identification in the beginning of kindergarten could benefit from multiple learning strategies in small groups.

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**Keywords:** teaching alphabet knowledge, teacher action research, letter identification, letter sounds, kindergarten, writing alphabet letters

## Introduction

Alphabet knowledge, the ability to identify letters and sounds, and write letters, is one of the most important skills students need as they begin to learn how to read (McBride-Chang, 1999; Schatschneider, Fletcher, Francis, Carlson & Foorman, 2004). When I<sup>1</sup> began teaching eleven years ago, it was common for my students to enter kindergarten with little or no alphabet knowledge, and teachers in my district taught these skills during the school year. More recently, however, research demonstrates that children who attend preschool know, on average, 14 lower case and 18 upper case letters when they enter kindergarten (Piasta, Petscher, & Justice, 2012). Children who cannot recognize at least ten letters face a greater risk of lower literacy achievement in first grade (Piasta, Petscher, & Justice, 2012). Clearly, it

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<sup>1</sup> Linda Stanley is the classroom teacher who conducted the research.



has become important to help these students learn their letters and sounds more quickly than we previously taught them.

In 2014, the kindergarten literacy curriculum in my district changed with the adoption of the English Language Arts (ELA) Common Core standards. The kindergarten program became more rigorous: children are now expected to be able to recognize the upper and lower case letters and identify their corresponding sounds by December instead of June. In the past, kindergarten teachers taught these skills over the course of the academic year. The accelerated timeline means that teachers should begin conducting guided reading with leveled texts in January so that by May students will be able to read a text with two to six lines of print on a page. The problem is that many of our students still begin the kindergarten year knowing few, if any, letters. For example, at the beginning of the 2016-2017 school year, 40 out of 144 students at my elementary school could not independently write or identify letters in their first name. These students are at risk for becoming struggling readers (Brookes-Gunn & Duncan, 1997; Piasta, Petscher, & Justice, 2012)

According to the National Early Literacy Panel, there are six factors that influence reading development. One of these factors is alphabet knowledge, the ability to identify letter names and their sounds (National Early Literacy Panel, 2008). Since alphabet knowledge is critical for reading success, I designed a study to examine the effect of additional teaching strategies to help my struggling students learn their letters and sounds.

## Literature Review

*Importance of Alphabet Knowledge.* Alphabet knowledge is widely considered the strongest predictor of future reading ability (Hammill, 2004; National Reading Council, 1998; Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004). For example, kindergarten students who know the letter names are more likely to know the corresponding letter sound by the end of kindergarten, compared to other kindergarten students who do not know the letter name (Huang, Totorelli, & Invernizzi, 2014), and students with strong letter and sound knowledge are more likely to have strong reading skills and phonological awareness in first grade (Evans et al, 2006).

Although little is known about the best ways to teach alphabet knowledge, research by Piasta, Purpura, and Wagner (2010) suggests instruction in both letter names and sounds is preferred to letter sounds only. Furthermore, daily practice in alphabet knowledge has been shown to be effective in developing emergent literacy skills with children as young as three (Elliott & Olliff, 2008). I was interested to see if daily practice in letter names and sound would help my students develop alphabet knowledge, which provides the building blocks for reading.

*Innovation in Teaching Alphabet Knowledge.* Systematic and explicit instruction in alphabet knowledge has been a hallmark of early literacy instruction since the National Reading Panel report (NRP, 2000), but the specific approaches to this type of instruction have shifted. For

example, in the past, teaching one letter a week was common practice in kindergarten classrooms (Reutzel, 1992). However, teaching one letter a week does not provide enough time for students to learn the letters they struggle with and wastes time teaching letters that are already known (Stahl, 2014).

More recently literacy researchers have come to realize the importance of differentiating instruction based on students' alphabet knowledge in small-group formats (Stahl, 2014). Researchers have also debunked the notion that all letters need equal attention (Stahl, 2014). One study found children were more likely to recognize letters in their own names, letters that occur at the beginning of the alphabet, and letters whose name reflects the sound it makes (Justice, Pence, Bowles, & Wiggins, 2006). Consequently, a better practice is to teach letters in a small group, using student's existing alphabet knowledge.

Two instructional strategies that hold promise for developing students' alphabet knowledge are the use of alphabet books and handwriting practice. Each alphabet book covers a single letter, with the student reading the uppercase and lowercase letter on the first page and three pages of the lowercase letter on the left page, and a picture of something that begins with the letter, along with the label of the picture on the right page. The predictable format of these texts and their focus on print helps students advance through various stages of word recognition (Bradley & Jones, 2007; Evans, Saint-Aubin, & Landry, 2009). When using alphabet books in the classroom, teachers should emphasize letter names and sounds over word meaning and select books with simple illustrations that draw the reader's attention to the letter on the page (Both de Vries & Bus, 2014; Brabham, Murray & Bowden, 2006).

Handwriting is also associated with improvement in alphabet knowledge. Research finds that the movement of handwriting helps students learn to visually recognize letters and sounds (James & Engelhardt, 2012; Longcamp, Zerbato-Poudo, & Velay, 2005). Since research concludes alphabet knowledge is a precursor for reading, it is imperative that incoming kindergarten students who are not proficient in letter knowledge receive interventions to assist them in learning their letters and sounds. I decided to incorporate single letter alphabet books and handwriting practice in my small group instruction.

## **Methodology**

*Research Questions.* In order to assist students in developing alphabet knowledge, this action research project was conducted with students who recognized fewer than ten upper and lowercase letters at the start of kindergarten. Students were divided into two small groups and given additional instruction in alphabet knowledge. This action research project addressed two questions: 1) Will the addition of a daily letter book, used in a small group, help students gain letter and sound identification by December; and 2) Will the addition of a letter writing strategy allow the students to better recognize the letter and sound?

*Participants and Setting.* This study took place in a public elementary school in a rural town of the mid-Atlantic. The school serves just over 500 students in grades pre-K through two. The student population at the school is 55% White, 27% Black, and seven % Hispanic. Over half of the students qualify for free or reduced meals. Ten kindergarten students who were unable to identify ten or more upper case or lowercase letters during the first week of school were selected to participate in this study. Half of the participants were Black, four students were White, and one student was Hispanic. Boys and girls were equally represented in this group. All students were English speakers and none were identified for special education services.

*Data Collection.* I assessed students' alphabet knowledge prior to beginning the study in September and again at the conclusion of the study in November using upper and lowercase alphabet flashcards. For letter naming, students were asked to identify lower and uppercase letters separately. Following this, students were asked to identify letter sounds using lowercase letters. In keeping with district policy, students are asked to identify only the sounds of consonant letters. Copies of the assessments can be found in Appendices A and B.

*Small Group Instruction.* Participants were divided into two small groups to facilitate individualized instruction. I met with the groups every day for at least 15 minutes of guided instruction about letters and sounds. The letters that were chosen were based on letters that the students did not know from the pre-assessment. I followed the county curriculum that lists the order that letters and sounds should be taught. Each student had an alphabet book (see Appendix C for an example), and I guided the students through the following process:

1. Students point to the uppercase letter on the cover and read it.
2. Students track using their finger to the next lowercase letter and read it.
3. Students then turned the page and used a picture to read a word that began with the letter.
4. Students continue to read the book with one more page of reading the upper and lowercase letter, followed by one more word and picture that begin with the letter.

After reading, students discussed the letter name and sound. I asked students if any of the students had the letter in their name and encouraged them to name other words that begin with that letter. Emphasis during the first month was placed on letter recognition over letter sound, as participants needed to be able to identify the letter to produce the sound on the assessment.

After the alphabet books, students practiced writing the letter using the verbal path, directions for forming a letter (see Appendix D for an example). I modeled writing the letter while stating the verbal path as the children watched, and then students traced the letter on their letter book as they repeated the verbal path with the teacher. Finally, students wrote the letter while repeating the verbal path.

*Analysis.* Pre- and post-assessments were compared to determine alphabet knowledge development among the students. Because the students demonstrated substantial increases across all three assessments, paired t-tests were used to determine if the findings were statistically significant. However, given the small sample size, caution should be used in interpreting and generalizing the results.

## **Results**

The results of the alphabet letter identification pre- and post-test of alphabet letters are shown in Table 1. Participants were able to identify a greater amount of upper and lowercase letters in November than when they began kindergarten in September. For example, while on average students were only able to identify seven upper case letters in the pre-assessment, by November they were able to identify 22 upper case letters.

Student 3, who was only able to identify 3 upper and lower case letters in September, made the greatest gains in the group. Student 3 began the school year quiet and shy, however, she was eager to learn and came to small groups ready to participate in all activities. As her letter knowledge grew, so did her confidence in the classroom. Student 4, who made the least gains, was a severe behavior problem. This student spent much of our small group time refusing to participate, hiding under the table, or causing other commotions. Student 4 also received other interventions with another teacher in the school, however they were not able to come as far with alphabet knowledge as most of the others.

*Table 1: Upper and Lowercase Letter Assessments*

Student	September	November	September	November
	Uppercase	Uppercase	Lowercase	Lowercase
1	3	26	3	25
2	10	26	9	26
3	6	26	3	26
4	3	16	4	15
5	12	25	10	20
6	14	26	9	26
7	1	15	1	15
8	10	21	6	23
9	3	22	2	19
10	9	26	6	26
Mean	7.1	22.9	5.3	22.1
S.D.	4.48	4.31	3.2	4.53

The results of the letter sound identification pre- and post-test are shown in Table 2. The data show that participants were able to identify more letter sounds in November than when they began kindergarten in September. On average, students identified 14 more letter sounds in November. Student 1 showed the greatest growth in identifying sounds as this student was motivated to learn. Student 4 made very little growth in letter sounds as this student did not enjoy being in small groups and wanted to avoid our activities.

*Table 2: Letter Sounds Assessments*

Student	September Sounds	November Sounds
1	1	20
2	4	20
3	0	21
4	0	2
5	0	16
6	2	17
7	0	12
8	0	13
9	0	14
10	3	21
Mean	1	15.6
S.D.	1.49	5.83

T-test results are shown in Table 3. There was a significant difference in the mean scores for all three assessments. The significant results suggest the change in students' scores was unlikely due to chance, and might be the result of the strategies implemented in small groups.

*Table 3: T-test Results*

	Pre-test Mean (s.d.)	Post-test Mean (s.d.)	t-statistic
Uppercase letters	7.1 (4.48)	22.9 (4.3)	12.78***
Lowercase letters	5.3 (3.2)	22.1 (4.53)	12.46***
Letter sounds	1 (1.49)	15.6 (5.83)	8.86***

\*\*\*  $p < 0.001$

## Discussion

Results of this study show statistically significant improvement in letter and sound identification after small group instruction with alphabet books and handwriting practice. At the beginning of the year the participants struggled with letter recognition. During the letter identification pre-assessment, three students offered substitutions for the letters they were shown. For example, one student substituted 3 for E, 9 for P, R for F, b for d, and d for b. Another student identified six of the uppercase letters (F, R B, P, K, Y) as E. Research shows that until children are familiar with letter forms, it is common for them to make substitutions or have confusion such as the ones the students made (Both de Vries & Bus, 2014).

In the first four weeks of the study, students continued to struggle with remembering the letters we practiced. Each afternoon we would review the alphabet book and when shown the cover, many students could not identify the letter. Over time though, the students began learning the letters at a quicker pace, and chose to re-read the letter books during center time, as well as independently complete other alphabet activities and games that we had used in whole group.

At the beginning of the study most students were unable to identify any letter sounds. During the reading of the letter books the students often tried to read the pictures with a word that did not begin with the letter. For example, in the Rr book there was a picture of a rabbit and the students would say bunny. At the study's conclusion, students were able to correctly identify more letter sounds. The students' performance with two letters deserves mention.

Letter sound /w/ was the only letter sound that all participants were able to identify at the end of the study. Since w's sound is not heard in its letter name, it is sometimes a harder sound to identify (Evans et al., 2006). During the post-assessment, four students made the w motion with their hand that we used in when practicing the sounds. The letter sound that was least known during the post-assessment was y. Letter y contains the /w/ sound so it was understandable four students confused the y letter sound with /w/.

## Limitations

The process our county uses to assess students' letter sound knowledge might affect the results. Students are shown a lowercase letter flashcard and asked, "What sound does this letter make?" However, if the students were given the letter name, they might be able to identify the sound because this practice can help students with the letter sound (Evans, Bell, Shaw, Moretti & Page, 2006). For example, letters b, p, and z begin with the letter sound of their name. After the post assessment, I reviewed the sounds the students could not

identify and asked them, "What sound does (letter) say?" Many of the students were able to identify the sound.

Another limitation of this study is the lack of a control group. Although this study revealed statistically significant improvement in the students' abilities to identify letters and sounds, I cannot be sure that the two new instructional strategies caused the significant difference between pre-test and post-test scores. Without a control group, it is not possible to state what would have happened without the intervention.

A third limitation is that parents were aware of the study and some expressed interest working with their students at home. While parent support is helpful, it is not possible to know how much this affected the students' progress.

## **Conclusion**

During this study, I learned about the importance of early intervention. Most of the students took at least four weeks before beginning to show progress with their letter and sound identification. Once they began to retain the identification of letters and sounds they progressed more quickly identifying other letters and sounds.

Normally with a class size of at least 24 students, I create groups of six to seven students for guided reading instruction. In this study I observed how students are better able to concentrate in a smaller group with instruction targeted at their needs. The smaller groups also led to more participation from these students during whole group carpet time. After the study was completed, they felt more confident and often raised their hands to participate. I continue to use the smaller groups for my guided reading instruction, and it will be a strategy that I take forward in the future.

Teachers must be flexible and willing to try new instructional strategies to discover what works best with their students. For future research in teaching letters and sounds, I propose that we add the flashcards with picture mnemonics to assist students in having a visual for the letter and sound. I also recommend teachers use many alphabet books as read-alouds during the first weeks of school. Students who are read alphabet books with an emphasis on letters and sounds make greater gains in letter and sound knowledge (Brabham, Murray, & Bowden, 2006).



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### Appendix A: Letter Name Assessment Form

#### Letter Recognition Assessment—Individual Record

Name \_\_\_\_\_ Grade \_\_\_\_\_ Date \_\_\_\_\_

Directions: Use Uppercase and Lowercase Letter Recognition Sheets. Slide a card under each letter and ask the child to read it. Check (✓) accurate responses and note substitutions. Calculate number of letters known (as well as total score). Note unknown letters. Evaluate substitutions to determine features to which children are attending.

Letter	Accurate	Substitution or Confusion
H		
E		
M		
T		
I		
P		
Q		
U		
O		
C		
W		
B		
X		
V		
J		
S		
G		
N		
Y		
K		
Z		
R		
A		
F		
L		
D		
Score		

Letter	Accurate	Substitution or Confusion
h		
e		
m		
t		
i		
p		
q		
u		
o		
c		
w		
b		
x		
v		
j		
s		
g		
n		
y		
k		
z		
r		
a		
f		
l		
d		
Score		

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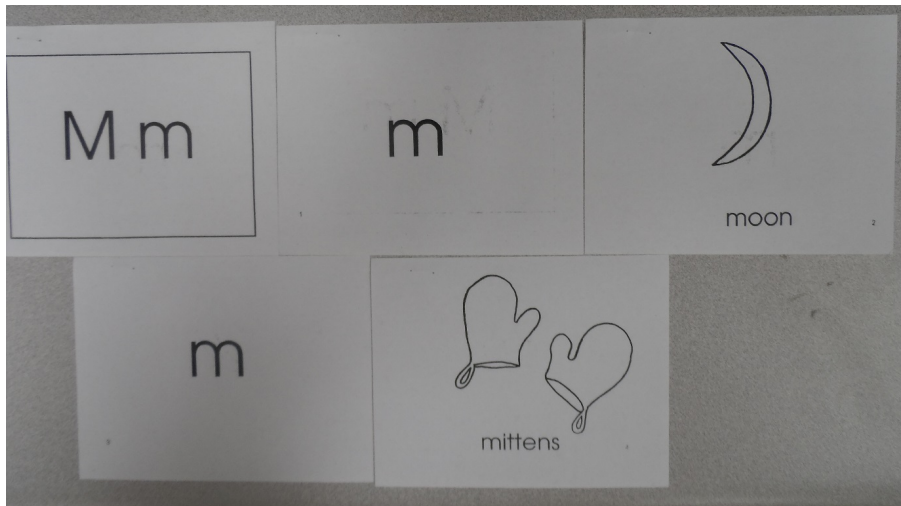
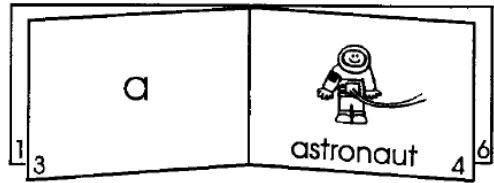
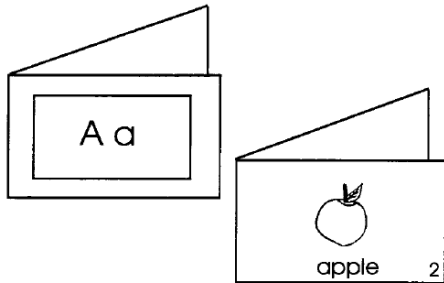
Unknown Letters	Substitutions	Total Score for All Letters

### Appendix B: Letter Sounds Assessment Form

Directions: Show a lowercase letter flashcard to the student and ask them: “What sound does this letter make?” Record accurate responses and note substitutions or confusions.

Letter	Accurate	Substitution or confusion
h		
m		
t		
p		
q		
c		
w		
b		
x		
v		
j		
s		
g		
n		
y		
k		
z		
r		
f		
l		
d		
<b>Score</b>		

**Appendix C: Fountas & Pinnell Letter Identification Books**



## Appendix D: Verbal Path for the Formation of Letters

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# Verbal Path for the Formation of Letters

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Sometimes it helps children to say aloud the directions for "making" a letter. This "verbal path" helps them to understand the directional movement that is essential. In addition, it gives the teacher and child a language to talk through the letter and its features. Here, we suggest language for creating a verbal path to the distinctive features of letters.

### Lowercase Letter Formation

<b>a</b> — pull back, around, up, and down	<b>n</b> — pull down, up, over, and down
<b>b</b> — pull down, up, around	<b>o</b> — pull back and around
<b>c</b> — pull back and around	<b>p</b> — pull down, up, and around
<b>d</b> — pull back, around, up, and down	<b>q</b> — pull back, around, up, and down
<b>e</b> — pull across, back, and around	<b>r</b> — pull down, up, and over
<b>f</b> — pull back, down, and cross	<b>s</b> — pull back, in, around, and back around
<b>g</b> — pull back, around, up, down, and under	<b>t</b> — pull down and cross
<b>h</b> — pull down, up, over, and down	<b>u</b> — pull down, around, up and down
<b>i</b> — pull down, dot	<b>v</b> — slant down, up
<b>j</b> — pull down, curve around, dot	<b>w</b> — slant down, up, down, up
<b>k</b> — pull down, pull in, pull out	<b>x</b> — slant down, slant down
<b>l</b> — pull down	<b>y</b> — slant in, slant and down
<b>m</b> — pull down, up, over, down and up, over and down	<b>z</b> — across, slant down, across

# USING PARAGRAPH FRAMES TO SCAFFOLD THE TEXT-BASED ARGUMENTATIVE WRITING EXPERIENCES OF LOW-PERFORMING EIGHTH-GRADE STUDENTS

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**Abstract** Revised curricular standards (Common Core) require students to engage in analytical writing (also known as text-based writing). This means that students have to read and comprehend a given stimulus and then write an essay based on evidence provided by the given stimulus. There is little current literature that documents effective writing instruction, which scaffolds middle school students' essay writing, based on a given stimulus. This study explored the use of paragraph frames as a tool for improving the argumentative essay-writing skills of low achieving middle school students. A total of 23 eighth-grade students received paragraph frame instruction over the course of 12 weeks from their Language Arts teacher. Students' writing performance was measured on the English Language Arts Text-based Writing Rubrics Grades 6–11: Argumentation. Analyses of the data revealed that students' overall writing performance increased significantly from pretest to posttest. Students also made significant gains across the pre- and posttest period in the following two domains (1) Purpose, Focus and Organization and (2) Evidence and Elaboration, but not in Conventions of Standard English. The article documents how one teacher scaffolded the text-based argumentative writing experiences of her low-achieving students.

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**Keywords:** analytical writing, argumentation, paragraph frames, scaffolding, teacher action research



## Introduction

Writing is an essential skill for academic, social, and career success. A key requirement for student success in the middle school is the development of proficient essay writing skills. Despite the need for skilled writing, a large number of eighth graders fail to write at the proficient level. Results of the National Assessment of Educational Progress (NAEP) 2015 writing assessment indicate that only 24% of eighth graders scored at the proficient level [National Center for Education Statistics (NCES), 2012].

Revised curricular standards (Common Core) focus on preparing students for success in college, career, and life and thus emphasize more critical-thinking, problem-solving, and analytical skills. With this shift in curricular standards, students have to develop a new set of writing skills to meet the academic demands of the 21<sup>st</sup> Century. Traditionally, essay writing practices in K-12 classrooms relied heavily on students' life experiences and their personal opinions. Current standards require students to engage in analytical writing (also known as text-based writing). Students thus have to read and comprehend a given stimulus and then write an essay based on evidence provided by the given stimulus. To meet the demands of the revised standards, students are expected to proficiently produce evidenced-based literary, argumentative, and informative essays (National Governors Association Center for Best Practices [NGA Center] & Council of Chief State School Officers [CCSSO], 2010).

There is little current literature that documents effective writing instruction to scaffold middle school students' essay writing, based on a given stimulus. Additionally, no studies have been found that documents the use of paragraph frames to scaffold middle school low achieving students' essay writing, based on a given stimulus. This action research is a direct response to the concern of the second author about her students' writing performance on the State Writing Assessment. The results of this study may help us understand how to better support adolescents in improving their argumentative essay writing skills and provide a framework for teachers about effective writing strategy instruction with middle school students to meet required the State Standards.

The purpose of this research was to examine the effectiveness of paragraph frames instruction on the argumentative essay writing skills of eighth graders as measured by one of the Florida State Assessment (FSA) writing rubrics (i.e., the English Language Arts Text-based Writing Rubrics Grades 6–11: Argumentation (FSA), henceforth referred to as ELA-TBWR). The study sought to answer the following research questions:

1. Will paragraph frames instruction improve middle school students' argumentative writing skills on each domain of the ELA-TBWR?
2. Will paragraph frames instruction improve middle school students' overall argumentative writing performance as measured by the ELA-TBWR?

## Literature Review

*The Need for Proficient Writing.* Proficient writing is an essential requirement for academic success (Graham & Perin, 2007). One of the main purposes of schools is to ensure the development of proficient writing skills. Moreover, the very nature by which students are assessed in schools requires them to be skilled writers. The ability to write at the proficient level also augments student learning, increases opportunity for employment, and facilitates economic success (National Commission on Writing in America's Schools and Colleges [NCW], 2003); Langer & Applebee, 2011; Society for Human Resource Management, 2008). Despite this high need for proficient writing, results of the 2011 NAEP Report Card indicates that only 24% of eighth graders performed at the *Proficient* level in writing [National Center for Education Statistics (NCES), 2011].

*Argumentative Essay Writing.* Learning to write strong arguments helps students understand multiple perspectives and teaches them how to analyze and respond to the arguments of others. These essential skills are required well beyond graduation and are vital for participating in a democratic society (Gunning, 2010; Hillocks, 2011). According to Hillocks (2011), argument is the essence of critical thinking. Argument entails making a case to sustain a claim during the course of our daily lives (e.g., making claims about science, policy making, legal issues, technology, etc.). Engaging in argumentative reading and writing involve complex tasks that involves identification of a claim, supportive evidence, and assessment of warrants (Newell, Beach, Smith, & Vanderheide (2011).

Along with the complex tasks required for argumentative reading and writing, current standards for eighth-grade writing specifically requires students to (a) write arguments to support claims with clear reasons and relevant evidence, (b) have sound knowledge of claims, (c) use words, phrases, and clauses to create cohesion, (d) establish and maintain a formal style, and (e) provide a concluding statement that follows from and supports the argument presented (Council of Chief State School Officers & National Governors Association, 2010). It is thus imperative that low-achieving middle school students are provided with effective writing instruction to help them succeed academically.

*Strategy Focused Instruction.* Writing instruction should help students meet the challenges of writing effectively for diverse audiences. One type of writing instruction, strategy-focused instruction, has been found to enhance students' writing skills. Strategy-focused instruction involves explicitly and systematically teaching students the steps necessary for undertaking specific writing tasks (Fitzgerald & Markham, 1987). Research overwhelmingly indicates that strategy-focused instruction is an essential component of writing instruction. Graham and Perin's (2007) meta-analysis identified 11 key elements of adolescent writing instruction with strategy-focused instruction identified as the most effective (effect size = 0.82).

A key feature of strategy-focused instruction involves explaining, teacher modeling and using think-alouds (De La Paz, 2007; Tompkins, 2006). With strategy-focused writing instruction, the teacher (1) identifies a strategy, (2) introduce the strategy to the students through teacher modeling and (3) allow the students to engage in guided practice with the strategy. The students finally achieve mastery through repeated practice and reinforcement (Collins, 1998).

*Explicit and Direct Instruction and Scaffolding.* Research indicates that effective teachers use explicit instruction to facilitate student learning (Duke & Pearson, 2002; Taylor, Peterson, Pearson, & Rodriguez, 2002). Explicit instruction means showing students what to do and how to do and involves cognitive modeling, guided practice, and independent practice (Pearson, & Gallagher, 1983). With explicit instruction, teachers provide corrective feedback and reteach as necessary.

In addition to teaching writing explicitly and strategically, teachers should also provide sufficient instructional scaffolding. Instructional scaffolding refers to types of support provided by teachers (or peers) to help students accomplish a specific task that they are unable to accomplish on their own. According to Vygotsky (1986), children learn through meaningful social interactions in a supportive learning environment, accompanied by instructional scaffolding. Bruner (1986) describes scaffolding as the support that teachers provide to students to facilitate their learning and mastery of new tasks. As students gain knowledge, the scaffolding is gradually withdrawn so that students transition from social interaction to working independently. In writing, instructional scaffolding provides students the support they need to make sense of their writing and is gradually withdrawn as students' writing skills become internalized, resulting in independent and self-regulated writers.

*Peer Review.* Peer reviewing, also referred to as peer editing, is “[a]n instructional approach that is based on collaboration” (Piliappakos, 2017; p. 2). Peer review serves an important function in the writing process. During the peer review process, partners read each other’s writing and then provide feedback on each other’s writing. The feedback received from peers is then used to improve the written work. During the peer review process both the reader and the writer benefits; the writer receives feedback to improve his or her writing and the reader develops skills in critically evaluating the written work (Philippakos & MacArthur, 2016b). Peer reviewing also has a motivating aspect. Newell et al (2011) maintains that students may be more motivated to write for their peers than for their teacher.

*Paragraph Frames.* Gunning, (2012) contends that students who score below the basic level in writing need significant instruction and scaffolding. Paragraph frames, a writing strategy introduced by Nichols (1980), facilitate remediation for adolescents who are experiencing

writing difficulties. Paragraph frames are the most structured writing strategy and are most suitable for introducing new types of writing (like analytical writing) to struggling writers. Paragraph frames consist of an outline that includes the main ideas and transition words that students can build on. It essentially presents students with a structure they can use as they write paragraphs and essays (Gunning, 2012, Nichols, 1980). With paragraph frames, students are provided with sufficient scaffolding that aids them in constructing meaning and expressing their writing in a logical manner.

## Methodology

This study explored the use of paragraph frames as a tool for improving the argumentative essay-writing skills of low achieving middle school students and sought to answer the following two research questions:

1. Will paragraph frames instruction improve middle school students' argumentative writing skills on each domain of the ELA-TBWR?
2. Will paragraph frames instruction improve middle school students' overall argumentative writing performance as measured by the ELA-TBWR?

*Participants.* The study was conducted in a middle school in South Florida. The total school population was 1039 students and consisted of 58% Black/African American students, 23.8% Hispanic students, and 15.6% Caucasian students and 2.29% multiracial and Asian students. The majority of students (79.4%) were eligible for free and reduced lunch; higher than the state average of 61.9%. Convenience sampling was used. Mills, Gay, & Sperling (2016) describe convenience sampling as “[t]he process of including whoever happens to be available in a sample” (p. 656). The second author taught a total of 120 students. However, only 30 out of 120 (25%) of parents and students returned informed consent and student assent letters. A total of seven students either transferred to another school or failed to take the pretest or the posttest. The sample thus consisted of 23 eighth-grade students; eight boys and fifteen girls.

*Design.* The study used a one-group pretest-posttest design. According to Mills et al. (2016), the one-group pretest-posttest design involves a single group that is pretested, exposed to treatment, and then tested again. Pretest data was collected in October and posttest data at the end of January. Students received the paragraph frames instruction for approximately 12 weeks.

*Paragraph Frames Instruction.* The Implementation of the paragraph frames instruction is described in detail by the second author as follows:

The language arts teachers in our school, worked according to a monthly calendar created by the language arts department. All grade-level language arts teachers have

to teach the same topic on the same day. We used literature lessons as a reward, icebreaker, or buffer after arduous writing assignments. There were instances where students would receive writing lessons five days per week because they did not finish what we planned for, but generally, we planned for three writing days per week and one typing and editing day.

Every student had a writing folder where they housed the ELA-TBWR, handouts, notes, and writing samples (anchor papers). Students kept notes with the specific format of type of essay, transition words, and other relevant information. Additionally, there was a folder with a teacher-created argumentative paragraph frame and an informative paragraph frame on each student's desk (see Appendix A for paragraph frame). Although I taught both argumentative and informative essay writing to my students, this research documents the students' progress on their argumentative essay writing skills only.

Throughout implementation of the paragraph frames instruction, I used a PowerPoint to model the specific parts of an argumentative essay. Using think-alouds, I modeled what to do and how to do it. I provided opportunities for guided practice with corrective feedback. I started off with thesis statements and the formula for creating a thesis statement. Next I taught hooks. The lessons that followed focused on body paragraphs (topic sentences, text citation, and elaboration). Each week, I created a writing prompt based on current news events or topics of interest. As previously stated, current standards require students to read and comprehend a given stimulus and then write an essay based on evidence provided by the given stimulus. I therefore, located three sources of information about specific essay topics from local newspapers or other sources (including a live news report from one of the local broadcasting stations). I also used ideas archived from my previous years of teaching. These sources of information served as stimuli passages for the writing prompts.

The students and I always read the prompt together then discussed what type of essay (argumentative) we were working on, how to identify the type of essay and the key words to be used to restate the prompt in the students' thesis statements. We also read the three stimuli articles together and discussed the main ideas and supporting details while students would highlight, underline, or take notes. This was particularly helpful for the lowest students. Most of my students also had a reading class, and I collaborated with the reading teacher to have the students read the articles in her class and work with them to identify the main ideas.

At the beginning of the paragraph frames instruction, students also used a planning sheet to record the thesis statement, organize ideas to be used in the body paragraphs, and any supporting evidence from the text. The planning sheet made it easier for students to complete the paragraph frames. On the first day, the students wrote their thesis statements and used their notes to create planning sheets that map out the essay. Planning

took a full period. On the second day, they wrote the *Introduction* and *Body Paragraph #1*. I projected samples of some of the other students' work on the overhead projector, so that the rest of the class could see various samples of effective introductions and body paragraphs. These mentor texts served as a source of motivation, particularly because the students believed that since some of their peers could write good essays, they would also be able to write like that. On the third day, the students wrote *Body Paragraph #2* and the *Conclusion*. While they worked I rotated around the room and provided guided assistance, corrective feedback, and answered questions. The fourth day was a typing and editing day. After typing and editing, the students exchanged computers to do peer editing. The peer editing was used to scaffold revision of typed papers. Peers read the essays and provided feedback in terms of the quality of the argument and how to improve the argument. I also reviewed and edited drafts of each essay. I selected the best essays as mentor texts, and we discussed the salient features of those essays. Eventually, most students were able to plan on the computer and type their essays, using their notes.

By the beginning of January, we were moving into "crunch time" in preparation for the FSA. I no longer read the prompts and the three stimuli articles with the students (they read independently). I timed them while they read. They no longer created extensive planning sheets. They worked on the computers and I gave them timed writing drills as follows:

- five minutes to write a thesis
- five minutes to write a hook, and
- 20 minutes to write a body paragraph.

They hated the timed drills, but it was the only way to help them complete their essays within the required 2-hour timeframe, demanded by the FSA.

*Data Collection.* The ELA-TBWR, was used to collect the data. The total number of possible points a student can obtain on the ELA-TBWR is 10. The ELA-TBWR consists of the following three domains:

- Purpose, Focus, and Organization (four possible points)
- Evidence and Elaboration (four possible points)
- Conventions of Standard English (two possible points)

A pre-and posttest was administered before and after implementation of the paragraph frames instruction.

## Results

The study used a one-group pretest-posttest design. A within-subjects t-test (paired samples test) was used to analyze the data and to examine whether the writing

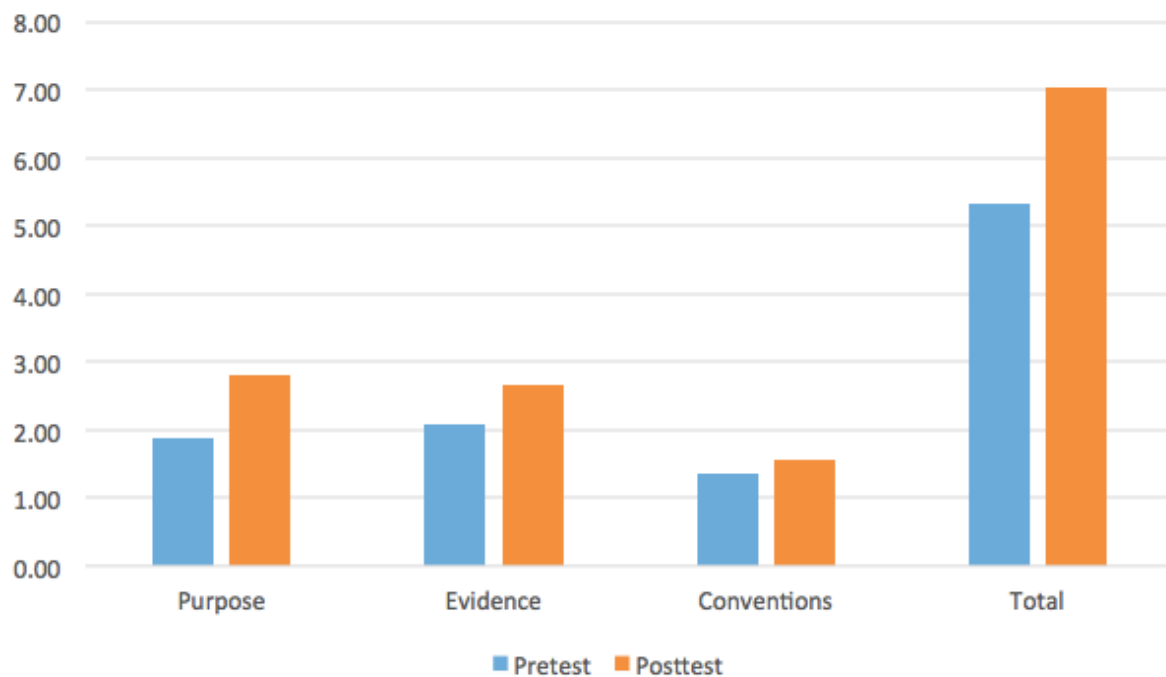
performance of eight-graders, instructed in paragraphs frames, differed significantly from pretest to posttest on measures of the ELA-TBWR. Paired samples tests are used for comparisons with a continuous dependent variable when there is one measurement variable and two nominal variables (McDonald, 2014). The dependent variable in this study was argumentative writing achievement as measured by the ELA-TBWR. The independent variable was type of instruction (paragraph frames).

Research question one examined whether paragraph frames instruction will improve middle school students' argumentative writing performance on each domain of the ELA-TBWR. Analysis of the data suggests that students made significant gains across the pre- and posttest period in the following two domains of the ELA-TBWR (1) Purpose, Focus and Organization and (2) Evidence and Elaboration, but not in Conventions of Standard English. There was a significant difference in students' Purpose, Focus and Organization scores after the paragraph frames instruction ( $M=2.80$ ,  $SD = 0.60$ ) than before paragraph frames instruction ( $M=1.89$ ,  $SD 0.62$ );  $t(22) = -12.22$ ,  $p=0.00$ . There was also a significant difference in students' Evidence and Elaboration scores after paragraph frames instruction ( $M=2.67$ ,  $SD = 0.54$ ) than before paragraphs frames instruction ( $M=2.07$ ,  $SD 0.59$ );  $t(22) = -6.47$ ,  $p=0.00$ .

Research question two examined whether paragraph frames instruction will improve middle school students' overall argumentative writing performance as measured by the ELA-TBWR. Analyses of the data indicates a significant difference in students' overall scores after paragraph frames instruction ( $M=7.04$ ,  $SD = 1.20$ ) than before the paragraph frames instruction ( $M=5.30$ ,  $SD 1.35$ );  $t(22) = -9.958$ ,  $p=0.00$ . Results are presented in Figure 1.

Figure 1 shows that students made significant gains across the pre- and posttest period in their overall writing scores after paragraph frames instruction as well as in the Purpose, Focus, and Organization domain and in the Evidence and Elaboration domain, but not in the Conventions of Standard English domain.

*Figure 1: Students' overall argumentative writing performance as measured by the ELA-TBWR*



## Discussion

This study examined whether paragraph frames instruction will improve low achieving middle school students' argumentative writing performance. The results suggest that paragraph frames instruction can improve the writing performance of middle school students. Specifically, our results suggest that when students receive paragraph frames instruction their overall writing performance is enhanced. The students also showed increased performance on the Purpose, Focus, and Organization domain. This suggests that:

- some of the students' responses were somewhat sustained within the purpose, audience, and task but may have included loosely related or extraneous material and a claim with an inconsistent organizational structure, while
- other students' responses were adequately sustained and generally focused within the purpose, audience, and task and included a clear claim and distinct organizational structure with a sense of completeness

The students further showed increased performance on the Evidence and Elaboration domain, indicating that some students:

- provided uneven, cursory support/evidence for the writer's claim that includes partial use of sources, facts, and details, while



- other students provided adequate support, citing evidence for the writer's claim that includes the use of sources, facts, and details

Although none of the students achieved mastery (a score of 4) in the Purpose, Focus, and Organization domain and in the Evidence and Elaboration domain, as measured by the ELA-TBWR. , the study demonstrates that direct and explicit paragraph frames instruction, together with teacher scaffolding, can improve the writing performance of low-achieving middle school students. Furthermore, the use of peer samples as mentor text served as a powerful tool for motivating low-achieving students.

The students did not improve their scores on the Conventions of Standard English domain. The majority of the students in the study spoke a dialect or language other than Standard English in their everyday lives (i.e., African American English, Haitian Creole, or Spanish), an essential component of their identities. These students experience a variety of challenges in learning to read and write Standard English. This finding is similar to a study conducted by Campbell and Filimon (2017), who examined the effects of strategy-focused instruction on the argumentative writing of students in a linguistically diverse seventh grade classroom. These authors found that, despite the fact that the English Language Learners (ELLs) (1) received the same strategy-focused writing instruction within their mainstreamed classrooms and (2) their teachers scaffolded their writing experiences in the same way they did for the rest of the students, the writing scores of the ELLs did not indicate a significant difference. Based on their research that examined language ideologies, Godley, Carpenter, & Werner (2007) believe that literacy educators need to develop a grammar instructional approach that recognizes language variations and students' existing knowledge about language, to facilitate the reading and writing skills of students who speak a dialect other than Standard English. In order for students to become proficient writers that meet the requirements of the revised standards, teachers need to incorporate specific grammar instruction to accommodate the learning needs of the diverse student population in today's classrooms.

The students in this study were initially very intimidated by the fact that they had to read the stimulus and then respond to it in the form of an essay. However, consistent scaffolding, classroom discussions, peer editing and the sharing of mentor texts soon eliminated any trepidation they experienced. Mentor texts are an important component of writing instruction. In this study, the sharing of mentor text contributed significantly in encouraging and motivating the students to participate in the writing instruction, particularly the lowest performing students.

## Limitations

This action research study used a one-group pretest-posttest design. One limitation of this design is that it has almost no external validity. But, a key characteristic of action research is to assist teachers in becoming more efficient in the teaching and development of their students (Sagor, 2000). In this study, the second author was concerned about her students' poor writing skills and participated in the study to improve her teaching practices and her students' writing skills. Another limitation of the one group pretest-posttest design is *history* (this means that an event outside the experiment or participants may have affected the scores of the students). In this study, some of the students in the sample also had a reading class, and the teacher collaborated with the reading teacher who worked with them to identify the main ideas in the articles they read in the reading class. This additional instruction could have affected those students' posttest results. The paragraph frames instruction only lasted 12 weeks. A longer intervention that includes grammar instruction could produce improved results.

## Conclusion and Implications

The study demonstrates that explicit and direct paragraph frames instruction is effective in improving the writing performance of low achieving middle school students. With the urgency to prepare the students for the state exam and the limited time to do so, not enough time was spent on teaching conventions. A replication of this study that includes explicit and direct instruction in conventions and that takes students' different dialects and unique knowledge of language into account is warranted. We also need to explore whether paragraph frames instruction influence students' attitude about writing. Furthermore, we need to examine teachers' reflections, pedagogical responses, and their experiences when teaching writing instruction to diverse students.

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## Appendix A: Paragraph Frame for Argumentative Writing

- Paragraph #1 (Introduction):

**Indent.** Write a **Hook**. Write a **Connector Sentence**. Write a full **thesis statement** (restate the prompt) with two **reason ideas**.

- Paragraph # 2 (1<sup>st</sup> Body Paragraph):

**Indent.** Write a **topic sentence** (Transition word- *Initially*, restate the prompt + because + reason idea #1.) Write a **Filler Sentence**. Write a **cited and paraphrased textual evidence sentence** (*Source 1 mentions that ...*) Write your **Elaboration** to explain the text citation. (*In other words...*). **Opposing Argument** (*Some may argue that ...*). **Counter Claim** (*On the other hand, ...*). **Elaborative sentence(s)** (*To clarify...* **Close out sentence with a justifier** (*It is clear that ...* Mention the thesis and reason idea # 1 in another way.)

- Paragraph # 3 (2<sup>nd</sup> Body Paragraph):

**Indent.** Write **topic sentence** (Transition word- *As a final point*, restate the prompt + because + reason idea #2.) Write a **Filler Sentence**. Write a **cited and paraphrased textual evidence sentence** (*According to Source 2, ...*) Write your **Elaboration** to explain the text citation (*This means...*). **Opposing Argument** (*Critics claim that ...*) **Counter Claim** (*On the contrary ..*) **Elaborative sentence(s)** . (*In this case, ...*). **Close out sentence with a justifier** (Without a doubt, ...)

- Paragraph # 4 (Conclusion):

**Indent.** Transition word – *In conclusion*, **Restate the full thesis with the two reason ideas**. Ask a **thought- provoking question** about the topic. **Make a prediction** (*In the future,*)

- **Hook** – Anecdote (brief) with elaboration, quotation with elaboration, an intelligent question with elaboration, a shocking statement or fact with elaboration, imagine, a news report, or a definition.
- **Transitions for Topic Sentence**- *Initially*, *to commence*, *as a final point*, *moreover*.
- **Transitions for elaboration** – *In other words*, *this means*, *to clarify*, *for instance*, *for example*, *in this case*, *another key point*, *as an illustration*
- **Transitions for justifiers**- *clearly*, *without a doubt*, *evidently*, *unquestionably*, *all in all*
- **Counterclaim**- 1. *Although some people may argue that*, 2. *It is understandable that people may have this opinion, however*, 3. *It may be said that ...*, 4. *On the contrary*, 5. *On the other hand...*

# STUDENT TEACHER LEARNING THROUGH REFLECTION

**Jeffrey Johnson**

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**Abstract** Student teaching has been viewed as an important part of developing into a skilled practitioner for over one hundred years. While most people acknowledge that important changes occur during that time, research on the details of those changes has been limited. This paper will present a model of research using reflections by the student teacher along with discussions with and observations by their mentor teacher as sources of evidence of learning. Examples from three former student teachers/interns will be given to illustrate the types of changes that may occur.

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**Keywords:** student teaching, reflection, teacher action research

## Introduction

Since the days of the first normal school in the United States in 1839, a practicum experience has been a graduation requirement for many new teachers. Many educators have viewed this field experience as the most valuable part of their teacher preparation program (Goldhaber, Krieg, & Theobald, 2017; Levine, 2006; Smith & Rayfield, 2017; Wilson, Floden, & Ferrini-Mundy, 2001). Cyrus Pierce, the principal of that first school, said that the goal of this experience was to “teach to pupils (i.e. the future teachers), by my example, as well as by precepts, the best way of teaching the same things effectually to others” (Haberman & Harris, 1982). Dewey later described the difference between the practice teaching experience and a student teaching one:

It ought to go without saying... that criticism should be directed toward making the students thoughtful about his work in the light of principles rather than induce in him a recognition that certain methods are good, and certain other special methods are bad...criticism may be adapted to giving a training-teacher command of some of the knacks and tools of the trade, but are not calculated to develop a thoughtful and independent teacher. (Haberman & Harris, 1982, p. 45)

In my time working as a secondary mathematics teacher, I have been fortunate to serve as the mentor to many interns and student teachers. In that capacity I have tried to follow

Dewey's goal of developing thoughtful teachers, not just mimics of my methods. More recently Papastamatis, Panitsidou, Giavrimis, and Papanis (2009) stated that:

Teaching professionals should be encouraged to try out new ideas, and even conduct their own classroom research on how well those ideas work with their learners and under what conditions they work best. They need to take time to reflect about what they are doing. Educational authorities need to provide them with opportunities to do so. (p. 87)

The attempt to follow this advice has been both exciting and challenging, given that student teachers come with their own views of what the process should entail (Calderhead, 1991). In the first few days of our time together I always scheduled time to talk together about their goals and expectations for that semester and found that my belief in the value of reflection did not always match theirs (Leatham & Peterson, 2009). Some have been very open to this method of development, while others were less enthusiastic but still agreed to follow Dewey's method of development.

Some of the hesitancy may have come from a view of reflection as unnecessary given their already developed ability (Pultorak, 2014), or they may have had previous mentors who did not engage in reflective activities with them (Leatham & Peterson, 2009). Additionally, while all teacher preparation programs that I have worked with require written reflections from their student teachers, some university supervisors seem to view this as a task to perform, not an activity to continually engage in (Tabachnick & Zeichner, 1984). If reflections are only cursorily read, and rarely discussed with the student teacher, they may devalue their importance.

Regardless of any initial hesitancy all of my student teachers have agreed to engage in critical reflection of their teaching, both on their own and with me as their mentor. My personal notes have accompanied these reflections, both verbal and written, on their preparation for and engagement in teaching activities. For many years I have kept these documents for my records, however recently I was thinking about the process of learning during the student teaching experience. Many researchers have had difficulty documenting the practical impact of reflection on what is done in the classroom (Greenberg, Pomerance, & Walsh, 2011; Stockero, 2008; Zeichner & Liston, 2013). Some have even feared that it may be impossible to find measurable effects of student teaching on learning and knowledge (Dunkin, 1994; Boyd, Grossman, Lankford, Loeb & Wyckoff, 2009) due to variation in mentor and mentee beliefs and differences in classroom experiences. As I looked through my records, I wanted the answer to the following question: Is there evidence that my student teachers' reflections on their teaching had an impact on their teaching and learning?



## Literature Review

While having philosophical roots in Dewey and Socratic learning, much of the recent research on reflection and student teaching can be traced to Kenneth Zeichner and the implementation of formalized reflection in student teaching in the 1980's, beginning at the University of Wisconsin and expanding from there to nearly every teacher preparation program (Zeichner & Liston, 1990). Harford and MacRuaric (2008), when studying student teachers, claimed that "Reflective practice is widely recognized as a central tenet of the teaching and learning professional." They added that teacher education can "enable student teachers to achieve a level of reflection beyond their current ability level." To study this, they had student teachers review video tape of their own teaching, and working in a collaborative group with other student teachers, they "demonstrated tangible evidence of the development of reflective skills working in the context of a community of practice" (Harford & MacRuaric, 2008). While they were not able to prove that this improved reflection had an impact in how the student teachers performed in their placements, they did claim that an increase in reflective skills and greater awareness of classroom activities are skills generally associated with expert teachers.

Zeichner promoted "reflection about teaching and its contexts" as one of the key components in developing competent teachers (Zeichner & Liston, 1987). Unfortunately Zeichner was never able to prove that this reflection led to improved teaching either, finding instead that "students became more skillful in articulating and implementing the perspectives that they possessed in less developed forms at the beginning of the experience." (Tabachnick & Zeichner, 1984). However he theorized that this was because the student teachers, instead of reflecting on the work they were doing, viewed student teaching as "a time for the demonstration of previously learned skills" and had limited contact with the university supervisors who were to oversee their reflections.

Unfortunately, the difficulty in encouraging reflection leads to difficulty in studying student teaching as a reflective act. Korthagen (1985) claimed that "student teachers have to develop a reflective attitude before this period in order to become aware of the influence of utilitarian perspectives on their own activities in school." Leatham and Peterson (2009) found that only 25% of cooperating teachers felt that their primary duty was to facilitate reflection, while 28% believed they were to simply provide experiences for their student teachers and 40% felt their purpose was to model and share knowledge, both of which fit a socialization model of teacher development. Stockero (2008) found that reflection can be taught in a mathematics methods class, and that the skill is transferable to field experience activities. However the transferability may be questionable to future teaching, as it is unclear "how a reflective stance developed in a teacher education program ultimately affects teachers' day-to-day instruction."

More recently researchers have looked at different ways of eliciting and documenting reflection. Gelfuso & Dennis (2014) found that just having a content coach available did not improve reflection about the student teachers. Toom, Husu, & Patrikainen (2015) and

Körkkö, Kyrö-Ämmälä & Turunen (2016) used student teachers portfolios to examine reflective practices. Pérez & Batista (2017) incorporated peer teaching and peer observation to elicit reflection among both parties, while Krutka, D. G., Bergman, Flores, Mason & Jack (2014) used social media to improve student teacher interaction and reflection. All found that reflection was viewed as a valuable tool by the student teachers, and they felt that it contributed to their growth as educators.

**Methodology**

Within the last ten years I have served as a mentor teacher to two student teachers and one intern, who I will call Janet, Robert and Norma (names have been changed). The student teachers worked in my math class every day for one semester, and for roughly half of the semester ran the classroom, preparing and teaching all lessons. My intern worked with my high school students two days a week for one semester, planning and teaching roughly ten lessons over that time. In my role as a mentor, I always ask my interns and student teachers to provide me with a copy of their lesson plan before they teach. During the day I take notes on that paper about their lesson, noting how closely they follow the plan and any changes that they made from on class to another. Between classes I engage them in a reflective discussion based on three questions:

1. How do you think it went?
2. What were the best parts of the lesson?
3. What would you do differently for the next class?

This discussion usually happens in the few minutes between class periods, so I jot down the basics of this discussion on the lessons plans. Occasionally there is additional time, such as during lunch, where deeper discussions would occur. Thus the data that I looked at was my notes from observing lessons and from the discussions that I had about those lessons and teaching in general with these three future teachers.

To analyze this data, I looked for examples where a change had been made from one lesson presentation to the next, or from one day to another, and the student teacher gave an explanation for why that change occurred. I also looked for examples where a change could have occurred or was recommended by me but did not occur, and explanations from the student teacher regarding that experience. Lastly I looked for changes that occurred over one unit of instruction and then over the entire semester. To develop a grounded theory (Corbin & Strauss, 1990) I used Shulman’s (1987) categories of teacher knowledge (see Table 1) to code the types of changes (or non-changes) that were occurring.

*Table 1: Shulman’s 7 Categories of Teacher Knowledge*

Content Knowledge	General Pedagogical Knowledge	Pedagogical Content Knowledge	Curriculum Knowledge	Knowledge of Learners	Knowledge of Educational Context	Knowledge of Educational Ends
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## Results and Discussion

My purpose in analyzing this data was to find if there is evidence that my student teachers' reflections' on their teaching has had an impact on their teaching and learning. The majority of the changes that I discovered occurred from one class period to the next, or within one day. These short-term changes occurred frequently, and the pre-service teachers usually had clear explanations for what they were changing and why. Long-term changes also occurred, with behaviors changing over a unit of instruction or after several months of working with a specific group of students. Many times these changes went unnoticed by the future teacher, but when asked they demonstrated a growth of knowledge and understanding.

*Short Term Changes.* Near the beginning of her time with me, Janet, a student teacher, was working in a geometry class. During the first class she wanted students to cut out pictures and definitions from handouts on their desks, match the two, then make a transparency of one of the pictures and provide a definition in their own words. Before the start of the second class, Janet had cut out the pictures and definitions herself and placed them in bags that she handed out to the groups while she was giving them instructions. In our conversation following the first class, she said that she was going to do this because, "Then I can distribute them, and have more people working, because they will be cut up." She also pre-assigned groups different pictures to put on their transparency so that all of the terms would be drawn by at least one group. In Shulman's (1987) categories of teacher knowledge, many of these changes would fall under the *Pedagogy* construct.

Shulman's *Pedagogy* construct focuses on administrative and classroom management skills to help students focus on important learning and maximize time on task. An intern, Norma, made similar changes to a presentation on factoring quadratics. After presenting the lesson to an Algebra class where students were asked to take notes from the board and follow the procedures to complete some problems, Norma and I discussed what she would do differently in the next class. Norma said that instead of her showing the notes on the board for the students to copy she would have it already written for them on a handout. That way, she hoped "more will get done" because students can move ahead instead of waiting for the next slide.

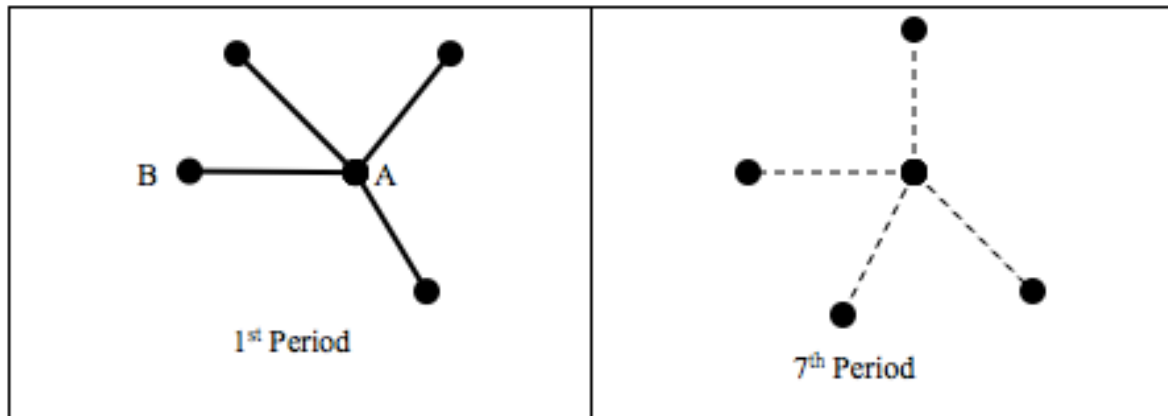
These changes in *Pedagogy* were often accompanied by changes in *Understanding of Students*. Janet, while thinking about the presentations she wanted students to make, said that in a later class she would "need to give some of the girls a specific role, like 'you're in charge of the transparency' or 'you're in charge of this'." Assigning specific roles streamlined the work students were asked to do, and demonstrated her increased understanding of student characteristics and how those would interact with the material. On a different day Janet changed a group activity in one class to a paired activity in another because she thought the students could "get more done, when it is just the two of them."

*Changes in Content Knowledge* may have occurred occasionally, but it was hard to differentiate between mistakes that were made due to lack of knowledge and mistakes due to anxiety or distraction. Robert, a student teacher, was working with a geometry class when we covered lines drawn in a triangle. He was going through a proof when he incorrectly identified a congruence theorem, and a student questioned him on it. Robert immediately recognized his mistake and corrected it. During our discussion he indicated that next time he would get it right, which he did in all subsequent classes. However, it is hard to say that he learned something in this experience, as he claimed that he knew it the first time but was going too fast.

The final area of short-term change that I observed was to the student teachers *Pedagogical Content Knowledge*. At times this occurred through our discussion and prompts by me as the mentor. When Norma was teaching students how to factor quadratics when  $a \neq 1$  she began by using a method that had students rewrite the trinomial  $ax^2 + bx + c$  as  $x^2 + bx + a \cdot c$  and factor the new expression, removing an “ $a$ ” from one of the binomials at the end. While this method produced valid answers, several students expressed confusion to Norma as to why it worked. She responded that “You can check that it does”, yet in our conversation after the lesson she expressed concern that she didn’t have a better answer for them. I asked if she knew other methods for factoring and she said this was how she had been taught and never thought to question it before. Norma began looking for other ways to factor and, with my encouragement, figured out another method that she taught the students the next day.

Other changes to *Pedagogical Content Knowledge* came entirely from the student teachers’ reflection on their experience. When teaching a lesson on the concept of locus, Janet presented a problem (see Figure 1) asking for the set of points that are the same length as  $AB$  away from  $A$ . After students attempted to solve it, Janet presented her solution. In the 1<sup>st</sup> class this involved drawing two points  $A$  and  $B$ , drawing a line segment between  $A$  and  $B$ , and drawing several other line segments from  $A$  with the same length. In the last class points  $A$  and  $B$  were drawn, but a dotted line segment was drawn from  $A$  to  $B$ , and similar dotted line segments were drawn from  $A$ .

Figure 1: A and B line segment drawings



When I asked Janet how the lesson went she noted that in the first class, students felt that everything drawn, including the line segments, were part of the locus. In later classes the drawing was changed so that students understood that only those points indicated were part of the locus.

These changes were also reflected in the student teacher's ability to anticipate student misconceptions. Several times a mistake that students made in one class were incorporated into the lesson given to the next. In an Algebra class Janet asked students to solve  $(x + 2)^2 - 4 = 12$ . In the first class a student gave the answer as  $\sqrt{12}$ . When she said this is incorrect, several other students said they got the same answer. After she looked at several of their papers, Janet informed them that they distributed incorrectly, and showed them the correct way to solve it. On reflection Janet said she needed to do a better job of explaining how to solve the problem, so in the next class she preemptively asked students if they were multiplying the binomial, and presented an alternate method of solving the problem.

*Long-Term Changes.* There was some evidence of more long-term changes that occurred among my student teachers, though the pedagogical ones seem to have less to do with learning new ideas than comfort in trying out new things. Janet demonstrated an overall shift from providing the majority of the explanations in the beginning of her student teaching to requiring more student explanations near the end. Some of this was due to her overall comfort level with the students, with her becoming more trusting of their answers and discussions as the semester progressed. However, the more important reason for the change was her desire for student understanding and accountability, which could fall into Shulman's *Knowledge of Educational Ends*. In the first lesson of the first day, Janet presented all of the explanations for the warm-up and most of them during the lesson. When asked about this, she explained, "I guess I didn't really have an evaluation packet (process). I just thought that it might take a little bit longer if they drew all of them, so I

decided to draw some of them.” A week later when planning an activity, she expressed a desire to have more student involvement, saying, “I want to assign...a kid to come up so that at least some of them are really being accountable.” Three weeks later she had students coming to the board to answer other students’ questions. She said on reflection that for the students, “It’s not the questions, it’s the concepts” that they need to master, and them sharing ideas will help them master them. Janet not only changed what she was doing pedagogically, but also seemed to show a change in her understanding of the value of the activities she had planned.

The other long-term change had to do with *Understanding of Students*. At the beginning of Norma’s time in my class we spent a lot of time discussing what individual students had done in class and how she could modify their behavior. By the end of the semester our discussion had changed to examining why they were behaving a certain way and how the structure of the classroom affected student behavior. A student mentioned in the beginning as “driving me crazy” changed to being a student who “I think ... is a little bit self-conscious, so maybe he is a little bit comfortable not in the front of the whole class.”

All of the student teachers and interns that I have worked with exhibited growth during the process, but some showed more than others. While all were willing to discuss with me what had happened and what they would do differently, not all exhibited the same level of willingness to question or change what they did. In geometry class, Robert introduced the concept of the altitude of a triangle by hanging a large plum-bob from the ceiling in the front of the room. He explained that the altitude has similar properties, hanging straight down from the vertex to the opposite side. When students were asked to draw the altitudes for their notes most had a general idea, but their drawings showed a lack of understanding. When I asked how he thought the lesson went Robert expressed frustration that the students “didn’t get it” and “they didn’t seem to pay attention.” I asked him what he could do differently to help them understand it and pay attention, but he said the problem was they weren’t trying hard enough, and he didn’t think he could change that. Although he understood there was a problem, his attachment to this instructional-aid limited his ability to question its usefulness or look for other methods.

## Conclusion

The present study demonstrates a model for analyzing students’ reflection as a tool for examining student teacher learning and for teacher learning in general using the Shulman (1987) framework. It is most effective when both mentor and mentee are willing to engage in reflective practice, discuss reflections on a regular basis, and make changes to their practice based on reflection. This method uncovered learning that occurred in the areas of *Pedagogy, Pedagogical Content Knowledge, Understanding of Students* and *Knowledge of Educational Ends*. This learning is observable in both the short term and on a more long-

term basis. Because of the limited number of participants (two student teachers and one intern), settings (one mentor teacher) and the fact that all were mathematics education majors, it is unknown how common these changes would be among student teachers in other settings working in other subjects.

Beyond the results of this study, the method of having mentor teachers reflect with their student teachers and document the results seems like a powerful tool (Frick, Carl, & Beets, 2010). Many researchers have lamented our lack of understanding regarding what is gained from the student teaching experience (Elliot, 1995; Greenberg, Pomerance, & Walsh, 2011; Levine, 2006). Roscoe and Butt (2010) explain that in teacher education the curriculum has been adjusted based on current research, but the assessments used to evaluate the student teachers performance has often lagged behind. Many mentor teachers feel that their primary duty is to get out of the student teachers way (Leatham & Peterson, 2009), yet they are already being asked to evaluate their progress and document their strengths and weaknesses. Asking them to engage in a more structured reflection with their student teachers could lead to powerful results. Duncan's (1994) and Boyd's (2009) concerns about the difficulty of identifying changes and learning among pre-service teachers could be dealt with by taking large samples and identifying a priori which people held which view.

This process of student teachers' reflecting on their practices and making changes to their methods was not necessarily an easy one. One of the student teachers mentioned that in her previous placement as an intern prior to student teaching everything had been prescribed for her. When she needed to teach a lesson for one of her classes, she was told not only what to teach but how to do it. In that setting, unless classes were given in a lecture format, with students taking notes and working individually, it was frowned upon. I asked why she asked to be assigned to a different location for her student teaching. She was familiar with that setting, and I said that most people would have thought that it would be easier to go back there, where everything was the same and you didn't have to think about what you were doing. She thought about it for a minute. "Yes," she said, "it would be easier, if you didn't really care."

As educators we have a responsibility to ensure that our students are learning the content and developing skills and abilities that will assist them in the future. Mentor teachers have an additional role in ensuring that future teachers gain the knowledge and skills they need to become effective teachers. Small-scale studies of changes that individuals make can be useful in developing new models of teacher development and growth. By engaging with student teachers in reflection, and using that as a tool to study their development we can improve education not only for our own classes but for future student as well.

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