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About the Journal

Founded in 2013, the Journal of Teacher Action Research (ISSN: 2332-2233) is a peer-reviewed online journal indexed with EBSCO that seeks practical research that can be implemented in Pre-Kindergarten through Post-Secondary classrooms. The primary function of this journal is to provide classroom teachers and researchers a means for sharing classroom practices.

The journal accepts articles for peer-review that describe classroom practice which positively impacts student learning. We define teacher action research as teachers (at all levels) studying their practice and/or their students' learning in a methodical way in order to inform classroom practice. Articles submitted to the journal should demonstrate an action research focus with intent to improve the author's practice.

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PROCEDURAL CHECKLIST INTERVENTION TO INCREASE MATH ASSIGNMENT COMPLETION AMONG STUDENTS WITH HIGH INCIDENCE DISABILITIES

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Abstract Federal law mandates that students with disabilities be educated in the least restrictive environment to promote equal access to the general education curriculum. Students with disabilities who demonstrate challenging behaviors in general education classrooms may present general education teachers with unique challenges if the teachers are unprepared to differentiate instruction for these students. This study investigated the effects of a procedural checklist on rates of task completion among three students with high incidence disabilities who exhibited significant challenging behavior in a general education classroom setting. The intervention was correlated with increased rates of task completion for the three participants.

Keywords: teacher action research, special education, high incident disabilities, self-monitoring, behavior management

Introduction

Federal legislation mandates that students with disabilities be educated in the least restrictive environment (IDEA, 2004); therefore, an increasing number of students with disabilities are being educated in general education settings (Carson, 2015; Kurth, Lyon, & Shogren, 2015). This scenario can be challenging for general education teachers who may find it difficult to differentiate instruction for these students. In addition to differentiating academic content, many teachers struggle to implement effective behavior management strategies for students with disabilities who exhibit challenging behaviors (Kostewicz, Ruhl, & Kubina, 2008).

Literature Review

Students with disabilities who exhibit challenging behaviors demonstrate low levels of high school completion and low grade point averages (Sutherland & Singh, 2004; Wagner, 1995; Wood & Cronin, 1999). Students who continually disrupt class or distract other students from completing their assignments frequently encounter disciplinary consequences: being sent to the discipline office, suspension, expulsion, or placement at alternative learning settings (Gable, Bullock, & Evans, 2006). Not only are suspension and expulsion exclusionary disciplinary practices, they fail to promote prosocial decision making (Cameron & Sheppard, 2006). Furthermore, the measures may not dissuade the students from engaging in such behaviors (Maag, 2002).

When students with disabilities are placed in restrictive settings due to their actions, they do not have adequate access to the general education curriculum and have diminished opportunities to engage with peers without disabilities (Turnbull, Huerta, & Stowe, 2006). The lack of academic and social resources may result in a substandard education with increased rates of course failure and poor test scores (Kochhar-Bryant & Greene, 2009). The removal of the students from their typical classrooms decreases their academic performance because they spend less time receiving rigorous academic instruction (McDaniel & Flower, 2015). Research suggests that students with challenging behaviors who are not taught how to manage their behavior in a systematic manner are more likely to be unsuccessful in academic settings (Nelson, Benner, Lane, & Smith, 2004; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004).

Students who exhibit challenging behaviors may demonstrate these behaviors as a protective shield from the constant academic failures they encounter (Gable et al. 2006). The behaviors may be displayed to conceal students' frustration and difficulty in comprehending academic content and to avoid being labeled derogatory terms due to failing master academic tasks. Therefore, the development and implementation of procedures that support academic success and subsequently minimize displays of challenging behaviors are essential (Denune, Hawkins, Donovan, McCoy, Hall, & Moeder, 2015).

Teachers develop and implement classroom management procedures and strategies to create positive learning environments and to support students in reaching their academic potential (Denune et al., 2015; Kostewicz et al., 2008). For example, a token economy system is a classroom management strategy in which students are given tokens when desired behaviors are demonstrated. The tokens are later exchanged for reinforcements (e.g., food, toys) or classroom privileges (e.g., computer time; Alberto & Troutman, 2006). Educators must provide clear expectations and utilize strategies consistently to minimize behavioral problems.

Teachers must have access to proactive strategies to assist students with disabilities who demonstrate challenging behaviors to support their academic progress (Houchens, Zhang, Davis, Niu, Chon, & Miller, 2017). Research indicates that an effective way to promote academic proficiency among students with disabilities is to implement self-monitoring strategies (SMSs; Amato-Zech, Hoff, & Doepke, 2006; Menzies, Lane, & Lee, 2009; Sheffield & Waller, 2010). SMSs can be individualized to reinforce positive behavior, chunk classroom assignments into manageable pieces, encourage on-task behavior, and/or provide students with breaks after designated periods of task engagement.

Self-Monitoring Strategies (SMS). The implementation of SMSs can improve students' behavior and increase academic progression (Shulze, 2016). Self-management encompasses several strategies that assist students in managing and shaping their own behavior (Cooper, Heron, & Heward, 2007). The implementation of SMSs involves several components that are essential when teaching students how to monitor and change their behavior. The primary objective of SMSs is to teach students how to assess, observe, and identify gradual changes in current behavior that correlates to the target behavior (Shulze, 2016). SMSs are one type of evidence-based intervention that can help students increase task completion and decrease incidents of challenging behavior.

SMSs incorporate multi-step procedures that teach students to record when a behavior does or does not occur (Mace, Belfiore, & Hutchinson, 2001). A SMS requires the student to record their performance on a target behavior based on pre-determined definitions and criteria (Rafferty & Raimondi, 2010). The teacher and the student work collaboratively to set goals related to a target behavior (Menzies et al., 2009). For example, the teacher and student may determine what is an acceptable number of undesired behavior occurrences that the student can demonstrate and what reinforcements will be implemented for meeting the goal. The SMS assists the student in being aware of the challenging behaviors. SMSs have been effective for students with many different categories of disabilities and for students ranging from pre-school age to high school age (Lewis, Hudson, Richter, & Johnson, 2004). The use of an SMS is beneficial for students that exhibit challenging behaviors because the students learn to be self-reliant and responsible for their own actions. Also, students can generalize and maintain desired levels of behaviors in the general education classroom when they use SMSs (Lewis et al., 2004; McConnell, 1999).

Research supports that self-monitoring interventions are effective in reducing a variety of challenging behaviors. For example, SMSs have been used to address both disruptive and off-task behaviors (Guereasko-Moore, DuPaul, & White, 2007; Levendoski & Cartledge, 2000), engagement in direct instruction (Brooks, Todd, Tofflemoyer, & Horner, 2003), and following class rules (Agran, Sinclair, Alper, Cavin, Wehmeyer, & Hughes, 2005). SMSs have also been associated with improvements in on-task behavior (Smith & Sugai, 2000; Stewart

& McLaughlin, 1992), increases in work completion (Brooks et al., 2003), and decreases in talking out (Smith & Sugai, 2000). If a student is exhibiting challenging behaviors, such as being off-task, an SMS can be used to guide the student through completing independent work or remaining focused during direct instruction. SMSs are evidence-based interventions that can be implemented in the general education setting to increase rates of assignment completion for students with challenging behaviors (Amato-Zech et al., 2006; Menzies et al., 2009; Sheffield & Waller, 2010).

Methodology

The current study examined whether a specific type of SMS, a procedural checklist (PC), was correlated with increases in rates of assignment completion in a general education math classroom. Participants were three students with high incidence disabilities who demonstrated challenging behaviors. The study sought to determine if the percentage of task completion of classroom assignments given to the participants in the math setting increased upon implementation and use of the PC.

Participants. The participants were three students receiving special education services at a public high school in the southwestern region of the United States. All participants were in the twelfth grade and ranged in age from 17 to 18 years old. One participant qualified for special education services under the category of specific learning disability (SLD). The second participant qualified for special education services under the category of multiple disabilities (MD) with a speech or language impairment (SLI). The final participant qualified for special education services under the category of other health impairment (OHI) with a secondary disability of SLD. All participants attended general education classes for the entirety of the school day. Participants were selected for the study because they demonstrated behaviors that impeded their progression regarding assignment completion, and all participants were failing their math class.

Participants attended a math class daily for 55 minutes. The model of academic instruction utilized at this high school is referred to as the “push-in” model. In this model, the special education teacher, who is the researcher, provided academic support in the general education setting, rather than providing educational services to students with disabilities in more restrictive, segregated settings. The special education teacher’s role was to differentiate instruction for students receiving special education services and to deliver explicit direct instruction in small groups to students who needed extra assistance with the mathematics concepts being taught. The special education teacher will be referred to as “the researcher” for the duration of this manuscript.

Leonel. Leonel demonstrated an intelligence quotient (IQ) score of 83 on the Kaufman Brief Intelligence Test-Second Edition (Kaufman & Kaufman, 2004), which is considered below

average in cognitive ability. Leonel scored a standard score of 61 on the Woodcock Johnson Test of Achievement Form B (Woodcock, McGrew, & Mather, 2001) in broad mathematics which is considered below average on math calculation skills, problem solving, and the ability to solve simple addition, subtraction, and multiplication facts quickly. Leonel qualified for special education services under the category of OHI. The researcher attended Leonel's math course (Consumer Math) three times a week for approximately 30 minutes each class. Leonel demonstrated difficulty remaining on-task and following directions to solve math problems. Prior to the introduction of the PC, Leonel got out of his seat, conversed with neighbors, used his cell phone without permission, and often directed profanity at the teacher. Leonel was hyperactive and appeared to enjoy receiving attention by distracting his peers. For example, Leonel randomly called out names of his friends, took pictures of himself, and left his chair as the teacher was delivering direct instruction.

Hannah. Hannah demonstrated an IQ score of 92 on the Test of Nonverbal Intelligence-Fourth Edition (Brown, Sherbenou, & Johnsen, 2010), which is considered in the average range when compared to the sample group of peers her age. Hannah scored a standard score of 68 on the Woodcock Johnson Test of Achievement Form C (Woodcock et al. 2001) in broad mathematics, which is considered below average on math calculation skills, problem solving, and the ability to solve simple addition, subtraction, and multiplication facts quickly. Hannah qualified for special education services under the category of MD with a secondary disability in the category of SLI. The researcher attended Hannah's Algebra 1 class three times a week for approximately 30 minutes each class. Prior to the introduction of the PC, Hannah easily grew distracted in-class. She averted eye contact from her worksheet and stared at the wall for long periods of time during lectures and independent work. She tapped her feet and fidgeted with her hair almost continuously when she worked on problems she did not understand. Hannah resisted help when approached by the researcher during independent work. If the researcher offered her assistance with a problem, she stated that she understood what she was doing, even though her responses to the problems were incorrect. Hannah was a quiet student and refrained from interacting with her peers.

Jose. Jose demonstrated an IQ score of 90 on the Kaufman Brief Intelligence Test-2nd Edition (Kaufman & Kaufman, 2004), which is in the average range of cognitive ability when compared to other students of the same age. Jose scored a standard score of 74 in the Woodcock Johnson Test of Achievement Form C (Woodcock et al., 2001) in broad mathematics, which is considered below average on math calculation skills, problem solving, and the ability to solve simple addition, subtraction, and multiplication facts quickly. Jose qualified for special education services under the category of SLD. The researcher attended Jose's Algebra 1 class at least three times a week for approximately 30 minutes per class. In his math class, Jose engaged in a significant amount of off-task conversation with his peers and frequently requested permission to use the restroom. Jose qualified for special

education services under the category of SLD in mathematics; therefore, completing basic mathematical procedures to solve problems was difficult for Jose. Jose took notes during lectures; however, he made it appear to the teacher that he was engaged in assignments even though he was not. For example, as the teacher was delivering direct instruction, Jose often appeared to pay attention by simulating that he was reading the class textbook. Instead, he would be drawing behind the worksheet. Also, when the teacher gave Jose an assignment and he opened his math book, he often became distracted and preferred to look at his drawings rather than engaging in the math work.

Setting. Baseline and intervention data were collected in the participants' math classrooms. Leonel's data were collected in his Consumer Math class, while Hannah's and Jose's data were collected in their Algebra 1 class. On average, there were a total of 20 students in each math class. The students' grade levels in the classes ranged between 10^{th} and 12^{th} grades. The general education teacher implemented an explicit direct instruction teaching method. The students were expected to take notes in a notebook when explicit direct instruction was being implemented, and independent work was assigned approximately four times per week. The work was to be completed independently at the students' assigned seats. The students were expected to show the procedures regarding how they solved each problem on a separate sheet of paper. All math worksheets given to students were curriculum resources from the textbook, *AGS Math for the World of Work* (Harmeyer, 2002). The worksheets correlated to the day's explicit direct instruction lesson. Prior to the start of class, the students were required to turn in the previous night's homework in a designated basket. Approximately every three weeks, the general education teacher gave each student a progress report that indicated the student's overall grade and missing assignments. If a student did not submit an assignment, the teacher assigned the student mandatory after-school disciplinary detention.

Intervention. The PC indicated specific steps participants needed to complete to solve problems correctly on the math worksheets. The PCs were created on three by five-inch index cards. Titles related to the concepts being taught each day were printed on the top of the cards. For example, if the concept being taught was finding the marked down value of an item, the title would be *Discount and Sale Price*. Below the title were key words and corresponding definitions. If the students were learning about discounts, the PC defined what the word *discount* meant. Beneath the vocabulary definition was an example of a problem from the worksheet. At the bottom of the card were two sections. On the left was a section labeled *Steps*. This section demonstrated the steps needed to solve the example problem. On the right was a section labeled *Did I do this step*? This section directed the participants to record a check mark as they completed each step needed to solve the problem. For example, if the participant followed steps one through three, a check mark would be marked next to those corresponding steps. The back of the index card illustrated another sample problem corresponding to a problem on the assigned worksheet. Thus, each

PC illustrated two example problems that required the use of the same steps. Since the math concepts taught by the teacher changed according to the scope and sequence of the curriculum, the PCs also changed to correlate with what was being taught. The following are sample titles and concepts that were illustrated on the PCs: *Simple Interest*, *Solving Algebraic Expressions*, *One-Step Equations*, and *Combining Like Terms.*

The researcher created the PCs several days in advance of each explicit direct instruction lesson. The general education teacher gave in-class assignments almost daily, and the researcher gave the PC to the participants before they entered the classroom. The participants used the PC with all independent work. The PCs were designed to simplify math concepts into individual steps that were presented in manageable increments for the participants. Rather than decreasing the amount of problems given to the participants on the in-class worksheets, the PCs were implemented to assist the participants in increasing their overall task completion percentages by simplifying the problems into individual steps. At the end of each session, participants returned the PCs to the researcher. In addition to the PC, the researcher and the three participants created a unique hand gesture that participants used as a signal to notify the researcher if they had questions or needed assistance. For example, a participant displaying a thumb up on the desk signaled to the researcher that the participant needed help.

Procedure. Before participants began using the PCs, the researcher met with the participants individually to discuss how PCs are used as a SMS. The researcher communicated to the participants that if they used the PC, their overall task completion percentage would likely increase. The researcher explained to the participants how the PCs were to be utilized by role-playing how the PC worked with each participant individually. The researcher engaged in role-play with all participants until they could use the PC with 100% accuracy. During this time, the participants were encouraged to ask questions about the PC. The participants were excited during the role-play because they understood the purpose of the PC. The researcher also explained to the participants that there would be a space on the side of each step that allowed them to place a checkmark once they completed that step. The researcher also reminded the participants of the hand gesture and that using the gesture notified the researcher to approach the participants because they needed help or had a question. The researcher practiced the hand gesture with all participants to ensure they were comfortable using it.

The researcher solicited input regarding the development of the PCs from the participants. The participants wanted the checklist to be the size of an index card so that their peers in the general education setting would not be able to determine they were receiving additional assistance. As a result, the PCs were created on small index cards. Since the math concepts presented throughout the research period changed, the researcher created checklists that corresponded to each concept that was taught.

Baseline and intervention data were collected by the researcher during the participants' math classes. During the classes, the participants were expected to complete worksheets that corresponded to the information presented during that day's math lesson. The problems on the math worksheets consisted of constructed responses or open response questions. For example, for constructed responses, the students had to obtain a specific answer to a math problem while an open response problem had multiple correct answers. To obtain the correct answer, participants had to follow specific steps; this was challenging for the participants. The number of questions on the worksheets varied from four to 30 questions. The study took place over 10 weeks. Prior to the introduction of the PC, the researcher collected data three times per week to determine baselines regarding the participants' rates of assignment completion.

The researcher maintained communication with the participants' general education math teachers to discuss the content taught and the assigned independent work. Since the researcher was the special education teacher in the participants' math classes, the researcher observed the behavior demonstrated by the participants, took notes regarding the assigned work, and recorded participants' percentages of task completion. The researcher calculated the percentage of task completion by dividing the amount of problems completed by the total amount of problems on the worksheet.

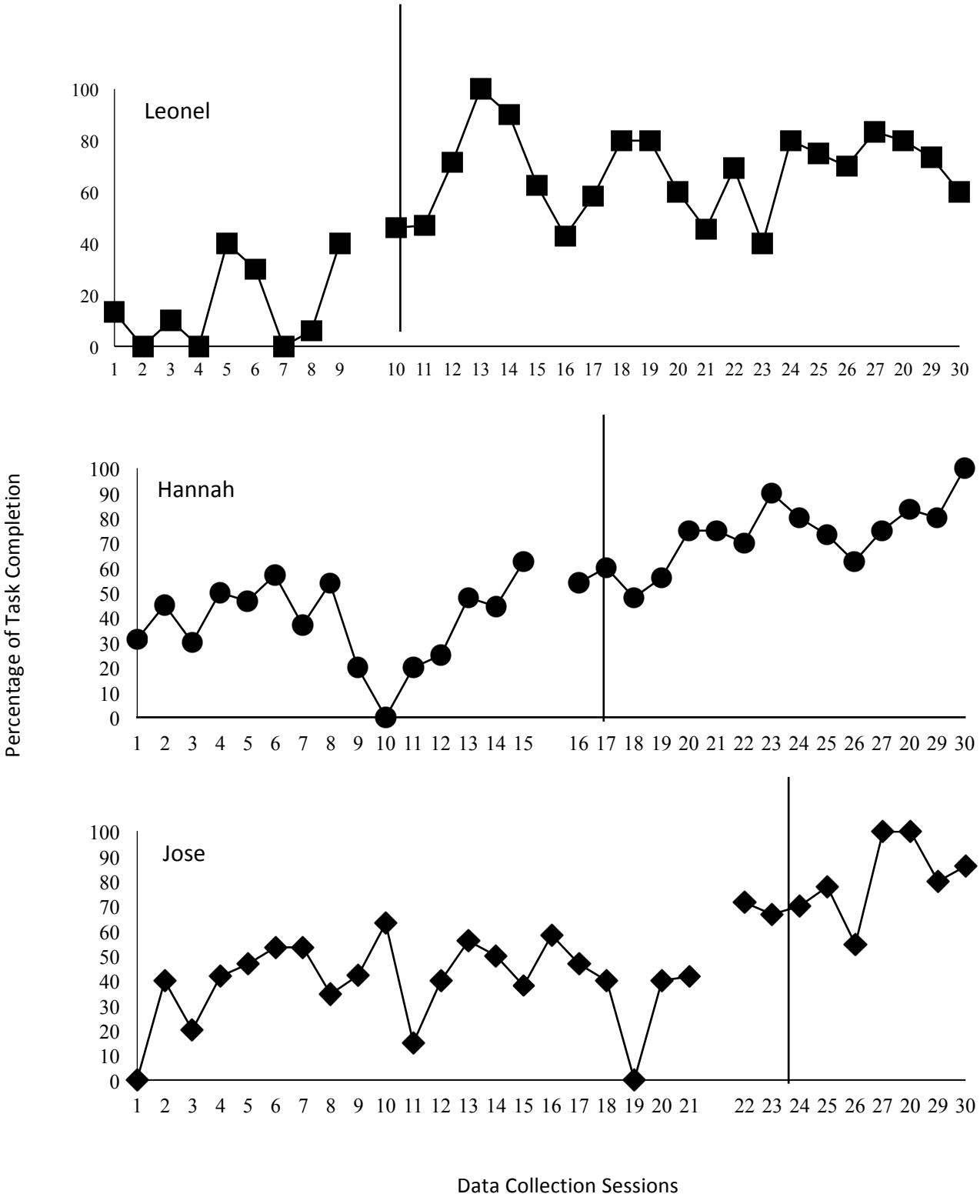
Data Analysis. The researcher implemented a multiple baseline with staggered start times research design to evaluate the effectiveness of the PC. Baseline data was collected for all participants during weeks one through three. During the fourth, the intervention was introduced to Leonel, and baseline collection continued with the other two participants. During the sixth week, the implementation of the intervention was introduced to the Hannah and baseline data continued with Jose. During week eight, the intervention was introduced to the Jose. The researcher collected both baseline and intervention data three times per week for throughout the study to gain determine participants' rates of assignment completion. The researcher compared baseline and intervention data to determine if there may be a correlation between the implementation of the PC and the percentage of task completion for the participants.

Results

The purpose of the study was to determine whether the use of PCs was correlated with increases in task completion among students with high incidence disabilities who demonstrated challenging behaviors in a general education math classroom. The researcher collected in-class math worksheets to determine the participants' assignment completion percentages. During the intervention period, participants used PCs on independent work to assist them in completing problems on math worksheets. The resulting data analysis

suggests that the PC intervention resulted in increased percentages of assignment completion for the three participants. The results are displayed in Figure 1.

Figure 1. Completion Percentages During Sessions



Note. The vertical lines designate when the intervention was implemented for each participant.

Leonel. During the baseline period, Leonel completed, on average, 17% of his classwork. Anecdotal notes revealed that on one occasion, Leonel got out of his chair and collected the class calculators even though the teacher instructed him not to do so. During session seven, when the general education teacher asked him to attend to his assigned work, Leonel refused to follow directions and directed profanity towards the teacher.

Initially, Leonel appeared to be excited to be the only student in the classroom to have a PC. During the first week of intervention, Leonel's overall attentiveness to the assignment increased. Leonel whispered to himself the steps that were illustrated on the checklist as he solved the math problems. When Leonel observed his peers struggling to complete a task, he shared his PC and taught them how to follow the steps needed to complete the problems. During session 13, Leonel began demonstrating challenging behaviors that distracted him during the assignments. During session 15, the researcher noted that the subject leaned on the air conditioning unit and engaged in off-task behavior. The researcher redirected Leonel to prevent him from engaging in such behavior and encouraged him to do his work. Leonel was given a two-minute break to talk to his peers when he completed a certain amount of questions from the worksheet.

During sessions 16 through 19, Leonel's percentage of assignment completion increased to approximately 80%. During this period, Leonel asked the general education teacher for his current grade on the class. Shortly after the teacher informed Leonel that he was at risk of failing the class because failure to submit class assignments, he promptly approached the researcher and asked him to develop PCs that correlated to the subject matter presented on the missing assignments. The researcher noted that Leonel copied the PC steps to solve a problem onto a separate page and took it home. During sessions 23 to 30, Leonel completed approximately 83% of his assignments with the use of the PC coupled with two minute breaks.

Hannah. During the baseline period Hannah completed, on average, 40% of her assignments. During session 10, Hannah completed 0% of the assignment. On that day, she drew two anime figures with flowers around them on the math worksheet. When the teacher saw that she did not complete her work that day, she was given a detention, and her parents were notified. After conferring with the parents, they informed the researcher that if Hannah’s grades began to increase, and if she completed her assigned work, they would take her to Disneyland. Between session 10 to 15 during baseline, Hannah's task completion increased to approximately 65%.

When Hannah received her PC during the intervention period, she immediately put it away in her bag. It appeared that she did not want her peers to see the PC. The researcher spoke to Hannah after the first intervention session and developed a system that motivated her to use the PC. The participant and researcher came to an agreement that if Hannah completed

problems in increments of three, she would be given two minutes to draw on the PC. During sessions 16 through 23, Hannah's percentage of task completion increased to 90%.

Jose. During the baseline period, Jose got out of his seat to talk to his peers. During sessions one through 10, Jose completed up to 63% of his assignment. During Session 11, the general education teacher moved Jose from the front to the back of the room. Jose appeared to initiate conversation more than usual with his new female peer. Jose's percentage of task completion dropped from approximately 60% to 15% from session 18 to session 19. When Jose was introduced to his PC, the he began to complete his work and checked off the steps needed to solve the problems on the worksheet.

Prior to receiving the PC, the researcher met with Jose and encouraged him to put forth more effort. As a reward for effort and completing assignments, the researcher allowed the participant to stand up and walk around the classroom for one minute. When Jose received the PC, he appeared to be more motivated to complete his assignments. From the last session of baseline to the first session of the intervention, Jose's percentage of task completion increased approximately 40%. Upon the completion of session 26, the general education teacher informed Jose that as a reward for completing assignments, he would be permitted to choose his seat. Between sessions 26 to 27, Jose's percentage of task completion increased to 100%. Though Jose struggled during some math concepts, it appeared that the implementation of the PC, with positive reinforcers given after assignment completion, assisted him with the breakdown of math problems into sequential steps. Jose checked off the steps delineated on the PC after he completed each task.

Discussion

The introduction of PCs with positive reinforcers were correlated with increases in task completion rate among three high school students with high incidence disabilities who exhibited significant challenging behaviors in their general education math classes. The participants were taught how to use PCs by the researcher prior to the implementation of the intervention. Using a multiple baseline with staggered start times research design, participants began utilizing the intervention at different time periods during the study. The results of this study suggest that the PC intervention along with positive reinforcers were effective in helping the participants break down each math problem into individual steps to increase task completion.

The PCs corresponded to direct instruction math concepts taught by the general education teacher. The participants were directed to complete individual steps, as outlined on the PC to solve the math problems. The PCs that were implemented in this study can be generalized to other academic contents by adjusting the steps needed to complete assignments in other content areas. For example, the PCs in the current study provided

vocabulary and delineated steps to solve sample math problems from the participants' math worksheets. For PCs to be utilized to another academic area, the PC would have to demonstrate an example that aligns with the subject matter.

Confounding variables may have influenced Hannah's results. During session 10, Hannah chose not to complete the in-class assignment. The general education teacher contacted Hannah's parents and informed them that she would be given a detention. After speaking to Hannah's parents, they informed the researcher that they made an agreement with Hannah. They stated that if Hannah completed her work, and did not receive another detention, they would take her to Disneyland as a reward. According to Figure 1, Hannah's assignment completion percentage began increasing after the Disneyland agreement had been established, when the intervention had not yet been introduced. Even though her percentage of task completion continued to increase after the intervention was implemented, the confounding factors of Disneyland and the incentive of free time to draw may have influenced Hannah's results.

The results of this study support the findings of previous research suggesting that when students who exhibit significant challenging behaviors learn to use SMSs, there is an increase in task completion (Sheffield & Waller, 2010; Shulze, 2016; Smith & Sugai, 2000). According to Alter (2012), when teachers who use a process-oriented instructional approach and outline specific steps to solve a problem, students develop basic mathematical computation skills and high level reasoning. The PC helped students solve math problems by breaking down each problem into individual steps, enabling the participants to complete tasks independently and decrease reliance upon teachers and peers (Amato-Zech et al., 2006).

Limitations

The limitations of the study pertain to data collection procedures. The researcher allocated time with the general education teacher to collect data for both baseline and intervention periods three times a week. However, there was an inconsistency in the data collection due to the general education teacher not implementing any independent work when the researcher had intended to collect data. For example, there were days in which the teacher reviewed for an exam, introduced a new mathematical concept using explicit direct instruction, or administered an exam. Due to the researcher not being able to collect data a minimum of three times a week for two weeks due to these factors, the researcher extended the study. The extra two weeks allocated to the study appear to have resulted in Leonel losing interest in following the PC. Leonel mentioned to the researcher that he was tired of following the PC and that he was ready to graduate from high school. The researcher encouraged Leonel to continue using the PC in the class due to his grade gradually rising. During the last two weeks of the study, Leonel began to exhibit behaviors similar to those displayed during baseline.

Prior to the administration of the PC, the researcher met with the participants and reviewed the procedures that detailed how the PC was a tool to be used during independent work. During the middle of the study, both a Thanksgiving and a winter break occurred, which totaled four weeks of participants being away from school. This period was embedded in the school calendar before the study began; therefore, the researcher had no control of this occurring. The inconsistency of the data collection due to these periods may have affected the percentages of task-completion. The participants had to be reminded about the PC because although the researcher continued to collect data after school resumed, the participants appeared to have forgotten how to use the PC. The percentage of task completion may have dropped due to the participants' time away from using the PC.

Another limitation to the current study is that data collection did not parse out the positive supports that were implemented in conjunction with participants' full or partial assignment completion. For example, the data collected does not determine if the PC alone influenced the participants' rates of assignment completion, or if additional incentives (time to draw, time to socialize with peers, option to choose preferred seat) given at various increments of assignment completion may have impacted the participants' rates of assignment completion. Despite these limitations, a significant amount of information was obtained from this study. The study showed that the implementation of a PC paired with positive reinforcement was correlated with increases in overall percentages of task completion.

Conclusion

The current study illustrates that the participants learned how to use a PC paired with positive reinforcement and their rates of assignment completion increased in a general education math setting. There are many possibilities for future research related to the current study. For example, the current study could be replicated with parameters regarding the amount of questions on the worksheets and time allocated to complete work to establish consistency among all participants for the entire duration of the study. The current study could also be replicated with data collection also focusing on positive reinforcements to accompany the PCs and accuracy of tasks completed. Task accuracy should be studied to determine if the implementation of PCs improves participants' abilities to answer questions correctly. Also, studying the effects of the use of PCs in other subject areas in the high school setting is warranted. Such research could help determine if students can be taught to generalize the use of PCs across academic areas. The use of a PC by students with high incidence disabilities who exhibit significant challenging behaviors promotes self-discipline and responsibility. To meet the unique needs of all learners, teachers should consistently seek evidence-based tools and strategies to support students' academic and behavioral needs.

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PARALLEL CONFERENCING: CO-VIEWING AND CO-ASSESSING TEACHER CANDIDATES' VIDEOS

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Abstract The purpose of this action research was to examine an alternative method of observing teacher candidate's instructional practices through the use of video and one-to-one conferencing between the university field instructor and teacher candidate. We developed an innovative strategy to field instruction that worked towards solving a two-part problem (a) managing a large workload and (b) preparing candidates for video-based reflection. The mixed-research approach included elements of self-study and practitioner research to identify the challenges and benefits of co-viewing video, the topics discussed during co-viewing, and the initiators of the reflective discussions. Several challenges and benefits of co-viewing video of practice were uncovered. Even though challenges were identified, parallel conferencing mixed with live observations was favored by teacher candidates. Discussions were focused across five themes with pupil behavior showing the most frequented topic. Initiators of the discussions equalized from the beginning of the semester to the end. Over time, the candidates began to initiate the conversations of practice. We propose that mixing parallel conferencing with live observations could function as cost effective solution to maintaining high quality field instruction.

Keywords: teacher action research, teacher candidates, video conferencing, field instruction

Introduction

In this paper, we, university-based field instructors (student teaching supervisors), examine an alternative method of conducting post-lesson observation conferences with teacher

candidates coupled with traditional field-based live observations. We have labeled our alternative method of conferences as *parallel conferencing*. *Parallel conferencing* occurs when the university-based field instructor and the teacher candidate sit together to co-view and co-evaluate a video recording of the candidate's teaching. The development of our *parallel conferencing* protocol evolved from two problems that we identified during the student teaching semester.

First, a newly implemented national teacher-licensing exam, the Education Teacher Performance Assessment (edTPA) required our candidates to record their practice and write deep reflections based on their teaching videos. Our candidates consistently struggled to purposely view and annotate their instructional videos. They did not identify evidence of effective practices or ineffective practices, nor did they reflect in meaningful ways towards the goal of improving their practice. Candidates' reflections were superficial and often focused on student behavior versus instructional decision-making or impact on pupil learning and developing understanding of content. Second, due to program restructuring university-field instructors' supervision loads doubled resulting in teacher student ratios of up to 1:24.

We knew that we needed to develop a new observation and conferencing approach to ensure that our candidates received consistent and timely feedback while maintaining the overall quality of our field instruction. Since the value of field instruction lies in the post-debriefing conference, as opposed to our silent and passive observation of lessons (Soslau, 2012), we decided to forgo the time spent observing our students, and reallocate all of our time to the instructional component of our work with candidates. Video recordings would now take the place of some, not all, of our field observations. To discern if the benefits of parallel conferencing outweighed the potential challenges, while alleviating the workload issues associated with doubling field instructors' loads, we asked the following questions:

- What are the benefits and challenges of co-viewing video recordings during one-on-one post-lesson conferences?
- What topics are most frequently discussed?
- Who initiates the topic and does the initiator role change over time?
- As a result of the study, what refinement to the parallel conferencing protocol is necessary?

Literature Review

Video for reflection. Research about preservice teacher preparation, and specifically the student teaching practicum, makes it clear that video can be used to help candidates reflect on their practice (Rich & Hannafin, 2009; Santagata & Guarino, 2011; Star & Strickland, 2008; Santagata et. al, 2007; Schepens et al, 2007; Star & Strickland, 2008; van Es & Sherin,

2008; van Es, 2009, Seidel, et al., 2013; Tripp & Rich, 2012). However, reflecting on video on one's own requires the candidate to employ a set of noticing and analysis skills that they may not have developed yet. Seidel, Blomberg, & Renkl (2013) provide evidence that structured guidance by a field instructor improved teacher candidates' abilities to notice. Teacher candidates' who learn to develop alternative interpretations of events and notice novel features of seemingly routine problems, are better able to examine pupil thinking retrospectively in ways that would be impossible to do in real time (van Es & Sherin, 2008; van Es, 2009; Sherin & van Es, 2009; Sherin, Linsenmeier, & van Es, 2009). Not only can video be used to help teach candidates learn how to notice and assess their practice, but the use of video has also been shown to motivate novice teachers to implement changes to their practice (Tripp & Rich, 2012) and engage in self-assessments firmly rooted in real problems of practice (Rich & Hannafin, 2009).

Personal Practical Knowledge and Professional Knowledge. Since this work was authentically motivated by the researchers who also served as the field instructors for the candidates in this study, we used two complementary conceptual theories; (a) professional knowledge landscape and (b) personal practical knowledge (Clandinin & Connelly, 1995; Connelly & Clandinin, 1990). To develop the parallel conferencing protocol and make sense of our data, we purposefully employed our personal practical knowledge of field instruction and post lesson observation conferencing. With a combined total of over 65 years of experience as field instructors, we know first-hand the shifts in practice that have been necessary to support our candidates and thus the professional knowledge landscape is both familiar and useful to us as we developed and carried out this study.

Context. We serve as field instructors at a mid-sized public university situated on the mid-Atlantic coast of the United States of America. All six-field instructors participated in the development and implementation of this study. Four of the field instructors are full time clinical faculty and the other two are full time professional staff. Faculty field instructors typically carry a smaller load of candidates ranging between twelve and seventeen, while full time professional staff can serve up to twenty-four candidates at a time. Two of the field instructors have terminal degrees and two instructors are currently enrolled in a doctoral program. Three field instructors graduated from the teacher preparation program that they now serve.

Our candidates complete a four-year undergraduate bachelors degree and earn two certifications (1) elementary education (2) special education or a middle school content. There were 98 candidates who a participated in the study. The majority of our candidates are female, cis-gendered, heterosexual, white, and middle to upper class. Candidates are placed in mostly suburban settings with a low percentage of pupils of color. We use the coteaching model for student teaching (Soslau, Gallo-Fox, & Scantlebury, 2018; Soslau, Kotch-Jester, Scantlebury, 2018). Coteaching ensures that the focus of the practicum is to support pupil learning while also attending to the professional learning needs of both teachers (candidates' and classroom mentor teachers').

Normally, field instructors observe and conduct post-debriefing conferences with each candidate every other week. Observations can last between 30 and 90 minutes while

debriefing conferences usually range from 45 to 60 minutes. Pre-lesson conferences are unusual, but do take place. Field instructors always provide candidates with a written record of the observation as well as any notes or feedback suggestions. Often field instructors will also provide extensive feedback on lesson plans and other candidate-generated curricular materials.

Parallel Conferencing Protocol and Procedures. All field instructors conducted live, real-time observations and conferences with their teacher candidates during the first few weeks of the twelve-week student teaching practicum. There were several reasons we made this decision. First, candidates were familiar with the process of live, real-time observations. Second, these in-person on-site meetings allowed field instructors to gain a better sense of the classroom environment and begin to build and maintain rapport with the classroom host teacher. Third, we did not want our decision making to inadvertently signal to our university administrators that we did not value live observations, causing them to cut classroom-visits as a funding priority.

For the second round of observations and conferences, all field instructors asked candidates to record 30 to 60 minutes of a lesson and prepare to co-view the lesson with their respective field instructor during a parallel conferencing session. These sessions took place during weeks four through six (of the twelve week practicum) at a location convenient to the dyad including places such as the school-practicum site, university offices, or other university location. The total time of the conference, inclusive of co-viewing, was one hour to an hour and fifteen minutes. In addition to being responsible for bringing the video clip, candidates also presented written documentation of their lesson plan, lesson materials, and student work.

Field instructors opened the parallel conference by reading from a brief script with pre-viewing prompts, which explained the procedures and created space for the candidate to ask any questions and provide any necessary background contextual information before viewing the lesson. Candidates were encouraged to pause the video when they noticed an aspect of their practice that went well, that they wished to improve, or for any other reason that they deemed necessary to discuss. Candidates were also informed that instructors would pause the video to ask probing questions and to learn more about the invisible web of decision-making that could not be seen by simply observing the candidate's instruction. Instructors used a parallel conference tracking form to take notes and collect field data about the number of times the video was paused and by whom, and which topics of conversation dominated the co-evaluation session.

Parallel Conference Protocol Prompts. When field instructors paused the video, they asked questions aimed at probing the candidates' invisible thinking such as,

- What were you thinking at this point?
- Can you share a bit about your rationale for this decision?
- I notice X … what do you notice?

Or used sentence starters such as,

- Explain why…
- Tell me about…

Later in the protocol, field instructors pushed for candidates to use evidence to evaluate the unfolding lesson. These prompts included questions such as,

- What do you notice about down time, non-instructional time?
- How are the students feeling at this point, how do you know, is that what you had hoped, why or why not?
- Can you find evidence of times when you encouraged pupil thinking?
- Does your body language match your intentions/voice?

Reflective prompts were also used and tied to candidates' evaluation of their lessons. For example,

- Were there steps, directions, materials, or other aspects of the lesson that could have been planned differently or more efficiently?
- How did your prior reflections on your lessons impact your teaching today?

Since prior research on field instruction practices pointed to the necessity of meta-conferencing, or conferencing about the value of the conference activity itself (Soslau, 2015a, 2015b), we also asked,

- What did you learn from this conference?
- What questions do you still have?

Towards the end of each conference, using what is known as temporally connected techniques (Conway, 2001) we pushed our candidates to plan for future reflection by asking,

- What will you reflect on tomorrow?
- What is the most important question you want to ask yourself?
- What is your hope for your next lesson (connected or not connected to this lesson)?

Finally, we encouraged candidates to understand that the reflective process we were engaging them in was one that they could employ on their own, during their in-service tenure. For example, we often closed our conferences with,

- How does our collaborative conferencing practice compare and contrast with your imagined reflective self-assessment process as a full time practitioner?"

Methodology

We employed a mixed research approach that would largely be considered action research (Anderson & Herr, 1999). Though we also used elements of self-study (Tidwell, Heston, & Fitzgerald, 2009), and practitioner research (Cochran-Smith & Lytle, 2009). Data were culled from our parallel conferencing notes, field notes, audio recordings of conferences,

candidate interviews, and field instructor research meeting notes. To develop the conferencing protocol, the field instruction research team met monthly to discuss the purpose and goals of parallel conferencing. They jointly developed the parallel conferencing procedure as well as the protocol, which included prompts and probes for the debriefing conference.

Once the protocol was developed, the team met throughout the semester to discuss data collection, emerging findings, and share field notes. An end-of-semester meeting was used to share field instructor perspectives. Data analysis of field notes and parallel conferencing transcripts happened iteratively since the sharing of one researcher's data and analysis influenced the data analysis of the other field instructors. For example, over time, we developed a list of codes to identify the major thematic topics that related to reasons for pausing the video during co-viewing. Data are mostly qualitative, though some frequencies were calculated to determine which topics cut across all of the field instructors' data sets.

Results

Topics Discussed. To determine the major topics discussed during parallel conferencing, field instructors coded their transcribed data. During our monthly meetings, we discussed our codes and determined which codes cut across all data sets tied to each field instructor. Table 1 includes the topics discussed during conferences with candidates.

Table 1: Topics Discussed with Explanations

Topics	Explanation
Pupil Behavior	One or more pupils is acting out and disrupting their own l the learning of those around them
Focus Pupils	A focus pupil is selected due to a predetermined learning need
Notice Some Anomaly	The teacher strays from the lesson, a number of children leave the room, or some other unplanned event transpires
Pushing for a Rationale/Justification	Attempts to uncover candidate thinking which is not readily accessible by observing candidates' behavior/practice
Identifying Points of Confusion	Noticing when children are confused by the directions, content, or some other aspect of the lesson

These topics are oft-addressed topics in the literature on novice teacher learning. Classroom management and the ability to create a learning environment where all pupils exhibit

socially desirable behaviors are incredibly difficult for new teachers. Similarly, we know that field instructors must push for candidates' rationales and justifications before attempting to provide a suggestion or giving some other type of evaluative feedback, since doing so would make all utterances predicated on the field instructors' assumptions and attributions about the candidates' intent (Soslau, 2012; 2015a).

Who hit pause more often? As aforementioned, we were also interested in learning whether candidates would take up the practice of initiating topics of conversation by self-selecting to pause the video and discuss something they noticed pertaining to their practice or internal decision making. To this end, each field instructor kept track of who "hit pause" when watching the video during all of three of their parallel conferences. Table 2 below denotes the frequencies and charts the data over time. This enabled us to track if there were any shifts in the role of initiator throughout the experience. The grayed boxes indicate a loss of data for the particular field instructor. One field instructor did not report any initiator numbers.

Table 2: Field instructor (FI) and N= Teacher Candidates (TC) related to person who "hit pause"

	Conference 1		**Conference 2**		**Conference 3**		**Totals**
	FI	TC	FI	TC	FI	TC	
FI#1 (N=24)	44	59	25	29	11	13	181
FI#2 (N=20)	67	45	58	53	20	20	263
FI#3(N=17)	54	40	11	13			118
FI#4 (N=17	53	43	41	35	9	10	191
FI#5 (N=12)	24	11	7	2			44
Totals	242	198	142	132	40	43	797

Each field instructor, regardless of the numbers of candidates they served, were the dominant participant in the beginning of the field experience. As the semester moved on, candidates began sharing the responsibility for pausing the video more equally with their field instructor during parallel conferencing. While the design of our study does not allow us to account for this shift, we posit some possibilities that can be taken up with further research. First, candidates may feel more comfortable over time, rapport may deepen between the dyad, candidates may feel a greater sense of agency as they become closer to their professional lives as inservice teachers, or field instructors may have become more adept at giving wait time and making space that allowed candidates to take more control over the co-viewing sessions. We think that this is a critically important area of study to develop, because control and a sense of agency has been shown to help candidates take

advantages of opportunities to improve their practice during field experiences (Soslau, 2015a).

Challenges – Field Instructors. During our monthly meetings we shared and compared notes about aspects of parallel conferencing that posed challenges. Often a field instructor would bring a written account of a challenge supported by a partial transcript of her/his conference with a candidate. Together, we determined thematic challenges that we faced during and upon reflection of our engagement in parallel conferencing. We have six areas of challenge that we will now explicate. All six-field instructors experienced these challenges.

Challenge 1: Feedback on the fly. First, we found it incredibly difficult to develop feedback "on the fly" or *in situ*. For years we had honed our practice as field instructors guided by procedures that had us silently observing, with ample time to collect our thoughts, before sitting with a teacher candidate to provide feedback or evaluative suggestions. Parallel conferencing did not allow for this think time and we found it difficult to respond to candidates' requests for suggestions on the spot. Overtime, we became more comfortable explaining to candidates that our goal was to guide them through a self-assessment process to evaluate their own practice using evidence from the video and from pupil work. We explained that we would send feedback and suggestions when we emailed them our notes from the conference. This challenge actually helped shift our instructional focus from giving suggestions or telling candidates how to improve, towards guiding candidates through a process and refining the reflective process alongside them.

Challenge 2: Sharing talk time. Second, we were hesitant to dominate the conversation. As evidenced in Table 2, most field instructors selected the majority of video pause points and initiated topics for discussion. Though, over time these practices were more evenly shared with candidates. During our monthly meetings we would discuss our strategies for encouraging candidates to take charge during the conferences. One field instructor required her candidate to pause the video at least twice in a given ten minute segment of footage. These artificially forced stopping points for discussion proved less than fruitful as candidates struggled to say anything meaningful during these forced stopping points. Other than providing more wait time and encouragement, we did not identify any strategies that disrupted our tendency to dominate the conference.

Challenge 3: Logistical problems analyzing group work. Third, we found it incredibly difficult to analyze a lesson that included group work. Often candidates would select a high functioning group to video record leaving the majority of the classroom out of view of the camera. This limited our ability to observe and give feedback about all learners in the classroom. Similarly, it limited candidates' abilities to reflect on the development of new understandings across all pupils. We addressed this issue by encouraging candidates to continuously move the camera from group to group or to not submit group work lessons for parallel conferencing.

Challenge 4: Coteaching with candidates. Fourth, parallel conferencing made it impossible to teach *in situ.* As previously explained, we use a coteaching model for student teaching. Coteaching makes use of all the human capital in the classroom, which often means that field instructors will assist the teachers during instruction. One field instructor reported modeling a small group for a candidate who was working with rotating groups of students. The modeling functioned as coaching *in situ* and the candidate reported the importance of seeing good practice in action as opposed to verbally discussing what could, or should, have happened. Since parallel conferencing is always a retrospective reflective activity, coaching in real time on-site and modeling practices live with real pupils is not possible.

Challenge 5: Losing contact and rapport with classroom teachers. Fifth, since parallel conferencing occurred outside of classroom time, field instructors lost the ability to maintain regular contact with the classroom teachers. These rapport-building opportunities are critical as we often draw on the same pool of classroom teachers each semester. One function of field instructors is to serve as ambassadors of the university and maintain positive relationships with our K-12 school partners. Classroom teachers may view the lack of face time as a lack of interest or worse, that we are not actually providing the necessary instruction to our candidates since we are not there to conduct live observations. Several field instructors reported clinical educators "calling them out" for not being in the classroom as much as they had been in the past. Though we explained the parallel conferencing approach to the classroom teachers, we are not confident that they perceive the benefits as outweighing the costs. Again, this is an area for future inquiry.

Challenge six: Lack of time. The final challenge noted by the research team was the amount of time allocated to viewing video footage. We found that in a one-hour conference, we only actually viewed about 15 minutes of video. Candidates became used to how long it took to debrief a single event in a given hour of instruction and began bringing video clips to our conferences having already previewed and annotated the sections that they wanted to discuss. This was a welcomed solution and one that the field instruction team was grateful that the candidates developed on their own. The previewing and annotation functioned as both a time saver, since we did not have to sit through footage that captured mundane tasks such as taking roll or passing out materials, but the annotation work also mirrored the reflective work that candidates would be accountable for when they completed their edTPA portfolios.

Challenges – Teacher Candidates. To discern the challenges that our candidates' experienced, we interviewed each candidate at the end of the student teaching practicum using an exit interview semi-structured protocol. Candidates were asked to share their perspectives on parallel conferencing and compare the practice to our traditional conferencing approach. The research team worked together to code the interview data and we identified four challenges that were thematic across the majority of our candidates. Two of these challenges could be easily addressed. First, candidates had technical difficulties with recording equipment and, secondly, they did not review or annotate their video before arriving at our parallel conference. The other two challenges were more complicated and

related back to the challenges articulated by the field instructors. Candidates reported that they were unsure as to when they should hit the pause button and they also lamented not being about to confer or consult with their field instructor during the actual lesson.

Benefits – Field Instructor. While challenges are certainly important to explore, we also wanted to learn more about the potential benefits of parallel conferencing. Field instructors gathered data through self-reflection to determine the benefits. What follows are benefits that cut across all field instructors. First, in contrast to our concern about the lack of ability to gain ample face time with classroom teachers, teachers reported that parallel conferencing was less invasive and distracting to young pupils compared to live observations. We also determined that the quality of our conversations with candidates was vastly improved. In the past, when recalling an aspect of a candidate's practice for discussion, the candidate would become defensive or simply refute that the particular event even occurred. Similarly, since candidates could see their practice, they were better able to offload the cognitive burden of remembering and could focus on the past in the "here and now."

We also determined that the grain size of events for discussion could be smaller and more meaningful. In the past some field instructors would ask candidates how they thought the lesson went and the candidate would appraise the lesson using broad strokes across the entire instructional period making comments like, "The lesson went well, the kids were engaged" or "The pacing was perfect, we finished in time for recess." The video served as an anchoring tool that tied conversations and reflections to specific teacher actions or pupils' reactions. These reflections tied to observable practices also served to improve intersubjectivity between field instructors and candidates. There was very little dispute about what had occurred and candidates and field instructors could enter conversations knowing that they were recalling events as they actually happened. Finally, the logistics of scheduling parallel conferencing were far simpler than scheduling live observations followed by face-to-face debriefing conversations. The ease of scheduling allowed us to schedule up to twelve conferences with candidates in a given week, making a single load of twenty-four candidates a manageable feat.

Benefits – Teacher Candidates. Candidates also reported benefits of parallel conferencing, which they cited as improving their capacity to notice, reflect and posit changes to their teaching practice. Interview data across participants showed a common theme of "richer noticing" which candidates attributed to the use of video. Candidates reported managing a heavy cognitive load during teaching; simultaneously juggling the need to communicate content, implement lesson plans, manage behavior, and work to collaborate with the classroom teacher. They explained that due to paying attention to multiple aspect of teaching during the act of instruction, they often missed pupil cues and did not recognize real time necessary adaptations or opportunities to improve pupil understanding. When viewing video of their practice, they could singularly focus on their teaching and pupils' reactions, which resulted in a deeper, richer ability to notice classroom interactions and provided ample opportunities for reflection on practice.

Candidates also reported that they preferred parallel conferencing because they had time to "decompress" and "process" the lesson before co-viewing and co-evaluating the lesson with their field instructor. Participants explained that it was difficult to sit with their field instructor immediately after a live observation and engage in deep meaningful reflection. Many candidates reported that their "head was spinning" and they just needed some down time and distance from the lesson to be able to analyze their teaching with a clear head.

When asked to compare the learning environment between a traditional live observation and parallel conferencing, the majority of candidates stated that parallel conferencing was less risky and they felt less pressure. For some candidates, they enjoyed being able to self-select a segment of their lesson to show their field instructor, as opposed to the field instructor viewing an entire lesson of her choice. Of course this could lead to "cherry picking" where candidates only show their best teaching episodes, missing out on opportunities to collaborate with their field instructor around a particular problem of practice. We probed candidates on this point and while some candidates admitted to only showing their best teaching, the majority of candidates purposefully selected segments of lessons that they wanted to improve, making good use of the conferencing time with their field instructor.

Finally, candidates shared that parallel conferencing boosted their sense of confidence and self-efficacy. Many candidates were able to notice positive aspects of their teaching practice while viewing the video and field instructors encouraged this by asking candidates to pause the video when they noticed something that went well and could be used in future instructional plans. The field has known for decades that student teaching can be a painful and anxiety-inducing time and opportunities to build efficacy are critical (see for example, Fuller, 1969; Gibson & Dembo, 1984; Ghaith & Shaaban, 1999; Davenport & Smetna, 2004), since a teacher's efficacy is directly related to their ability to positively impact pupil learning and emotional well-being. At the conclusion of each interview, we asked candidates if they preferred live, parallel, or a mixture of both conferencing approaches. A majority of candidates preferred parallel conferencing (55%) with the second choice being a mixed approach (33%) and less than 12% of respondents preferring live observations only (total respondents N=98).

Discussion

Revising the Parallel Conferencing Protocol. In the tradition of action research and the spirit of self-study, we have entered and remain committed to the cycle of inquiry involving the assessment of our practice, planning improvements, enacting change, and evaluating the merit of our innovations (Anderson & Herr, 1999; Mills, 2003). This study represents one full cycle of the action research process. We used the assessment phase to identify a problem, we collaborated to develop the parallel conferencing protocol, and we systematically implemented the protocol and collected data to determine if parallel conferencing was functioning to support the dual purposes of enhancing opportunities for reflection and

helping us to manage our workload. While our findings point to both benefits and challenges of parallel conferencing, we believe that the benefits are worth the pedagogical risks. However, we also acknowledge that we must use what we learned to refine and improve our field instruction practices.

As a result of our collaborative action research we have identified five necessary revisions. First, we plan to develop a second protocol to be used with candidates when exploring pupil work. Often times the content of the parallel conference was focused singularly on the video evidence of practice. While it is helpful for candidates to reflect on their enacted instruction, it is equally critical that candidates judge the merit of their lesson based on student data. Exploring pupil work enables candidates to determine which students understood the concepts and which pupils are struggling. These data are important to explore and candidates need guidance to sort through pupil work, evaluate the work against their planned learning objectives, and develop next steps including plans for enrichment and remediation. We believe that the heart of good teaching is rooted in pupil outcomes, thus we plan to use the pupil work protocol before co-viewing the video. The analysis of pupil work should be used to guide the co-viewing process by setting an intention for noticing. For example, if the pupil work showed that all students struggled to demonstrate understanding of a particular concept, then conference participants would closely analyze the segment of teaching related to that concept and work together to identify missed opportunities to improve pupil learning. Not coincidentally, this process maps exactly to a performance task on the edTPA.

Moving forward, we will now require candidates to preview and annotate their video clips before we meet to conduct the parallel conference. As aforementioned, participants began to do this of their own volition, but all candidates need to engage in this activity since it makes the co-viewing process more efficient and it provides ample practice for candidates to reflect on and annotate their own work. This second refinement necessitates the development of a scaffolding tool. We will develop guidelines to help candidates annotate their video, providing a template and suggestions for how and what to annotate.

Next, we noted a thematic challenge for our candidates related to their willingness to “hit pause” when co-viewing their lesson. Many candidates reported not knowing when to pause the video. For this reason, we will develop a list of rationales for why a candidate may choose to pause their video segment to discuss something they noticed with their field instructor. Sentence starters such as, “I noticed” and “When I … I was thinking …” or, “Here’s a point where I struggled with…” will be provided to candidates to help guide their process and encourage their active engagement in the conference. We are also considering setting a quota for the number of times candidates must pause the video during co-viewing, though we have yet to agree on an optimal number. This is difficult because some teaching events require lengthy debriefing conversations. If a candidate experiences a particularly complex event during teaching, the debriefing session could take the entire hour.

Finally, we will work together to develop a plan that allows for a mixed approach to our field instruction process. Though a majority of our candidates preferred parallel conferencing, we acknowledge that live observations carry benefits and advantages that cannot be achieved during the retrospective activity of parallel conferencing. These advantages include becoming familiar with the classroom climate, touching base with the classroom teacher, and providing *in situ* coaching during lesson delivery.

Implications

We make several important contributions with this study. First, we are one of very few field instruction teams that have systematically carried out an action research study for the purposes of improving our practice for a large population of teacher candidates in the USA. We would like to acknowledge the important work of other practitioner-researcher teams abroad in the United Kingdom and Australia. Second, we were able to develop an innovative approach to field instruction that worked towards solving our two part problem (a) managing a large workload and (b) preparing candidates for video-based reflection. Importantly, we were able to identify areas of improvement for our instructional practices, which in action research sufficiently addresses the significance of our work (Herr & Anderson, 2005; Mills, 2003).

We also realize that many teacher preparation programs are struggling to provide high quality field experiences for candidates. Declining enrollment numbers and budgetary concerns cut across many United States colleges and universities that house initial certification programs. Mixing parallel conferencing with live observations could function as cost effective solution to maintaining high quality field instruction. Similarly, teacher preparation programs are working hard to prepare candidates for state and national assessments that require candidates to deeply reflect on video recordings of their teaching practice (for example see, edTPA and PPAT requirements). Teacher educators who are working to prepare candidates for these high-stakes assessments can use our protocols to better support candidates.

Conclusion

Finally, though the field of self study in teacher education exist, see for example the journal, *Studying Teacher Education: A journal of self-study of teacher education practices*, there are limited empirical studies that actually explore the work of field instructors, particularly from field instructors' perspectives (Soslau, 2015a). Hopefully, our action research study will inspire other teams of field instructors to engage in similar inquiries to share their practices with the teacher education field. Student teaching and clinical based practice is an omnipresent component across teacher preparation programs including traditional and alternative route certification programs. Teacher educators need to better understand how to best serve candidates while they are student teaching. If candidates do not learn how to systematically reflect on, and analyze, their teaching decisions during their preservice experiences, then it is unlikely that they will engage in this reflective practice during their inservice tenure. Parallel conferencing is one viable approach to supporting the

development of reflective teachers who use pupil work and their own instructional decision making as the curriculum for which they develop their professional practice.

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REFLECTIONS: EXPLORING STUDENT WRITING SELF-EFFICACY IN THE ONLINE ENVIRONMENT

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Abstract Many studies have been conducted that address writing self-efficacy; however, few studies address writing self-efficacy in the online environment. Through this action research endeavor I sought to understand whether student online writing self-efficacy changed from the beginning of the course to the end with intentional, targeted assignments: authentic, informal, and formal writing. Students were administered the SEWS instrument and were asked to complete it anonymously at the beginning of the course and at the end. Data was calculated for percentage of change for each aspect of the instrument. Results showed that positive changes in student writing self-efficacy can occur over the course of a semester.

Keywords: teacher action research, online learning, self-efficacy, writing, higher education, historically black colleges and universities, teacher reflection

Introduction

Online education enrollment has increased exponentially within the last decade. Vilkas & McCabe (2014) suggest that innovative practices are needed to improve quality instruction, and that one area that needs further research is promoting online students' self-efficacy. In my current practices, I have learned that many students who enter online college writing courses do so out of necessity and not out of personal desire. I have further learned that, many students do not have high self-efficacy pertaining to writing, coupled with the fact that many of them are really not comfortable taking online courses. They may have enrolled because it was listed next in the sequence of courses they need to take, they decided to take the course as a last-ditch effort to graduate, or the traditional offering of the course was full, so they opted for the online version. Whatever the case, many students are in the online course and have low self-efficacy regarding the writing processes in the online environment.

Through this action research project, I sought to understand student writing self-efficacy in the online environment within a writing intensive literature course, with 45 students in a historically Black college in the Southeast United States. The first semester I taught the course, I noticed that several students withdrew from the course, failed the course, and many barely passed due to neglecting to complete many of the writing assignments. There were many students who passed, but the number of struggling students was alarming. This led me to reflect on the types of writing assignments, the required elements of the assignments, and the grading of the assignments. After reflecting, the main thing I decided to employ for the next semester was to incorporate a blend of authentic, informal, and formal writing. While I tailored the writing assignments, I also found it beneficial to track student writing self-efficacy as this could have been a contributing factor to either student completion of writing assignments in the previous semester. This reflective action research study details the processes of seeking to improve the course while tracking student writing self-efficacy for change as a result of those improvements.

Reflection on Practice. **"**In common-sense terms, reflection lies somewhere around the notion of learning. We reflect on something in order to consider it in more detail" (Moon, 2001, p.1). With this in mind, I thought it necessary to learn from my experiences of teaching the course to improve it for my future students. It is through reflection that I was able to ascertain points of correction, development, and improvement. Rogers (2001) placed the focus of reflection on the learners' professional growth. I decided that reflection on this course was important place for my professional growth. Upon realizing that many of my students were largely unsuccessful in the course, I decided that it was more important to me that students were successful and that they learned pertinent writing skills that would impact their writing self-efficacy. Therefore, I constituted non-negotiable standards as improvements for the course. I decided that students would participate in authentic writing, formal, and informal assignments tailored for this online course, which are described in the following sections.

Authentic Writing Assignments. Authentic writing is writing that causes students to move beyond their prior knowledge (Kixmiller, 2004). Students were required to complete a critical essay in which they were to critically analyze a text, research and synthesize critical sources, cite textual evidence, adhere to grammatical standards of English, and employ conventions of writing. This assignment required students to move beyond their prior knowledge, while reading literature, thinking critically about it, using Modern Language Association (MLA) format, and using a rubric to adhere to assignment parameters.

Formal and Informal Writing Assignments. Students were also required to complete formal and informal writing throughout the duration of the course. In each of these types of assignments students were required to adhere to conventions of Standard English, refrain from grammatical errors, and use MLA format. Formal writing assignments included a poetry explication assignment. For this assignment, students were to read the assigned poetry and write an analysis. The analysis included discussion of literary elements,

explanation of the structure of the poem, and comparison and contrast to other chosen poems and literature assigned in the course. A rubric was provided that outlined the assignment parameters.

Several critical paragraphs were assigned where students wrote a brief critical overview of the assigned literature and cite textual evidence. A rubric was provided for these short assignments. Lastly, a formal assignment in the form of a virtual, oral presentation was assigned. A rubric was also provided for this assignment. Students were to create an oral presentation that detailed the life and works of one literary figure of a specific time period studied within *World Literature 204*, such as *The Age of Reason* or *The Romantic Period.* Students were to essentially research and explain how the chosen author's work was representative of the period and the literary impact of the author's legacy. Students then created a screen recording of presentations of their research and uploaded it to YouTube for viewing and grading.

Discussion posts were considered informal assignments. Students read the assigned literary texts and responded to the texts through instructor created prompts of their choice. These were assigned bi-weekly. Students wrote a substantial amount on the literary piece, respond to two other classmates in a manner that moved the post forward, and discuss their opinion while providing textual evidence. I hoped that through the completion of these writing intense assignments and the implementation of rubrics that students writing self-efficacy would be positively impacted in this online course.

Literature Review

Self-Efficacy and Writing. Much research has been done concerning self-efficacy. Research on self-efficacy started in the 1970s.Yet, this literature review will not attempt to discuss all research in the area; however, it will present those studies most closely related to self-efficacy concerning writing and online courses. To begin, Bandura (1986, p. 391) defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances." In other words, self-efficacy is one's confidence in his or her abilities. Therefore, self-efficacy and learning is critical (Hodges, 2008). When people believe in their ability to execute something, they tend to think positively about doing so. Consequently, "people who have strong beliefs in their capabilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided" (Bandura, 1997, p. 39).

This concept applies to writing. In a study concerning writing and self-efficacy, Klassen (2002) concluded that student perceived self-efficacy was one of the strongest predictors of writing competence. When students are confident in themselves as writers, they tend to be more competent writers. In a study to examine how writing self-efficacy changed over time, Webb, Vandiver, and Jeung (2016) found that student writing self-efficacy affected the final course grade in middle and high school. They also noted that students reported a higher level of confidence in their writing at the end of a writing intensive course. Jalaluddin, Paramasivam, Husain, and Bakar (2015) argued that writing is not an easy task as it is a highly complex and demanding task that requires a number of skills to be performed. The

authors noted that writing performance is dependent on writing ability perception. Students who are not very confident in their writing may not feel that they possess the necessary skills to write successfully.

Online Writing Self-Efficacy. Bruning et al. (2013) stated that writing self-efficacy differs by type of writing and writing context. Student writing self-efficacy differs in the online environment because it is an online context instead of the face-to-face context. Much research has been performed on online learning; however, very little has been conducted on student writing self-efficacy in the distance learning style. Nevertheless, Kuo, Walker, Schroder, & Belland (2014) offered that online courses differ considerably from traditional instruction in the way students interact with the instructor. Students cannot readily access the instructor and therefore must self-guide their learning of much of the material including writing assignments.

Kuo et al. (2014) added that online learning requires that students be confident in performing internet-related actions and be willing to self-manage their learning process. When students have low Internet self-efficacy joined with low writing self-efficacy, it could be detrimental to the students' success. In a study concerning writing in a computer-based course, Park and Cho (2014) found that online writers who regularly took online courses tend to have higher self-efficacy and are more likely to incorporate feedback than non-online writers. Further, Shen, Cho, Tsai & Marra (2013) proposed that students' self-judgment about their capabilities is critical for their satisfaction with an online course. Additionally, Ergul (2004) showed that self-efficacy in distance education significantly and positively predicted students' academic achievement. Therefore, positive self-efficacy concerning writing and online learning is vital to student success.

Methodology

Participants. Participants were students from different programs of study ranging from sophomores to graduating seniors. This writing intense literature course had 45 students enrolled. There were 27 female students, and 18 were male students. The course is a part of the core curriculum with students from several majors enrolled. Students also had varying lineages of writing and online course experience.

Instrumentation. The purpose of this study was to examine whether online, college students would have a change in writing self-efficacy. The research question was: Does the level of student writing self-efficacy change from the beginning of an online course to the end of the course? To answer this question, I employed one instrument. The Self-Efficacy for Writing Scale (SEWS) consists of 16 items corresponding to three categories of writing related experience: ideation, conventions, and self-regulation (Bruning et al., 2013).

The study included 15 of the SEWS questions. The last question of the SEWS instrument was omitted to avoid student survey fatigue due to question repetition and to remain consistent with calculating scores for five questions for each aspect of the SEWS instrument. The instrument consists of 5-point Likert style questions where students provided the degree of

agreement or disagreement to questions such as: *I can put my ideas into writing* and *I can avoid distractions while I write*. The SEWS provides information about self-efficacy in identifiable dimensions of the writing process; however, it does not query self-efficacy for performance on writing assessments or any other specific writing task or genre. It has been validated and found reliable (Bruning et al., 2013). Although, the SEWS instrument was initially established for use with advanced and AP level high school students, I found it suitable for use within my lower level writing intense core literature course, as most students were sophomores. In addition, Ramos-Villagrasa et al. (2018), validated the instruments for use with college students.

Procedures. All students who were registered in the course were asked to complete the survey via Blackboard (Bb) survey the first day of the course. The survey was composed of 15 questions from SEWS, and 45 students completed the survey anonymously. Students took the questionnaire prior to completing or being exposed to any course assignments. Students were not coerced in any way to participate in the survey.

At the end of the course students were asked to complete the same survey via Bb survey. The survey was composed of 15 questions from SEWS. Due to student attrition, 42 students completed the survey anonymously. Students completed this survey after all other course assignments were completed and were not coerced in any way to participate in the survey. I obtained results from both the pre-course survey and the post course survey from the Bb survey tool and calculated by hand to obtain the percentages necessary to document any changes within the first and second writing self-efficacy survey data.

Setting. The setting for this study was a historically, predominately Black university in the Southeastern United States with an enrollment of 5,000 students. Admission requirements are ACT and SAT scores. The university offers degrees in engineering, humanities, communications, Master's level degrees, and doctoral degrees in elementary education.

Results

The results for each aspect of the instrument were assessed and calculated for percentages (as labeled aspects within the SEWS instrument). As a reminder, the three areas assessed by the instrument are conventions, self-regulation, and writing ideation. First, I reviewed each of the fifteen questions and ascertained the changes from the beginning of the semester to end of the semester. I thought it would be beneficial to explain the results in the context of the aspects measured by the instrument and for ease of comparison. It must also be noted that the *strongly agree and agree* and *disagree and strongly disagree* were percentages combined in the narrative for each section.

Ideation. Ideation is concerned with students' self-efficacy in generating ideas for their writing. Bruning et al. (2013) argued that writing cannot take place without ideas. Therefore, it is important that students feel confident in this area. Questions 1-5 were related to this

aspect of the SEWS instrument. The percentages of change from pre-course to post-course are depicted in the tables and narratives below.

Question 1- *I can think of ideas for my writing*. The number of students who agreed that they could think of ideas for their writing increased to 92% post course (see Table 1). In the beginning, 83% of students agreed that they could think of ideas for their writing. This was a small increase of 9% with 7% of students as neutral. There were 10% of students neutral in the beginning, and 8% disagreed. This was a 2% decrease in disagreement.

Table 1: Question 1 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	35	42	7
AGREE	48	50	2
NEITHER	7	0	7
DISAGREE	7	4	3
STRONGLY DISAGREE	3	4	1

Question 2- *I can put my ideas into writing*. More students agreed in the second survey that they could put their ideas into writing (see Table 2). In the beginning, only 77% of students agreed that they could put their ideas into writing. At the end of the course 96% of students thought that they could do this. This is a 19% increase from the beginning to the end of the semester of students who felt that their self-efficacy increased in this area. No students disagreed. There was a 13% decrease in those who were neutral. 6% of student disagreed in the beginning. However, no students disagreed for the second survey.

Table 2: Question 2 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	32	42	10
AGREE	45	54	9
NEITHER	17	4	8
DISAGREE	3	0	3
STRONGLY DISAGREE	3	0	3

Question 3- *I can think of many words to describe my ideas*. There were more students who felt that they could think of words to describe their ideas before the course started hence the 5% percent decrease (see Table 3). There were also students who felt that they neither agreed or disagreed post course. For the second survey, 6% more students were neutral. Only 1% less students disagreed.

Table 3: Question 3 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	32	23	9
AGREE	42	46	4
NEITHER	13	19	6
DISAGREE	13	8	5
STRONGLY DISAGREE	0	4	4

Question 4- *I can think of a lot of original ideas.* Many students agreed that they could think of a lot of original ideas in the beginning (see Table 4). However, 5% more of students agreed that they could do so post course, hence a small increase. Only 7% of students were neutral in the second survey. There were 4% of students disagreed in this area. This is 12% less than those who disagreed in the first survey.

Table 4: Question 4 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	23	31	8
AGREE	61	58	3
NEITHER	13	7	6
DISAGREE	3	0	3
STRONGLY DISAGREE	0	4	4

Question 5- *I know exactly where to put my ideas in my writing.* There were 11% more of students who agreed post course that they knew where to put their ideas in writing (see Table 5). There were 69% of students who agreed post course that they felt they knew where to put their ideas. 8% more of students were neutral post course. Only 4% of students disagreed post course. This is an 18% decrease in those who disagreed.

Table 5: Question 5 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	10	19	9
AGREE	48	50	2
NEITHER	19	27	8
DISAGREE	19	4	15
STRONGLY DISAGREE	3	0	3

Conventions. Bruning et al. (2013) stated that the second dimension of the model is self-efficacy for writing conventions, which refer to a set of generally accepted standards for expressing ideas when writing in a given language. In English these would include agreed-upon ways to spell, punctuate, capitalize, and structure sentences. Questions 6-10 were related to this aspect of the SEWS instrument. The percentages of change from pre-course to post course are depicted in the tables and narratives below.

Question 6- *I can spell my words correctly.* Many students strongly agreed that they could spell words correctly pre-course, at 84% (see Table 6). However, post course, 3% more of students agreed that they could spell words correctly, at 87% post course. No students were neutral post course. There were 14% of students who disagreed to this statement post course.

Table 6: Question 6 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	42	29	13
AGREE	42	58	16
NEITHER	8	0	8
DISAGREE	8	7	1
STRONGLY DISAGREE	0	7	7

Question 7- *I can write complete sentences.* Most students agreed that they could write in complete sentences pre and post course, and there was only a 1% increase (see Table 7). 2% more of students were neutral post course. Only 4% of students disagreed post course, which was 2% less than students who disagreed pre-course.

Table 7: Question 7 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	29	31	3
AGREE	52	50	2
NEITHER	13	15	2
DISAGREE	0	4	4
STRONGLY DISAGREE	6	0	6

Question 8- *I can punctuate my sentences correctly.* Most students agreed that they could punctuate sentences correctly during the pre and post course survey (see Table 8). 87% of students agreed that they do this pre-course. There were 93% who agreed post course. There was a 6% increase in students who felt they could punctuate sentences correctly. There was a 3% decrease in those who were neutral. Only 6% less students disagreed.

Table 8: Question 8 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	32	31	1
AGREE	55	62	7
NEITHER	10	8	2
DISAGREE	3	0	3
STRONGLY DISAGREE	3	0	3

Question 9- *I can write grammatically correct sentences*. 87% of students strongly agreed or agree that they could write grammatically correct sentences pre-course and 93% agreed post course (see Table 9). However, 9% more students agreed post course than pre-course that they could write grammatically correct sentences. There was a 1% decrease in students who were neutral. Even though 9% of students disagreed that they could write grammatically correct sentences in the beginning, post course no students disagreed.

Table 9: Question 9 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	26	37	11
AGREE	52	50	2
NEITHER	13	12	1
DISAGREE	6	0	6
STRONGLY DISAGREE	3	0	3

Question 10- I can begin my paragraphs in the right spot. There were 75% of students agreed that they could begin their paragraphs in the right spot pre-course, and 81% post course agree (see Table 10). This was a 6% increase. No students strongly disagreed post course. 10% disagreed pre-course and only 4% disagreed post course. This was a 6% decrease. There was a 2% increase in students were neutral.

Table 10: Question 10 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	23	31	8
AGREE	52	50	3
NEITHER	13	15	2
DISAGREE	10	4	6
STRONGLY DISAGREE	0	0	0

Self-Regulation. Self-regulation is an important aspect of writing. It is good for students to be able to generate ideas and having confidence in their abilities to generate ideas. However, these factors can be useless if students are not confident in their abilities to regulate themselves while writing. Self-regulatory skills are needed not only to generate productive ideas and writing strategies but also to manage the anxieties and emotions that can accompany writing (Bruning et al, 2013). Questions 11-15 were related to this aspect of the SEWS instrument. The percentages of change from pre-course to post course are depicted in the tables and narratives below.

Question 11- *I can focus on my writing for at least one hour*. There were 55% of students who agreed pre-course that they could focus on their writing for at least one hour, and 58% agreed post course (see Table 11). There was an increase of 3% of students' self-efficacy in this area. However, 12% more of students were neutral post course. Finally, 10% less students disagreed.

Table 11: Question 11 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	13	27	14
AGREE	42	31	11
NEITHER	19	31	12
DISAGREE	19	12	7
STRONGLY DISAGREE	3	0	3

Question 12-*I can avoid distractions while I write*. There were 48% of students who agreed pre-course and 62% post course agree that they could avoid distractions while they write (see Table 12). This was a 14% increase, and 16% fewer students were neutral post course. Only 4% more students disagreed post course that they could avoid distractions while they write.

Table 12: Question 12 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	16	12	4
AGREE	32	50	18
NEITHER	29	15	16
DISAGREE	16	15	1
STRONGLY DISAGREE	3	8	5

Question 13- *I can start writing assignments quickly*. There were 62% of student agreed pre-course that they could start writing assignments quickly. Yet, 61% agreed post course (see Table 13). There was a 1% decrease concerning this question, although students did report positively in this area pre and post course. There was a 5% decrease in those who were neutral. 6% of students disagreed pre-course and 12% disagreed that they could start writing assignments quickly. This was a 6% increase in students who disagreed.

Table 13: Question 13 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	10	15	5
AGREE	52	46	6
NEITHER	32	27	5
DISAGREE	3	12	9
STRONGLY DISAGREE	3	0	3

Question 14- *I can control my frustration when I write*. 81% of students agreed that they could control their frustration both pre and post course (see Table 14). There was no significant change in self-efficacy in this area. 13% more students were neutral. There was a 13% decrease in students who disagreed that they could control frustration while they write.

Table 14: Question 14 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	13	31	18
AGREE	68	50	18
NEITHER	6	19	16
DISAGREE	10	0	10
STRONGLY DISAGREE	3	0	3

Question 15- *I can think of my writing goals before I write*. There were 64% of students who agreed pre-course that that they could think of writing goals, and 77% post course (see Table 15). Overall, there was a 13% increase in students who agreed by the end of the course. There were 16% less students who were neutral. There was a 2% increase in students who disagreed that they think of writing goals before writing.

Table 15: Question 15 Results

RESPONSE	PRE-COURSE	POST-COURSE	CHANGE
STRONGLY AGREE	6	23	17
AGREE	58	54	4
NEITHER	29	15	16
DISAGREE	3	8	5
STRONGLY DISAGREE	3	0	3

Discussion

Overall, there was an increase in student writing self-efficacy in the online environment from the beginning of the course to the end of the course. Students mostly agreed or strongly agreed to the prompts of the SEWS instrument at the end course of course, whereas in the beginning they disagreed more. This indicated that their writing self-efficacy was lower at the start of the course. The greatest amount of positive change was for the following aspects: ideation and self-regulation. For example, 49% of students agreed that their writing self-efficacy in ideation was improved. The increase could be attributed to the fact that generating ideas for writing was a skill that presented itself through the informal discussion posts and the in-depth thinking students were subjected to through the formal writing assignments. These assignments encouraged students to share ideas and personal connections with the literature, which aided in the generation of ideas.

The aspect of self-regulation also yielded moderate changes in student writing self-efficacy. Yet 31% of students agreed that their writing self-efficacy increased. The increase could be attributed to the fact that students naturally have to show more self-regulation within online learning environments. When completing the writing assignments, the professor was not readily accessible for help or guidance. Students relied on rubrics and other means of self-guidance, self-help, and self-motivation for completing the writing assignments.

The aspect of conventions yielded the lowest increase in students who agreed that their writing self-efficacy increased in this area. There were 25% more of students agreed post course. Though the increase was relatively small, the increase could be attributed to certain

elements within the course. I graded heavily on conventions and even required students to revise work when necessary. I mentioned grammatical errors, spelling errors, and punctuation errors when marking assignments. Therefore, students received much practice in the area of conventions. I was surprised that the increase in self-efficacy in this area was not much greater.

Future research could include the ideas mentioned here. The relationship between age and writing self-efficacy in college students should be studied. This would provide insight into whether age plays a role in how students feel about writing, especially in the online writing environment. It is important to understand if there is an age group that has higher or lower writing self-efficacy in the online environment or if there is an age gap. Another idea for future research is the difference between writing self-efficacy in traditional courses and online courses for college students should be studied. It should be ascertained whether students feel more confident writing in the traditional course or in the online setting. Students may feel like better writers in one or the other.

Limitations

One limitation was that no qualitative data was collected to gauge the perceptions of the students. Collecting this data via interviews or even observations could have potentially provided more depth in this action research project. This type of data would have allowed for more concrete evidence as to what influenced the change in the questionnaire responses and the increase in student writing self-efficacy from beginning to the end of the course. However, my goal was to only ascertain if there was a difference in student attitude concerning their writing abilities in the online environment while being exposed to different types of writing assignments including formal, informal, and authentic to inform my own practices.

Conclusion

Conducting this research enlightened me. As I critically reflect on this action research study, I am aware that I was within my right as an education practitioner to perform action research as a means of improving my practices (Pine, 2009). This is what teachers do: critically reflect, study, and make improvements for the betterment and the success of our students. In the coming semesters, I plan to continue providing my students with authentic writing assignments, formal and informal assignments, allowing them to make connections to the literature we read in the course while still consistently enforcing the rules and guidelines of MLA formatting and standard English because the students overall writing self-efficacy did increase as a result of these assignments. Via the data collected through the experimental pedagogy described in this study, ultimately, I believe that even though students may have had an aversion to writing, were not totally comfortable with writing, and that this discomfort may have been heightened in the e-learning setting, students must be challenged and held to the same standards as those in traditional writing courses. This challenge may be the factor that increased student writing self-efficacy, which could positively impact the rest of their college career and even their lives concerning writing.

About the Author

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ENGAGING EDUCATION MAJORS TO EMBRACE DIVERSITY THROUGH EXPRESSIVE ARTS

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Abstract. One of the most pressing issues in education today is diversity and how educators can effectively embrace diverse learners in the classroom. The issue persists because many teacher training programs do not offer a specific course to prepare preservice teachers to be more responsive to diverse learners in their future classrooms. A growing body of research has addressed the importance of diversity in schools. However there are few studies that provide specific strategies for educators to embrace diversity and harness its strength to build a strong classroom community. This paper describes how two college professors prepared preservice teachers through an expressive arts course to be responsive to diverse learners in their future classrooms. Preservice teachers completed a diversity project and presented their findings to kindergartners and their families at an elementary school. Key findings were diversity in different countries, people, family structures, national flags, cultures, languages, foods, clothing, art, crafts, music, dance and movement. Implications for practice include integration of expressive arts to the curriculum, empowering students with skills to be agents of change, foster mutual understanding, dialogue and respect for diversity in their immediate and surrounding environments.

Keywords: teacher action research, diversity, expressive arts, pre-service teachers

Introduction

When the U.S. Census Bureau (2011) made a press release of our nations' changing racial and ethnic diversity, the nation arose to a reality about its' changing demographics that has been slowly unfolding. According to the report, the Hispanic population in the U.S. had grown by 43 percent, rising from 35.3 million in 2000 to 50.5 million in 2010. This growth accounted for more than half of the growth in the total U.S. population (Humes, Jones & Ramirez, 2010). Despite this considerable growth in the Hispanic population, the non-Hispanic White population remains the largest major race and ethnic group in the U.S, though it is growing at the slowest rate. However, this will change in 2050, when a significant shift in the U.S. population is predicted to occur. The U.S. Census Bureau

estimates that between the years 2040 and 2050, the U.S. population will experience the "majority-minority cross over", after which White, non-Hispanics will represent a minority of the population (Ortman & Guarneri, 2009).

Nowhere is diversity more evident than in our public K-12 schools. Recent demographic trends show increasing racial and ethnic diversity in public schools (Humes, et al., 2010). The percentage of Black and Latino students enrolled in 90% to 100% minority schools increased from 33% and 29%, to 38% and 43%, respectively (Orfield, et al., 2012). Early childhood programs have also seen rising numbers of children from culturally and linguistically diverse communities (NAEYC, 2009; NAEYC 2011). This changing demographic, makes it imperative for public education systems to implement practices that embrace learning needs of diverse student (Taylor, 2010), and for educators at all levels to review their educational philosophies and pedagogy regarding cultural diversity, and take action where needed to improve cultural competence for educators (Gunn, Peterson and Welsh, 2015).

Culturally and linguistically diverse students have the greatest need for quality instructional programs. However, they are less likely to be taught with the most effective evidence-based instruction (Taylor, 2010). Some K-12 public schools have responded to diverse learners in the classroom, using best practices where the environment and instructional practices reflect the language and culture of the children they serve (Duarte & Rafanello, 2001). But, there is evidence that suggests public education is failing to reach the culturally and linguistically diverse student population, particularly those with and at risk for disabilities (Taylor, 2010). As a result, students suffer in several ways: disproportionately lower academic success, underachievement, special education referrals, lack of collaboration with peers, and disciplinary actions (Taylor, 2010; Cartledge & Kourea, 2008).

Teacher training programs play a crucial role in preparing preservice teachers to work with diverse learners in their future classroom. A core challenge for teacher training is a realization that as K-12 students are becoming more diverse, the ethnicity and cultural backgrounds of the teacher population is not in itself representative of the diversity in our schools (Banks, 2006b, Szecsi, et, al., 2010). According to the National Center for Education Information, student populations continue to be characterized by diversity while more than 90% of teachers are mostly white, middle class and from non-urban backgrounds. Thus, our nation faces a difficult conundrum centered on the fact that we produce learners characterized by rich diversity while largely producing teachers from the dominant culture. Comprehending this paradox is important to adequately respond to diversity in our schools (Murray, 2010).

Literature Review

Howard Gardner's Multiple Intelligence (MI) theory and Multicultural Education Anti-bias approach provided a framework for development and implementation of this study.

Howard Gardner's Multiple Intelligence Theory. MI theory describes intelligences beyond the traditional view of one form of intelligence measured using I.Q tests (Isenberg & Jalongo, 2014). In his book *Frames of Mind,* Gardner described seven candidate intelligences: "the linguistic and logical-mathematical intelligences that are such a premium in schools, musical intelligence, spatial intelligence; bodily kinesthetic intelligence; and two forms of personal intelligence, one directed toward other persons, one directed toward oneself, "(Gardner, 1993, pp. xi). Naturalistic and moral intelligences were later added to the theory (Gardner, 2009).

Principles of MI theory are applicable to this study in many ways. This study recognized that learners have different learning styles and ways of expressing themselves. This study further enhanced other intelligence besides linguistic and logical-mathematical that are emphasized in schools today (Chen, et.al, 2009). In addition, expressive arts prepared an environment for preservice teachers to express the following forms of intelligence: body/kinesthetic intelligence (through dance and movements); musical/rhythmic (music and songs); visual/spatial (readers theater, art and crafts). Preservice teachers also developed interpersonal and intrapersonal intelligence as they learned about themselves and their attitude toward crafts, music, dance, dress and food of other cultures. They learned about diversity in their immediate environment through diversity of other students and faculty in the course and in the elementary school where they showcased their research. Finally, they identified other forms of diversity outside their microsystem through research of assigned countries.

Multicultural Education Anti-bias Approach. This approach describes a new perspective of looking at the world that challenges the often narrow and distorting views of culture, seeks more thoughtful and inclusive teaching and learning, and values respecting others and their differences (Eliason & Jenkins, 2003; Banks, 1996; Nieto, 2012). Multicultural education is one of the approaches that have been designed to empower students to embrace diversity, knowledgeable, caring and active citizens in a deeply troubled and ethnically polarized nation and world (Banks, 1993).

Broadly, the objective of multicultural education is for students to identify similarities and accept the nature of differences among their peers (Cortez, 1996). More specifically, the goals of multicultural education are: 1) work to build tolerance of other cultures, 2) abolish racism, 3) teach substance from various cultures, and 4) teach and help students to view the world from different cultural perspectives. When young students developed a spirit and attitude of tolerance and understanding of various cultures, and an ability to understand a different frame of reference, this increases their sensitivity and knowledge and promotes actively working for social justice as they mature (Spring, 1998).

Diversity in the United States. Overall, diversity refers to policies and practices that seek to include people, who are considered, in some way, different from traditional members. These differences can be in socioeconomic status, religion, gender, race, ethnicity, age, sexuality, disability status, and other personal or demographic characteristics (Mikulyuk & Braddock, 2018; Herring 2009). The U.S. has a long history as a nation of immigrants and in the recent years has welcomed immigrants from Pacific, Middle East, Caribbean, and other

Latin America countries (Ortman & Guarneri, 2009; Eliason & Jenkins, 2003). Diversity is by and large celebrated in schools, college campuses, businesses and other sectors (Mikulyuk & Braddock, 2018; Bell & Hartmann, 2007).

Benefits of Diversity in Education. A growing body of research supports the crucial role of diversity in strengthening learning communities and societies at large, especially communities from which K-12 students reside, which often differ drastically from the communities of pre-service teacher candidates (Banks, et al., 2005; Sobel, 2004; Theobald & Siskar, 2008). Diversity in K-12 schools has been linked to positive student growth and development outcomes (Ancheta, 2013; Braddock & Elite, 2004), students' cognitive development, development of positive intergroup orientations later in life (Mikulyuk & Braddock, 2018; Bowman, 2010), increase in trust among learners of different backgrounds, and better community-level racial and ethnic intergroup relations(Mikulyuk & Braddock, 2018).

Other studies, however, found that though the impact of diversity on student achievement in the long-term tends to have positive outcomes, short-term outcomes are both positive and negative (Mickelson, 2001). Mickelson (2006) found that as the percentage minority race/ethnicity in schools increases, standardized test scores for Black and White students tend to decrease.

Education researchers have also investigated how K-12 diversity and neighborhood diversity shapes students' racial contact preferences (Braddock & Gonzales, 2010; Kurlaender & Yun, 2005). In a case study of the Miami-Dade Public School System, students from multiracial schools compared with racially isolated schools were found to have more positive racial attitudes and stronger desires to live/work in diverse environments as adults (Kurlaender & Yun, 2005). Teaching diversity therefore enriches the classroom by providing various ways to solve problems and to view people, events and situations. When children are able to view the world from the perspective of it's diversity, their views of reality have broadened (Banks & Banks, 1993).

There are few studies that provide specific strategies for schools to embrace diversity and harness its strengths to build stronger classroom communities. Murray (2010) recommended three social justice education approaches that schools, educators and learners can employ to embrace diversity. 1) School-wide discourse that focus on questions concerning how instructional practices, curricular decisions, materials and classroom routines connect to children's family, community and cultural roots. 2) Develop school-wide equity leadership team to engage in projects that correlate with the unique needs of the school. 3) Building and sustaining an honest and genuine relationships with the community that surrounds the school-parents, families, businesses, and neighboring schools.

Teacher Training and Diversity. As K-12 student population is becoming more diverse, colleges of education have reframed their pedagogical approaches and adjusted curriculum content to meet the learning needs of diverse students (Banks, 2004; Taylor, 2010). However, implementing these changes in the curriculum have come with several challenges. One, is a realization that as K-12 students are becoming more diverse, the ethnicity and

cultural backgrounds of the teacher population is not in itself representative of the diversity in our schools (Banks, 2006b, Szecsi, et, al., 2010). Two, is a lack of cultural awareness among educators in modern classrooms to meet cultural and linguistic needs of diverse learners and their families (Taylor, 2010; Banks, 2002; McClanahan & Buly, 2009; Sturm,1997). Three, is a lack of a systematic framework to effectively embrace diverse learners in the classroom.

Many teacher education training programs do not have specific courses in their curriculum to prepare future educators to be responsive to diverse learners (McClanahan & Buly, 2009). Some programs, require preservice teachers to take a course on multicultural issues in education, within other courses that do not specifically address diverse learning perspectives that will be represented in their future classrooms (Murray, 2010). As a result, many new teachers reported that coursework just didn't help them to prepare for the diversity in their classrooms and called for changes in their training and help in findings ways to work with diverse students (Murray, 2010; McClanahan & Buly, 2009; Rochkind, et al., 2008). Other experts in the field have shared similar sentiments, that many teachers enter teaching ill-equipped and unprepared to work with diverse learners (Murray, 2010; McClanahan & Buly, 2009). The National Association for Education of Young Children, NAEYC a leading professional organizations in the field of education, also called preparation of a more diverse teaching workforce and a more diverse leadership for the profession as a whole (NAEYC, 2011).

Therefore, teacher education will need to renew its efforts to restructure programmatic experiences so that preservice teachers understand cultural systems, rather than viewing culture as simply a list of shared habits (Gunn, et.al., 2015). Teacher educators must also help new teachers develop a complex understanding of their own culture and how it might influence their instruction. These experiences will help teachers understand how student identities such as ethnicity, race, language, gender, sexual orientation, and religion will influence their school experiences (Gunn, et.al., 2015; Banks, 2006a).

Teacher education programs can implement two strategies to better prepare preservice teachers to teach students from diverse backgrounds. First, continue to build on current knowledge bases that contain special knowledge, skills, processes, and experiences essential for preparing teachers to be successful when teaching students from diverse backgrounds and to use that knowledge to prepare teachers for today's classroom (Brown, 2007; Taylor, 2010, pg. 25). Second, establish partnerships with diverse schools so as to provide rich opportunities for preservice students to practice what they learn in their teacher preparation courses (McClanahan & Buly, 2009, pg. 59)**.**

Utilizing Expressive Arts to enhance diversity. The use of expressive arts to shape an individual's' identity has been documented in various research studies. According to Cabedo-Mas, Nethsinghe, & Forrest (2017), art has been acknowledged worldwide as a tool to shape individual and community identities, to enhance relationships between people, to promote positive conflict transformation, development and peacebuilding. The authors also reiterated the importance of including universities and teacher educators in the multiculturalism discourse when they stated, "to teach these values in teacher training

programs is indeed of importance, as teachers will necessarily have to show abilities and skills to learn students how to peacefully deal with everyday conflicts and emotionally raise awareness of inequalities and confrontation to violence," (p.18).

Use of expressive arts also impact children's emotional well-being. Several researchers have affirmed that the arts play an indispensable role in enabling children to recognize and represent feelings and emotions, both their own and those of others (Isenberg & Jalongo, 2014; Jalongo, 2014; Stevenson & Deasy, 2005; Kendrick & McKay, 2004). Other researchers have described music, movement, and dance as important ways to enrich the brain (Florh, 2010; Gruhn, 2011; and Hodges, 2010). Therefore, immersing our children in the arts during their elementary years is a step every child needs to take in this journey towards becoming a responsible global citizen. Tavangar & Morales (2014) encourage both leaders and teachers to take simple steps to bring the world - which includes the arts, music and stories - into the classroom, so that fears of the unknown lead to curiosity, and an opportunity to see and respect how similar as well as different we are.

There are many forms of expressive arts that can be used in the classroom including music, dance, movement, visual art, paintings and reader's theater. Music and art offer many opportunities for providing cultural experiences for young children. Educators can utilize music and art in their classrooms in the following ways: 1) Introduce music from other countries, 2) have pieces of art from different cultures displayed in the classroom, 3) invite artists and musicians from different cultures to visit and perform followed by discussion of what feelings or messages they might be trying to portray, 4) have children share music that they listen to in their home or art that their family appreciates, 5) provide paints or marking pens in such skin colors as brown, black or peach for children to draw collages. (Eliason & Jenkins, 2003, pg. 153).

Teachers can utilize expressive arts in the classroom through the following ways. 1) expressive arts activities in the learning centers, 2) facilitate whole group activities, 3) display children's art activities on the classroom bulletin boards, 4) taking field trip to local museums for children experience to experience diverse perspectives, 5) display calendars in the classroom that include ethnic holidays, and note outstanding citizens of diverse ethnic origins, 6) include dolls in the classroom that display different identities, physical abilities and genders, 7) use games from different countries and cultures to help broaden children's perspective, dramatic play such as clothing and items that reflect diversities, 8) include musical instruments, songs and dances, stories that reflect diverse cultures as well as invite performers from diverse cultures, 9) include other languages to teach children common phrases, alphabets, shapes, colors, units of money, songs and finger plays (Eliason & Jenkins, 2003, 150-151).

Culture, identity and diversity. Finally, research studies have documented the role of culture in shaping an individual's identity and their interactions with others in society. Culture is defined as a set of values, beliefs and ways of thinking about the world that influences everyday behavior (Trumbull & Farr, 2005). Bronfenbrenner's ecological system's theory (1989) places individual development in the context of culture. Educators can shape identities of their learners through classroom activities which raise cultural awareness and

competence (Brown, 2007; Taylor, 2010). In addition, educators who harness the strength of diversity in building a strong classroom community often incorporate lessons, activities and experiences of different cultures in their pedagogy (Brown, 2007; Taylor, 2010).

Banks (1996) and Nieto (2012) described four levels of incorporating culture into the curriculum; contributory level (level 1), additive level (level 2), transformation level (level 3) and decision and social activism (level 4).

Level 1: Contribution level, is where some contributions to creativity and the arts are recognized and mentioned, but the curriculum does not change significantly. This study is only one small step toward the learning of appropriate developmental knowledge, attitudes and skills related to respecting and being accepting of people and cultures different from oneself. The starting point of nurturing global awareness begins in the early and elementary years. As Boix and Gardner (2007) noted, seeking new and creative perspectives is no longer a luxury in our classrooms today- it is a necessity. Examples of activities at the contribution level in the elementary years include acknowledgment of different heroes and holidays in different cultures, such as Kwanzaa, Chinese New Year or Cinco de Mayo. Educators can also start multicultural education at elementary years by introducing books on places of interest, sports, dolls, puppets, diverse cultural books celebrating holidays (Abdullah, 2009).

Level 2: Additive level, is where something more significant is added to the curriculum without altering the total program. Banks (2004) purports that education and awareness of diverse cultures must start early. Moore (2004) reiterated that developing kindness and compassion are an important part of a child's early development. Hence, integrating and adding diverse themes, concepts and viewpoints into the curriculum would enable and encourage developmental awareness of diverse cultures among students (Abdullah, 2009).

Level 3: Transformation level, where multicultural perspectives are infused throughout the program and have resulted in major curriculum changes. This level of transformation begs that we look at two relevant questions: What kind of learning do we wish our students to have to prepare them to become global citizens? How can we best nurture our students from the elementary years onward to be confident as they navigate this cultural shift - one that encourages analysis, reflection, communication and action successfully? The discussion and reflection part of this study is a small step of encouraging students to be agents of change as they take up this challenge of becoming globally competent.

Level 4: Decision making and social activism. This level includes the previous three levels and extends beyond them by focusing on positive changes to society. It encourages students to make decisions and act upon the concepts, issues, or problems they have identified.

Methodology

Purpose of the study. The purpose of this study was to use expressive arts as a tool to prepare preservice teachers (PT) to embrace diversity in their future classrooms. PT were empowered to recognize and value diversity and vitality of culture at the local, national and global contexts. PT developed knowledge, skills and experiences to embrace diversity in

creative ways. They designed hands on activities for Kindergarten children to embrace other cultures in a non-judgmental manner. Finally, this study provided a platform for PT to develop a multicultural world view.

Research question. The research question that guided this study is: How can teacher educators utilize expressive arts to prepare preservice teachers to be responsive to diversity (racial, ethnic, gender, cultural, linguistic, national and socioeconomic) in their future classrooms?

Significance of the study. Teacher educators have a professional and ethical responsibility to provide opportunities for preservice teachers to know who they are, understand their peers, and to work individually and with others (NAEYC, 2011). One way to attain this objective is through involvement in multicultural experiences at home, school and in the community. It is also extremely crucial for teacher educators to provide opportunities for preservice teachers to broaden their own worldviews through integration of course work that increases their worldviews, knowledge of multiculturalism, and immerses them in a rich multicultural environment.

This study provided opportunities for PT to begin learning about their own cultures and those of others through hands on activities. This study was a powerful tool for effecting change. PT were encouraged through this advocacy project to be the voice that brings clarity of thought and cultural responsiveness at early childhood and elementary school settings. This study was also multigenerational. Three generations represented by college educators, PT and kindergarten children were engaged in activities to develop a multicultural worldview and skills to promote their cultural competence.

Qualitative Research Design. This qualitative action research was conducted using the participatory research method, often referred to as collaborative action research. Action research is associated with social transformation responsive to the needs of ordinary people and communities. It is also dependent on partnerships between groups, such university educators and classroom teachers (Denzin & Lincoln, 2003).

Categories of participatory action research include classroom action research, action learning, action science, industrial action research (Denzin & Lincoln, 2003). This research project was a classroom action research. “Classroom action research involves the use of qualitative, interpretive modes of inquiry and data collection with a view to teachers making judgments about how to improve their own practices,” (Denzin & Lincoln, 2003, pp.339). In classroom action research, primacy is given to teachers self-understandings and judgements. The emphasis is on the interpretations teachers and students make and act on in the situation (Denzin & Lincoln, 2003).

Partnerships in classroom action research is more practical than theoretical. Partnerships, such as those between university professors and preservice teachers involve reciprocal roles. University teachers are often involved in the service role to the teachers. Such university researchers are often advocates for teacher's knowledge and may disavow or seek to diminish the relevance of more theoretical discourses (Denzin & Lincoln, 2003).

Research Setting and Participants. Participatory action research can be done in many ways and settings, but often in educational settings. Key participants in classroom settings are mainly teachers, students and curriculum consultants. But teachers often take the center stage (Denzin & Lincoln, 2003). This research project was facilitated by two teacher educators from two universities in the Southeast. One university is a four-year historically black college and university (HBCU). It is located at a suburban setting with a predominantly African American student population of close to 500. The other university is located at a urban area and has a more diverse student population of close to 20,000 from 100 countries. It offers courses at the undergraduate, masters and doctoral levels.

The research project was conducted over a semester course on how to integrate expressive arts to P-6 curriculum. Preservice teachers from the two universities enrolled in the same course and completed the diversity project as the key assignment.

Data collection procedures. Data was collected using photographs of preservice teachers showcasing their research findings at a cultural diversity fair at a local elementary public school. At the beginning of the semester, preservice teachers formed small working groups comprising of at least two students from each university. Each group then picked a country to research for their diversity project, identified a group leader, secretary, shared responsibilities equally and were responsible for their group's collaboration. Preservice teachers met face to face twice in the course of the semester, and thereafter communicated through email and social media platforms such as Skype, Google Hangout and WhatsApp using their cell phones or computers. After 10 weeks of planning and preparation, the diversity projects were showcased at an interactive cultural day with kindergarteners and their families at a public elementary school.

Preservice teachers presented research findings of their diversity projects of various countries in the form of tri-fold posters, power point slide shows, artifacts, artwork, crafts, dances, short skits. Appendix A contains examples of photographs of the preservice teachers showcasing their research findings to kindergarten students at a local elementary school.

Data analysis. Data was analyzed using Discourse analysis I method. Discourse analysis is classified into two categories. Discourse analysis I, tends to pay more attention to the notion of discourse as articulated through various kinds of visual images and verbal texts than it does to the practices entailed by specific discourses. Discourse I analysis has two main characteristics: i) It uses the notion of visual, written and spoken materials, and ii) It is

especially concerned to trace the production of social difference through discursive claims to truth (Gillian, 2001, pp.151). Discourse analysis II, on the other hand, tends to pay more attention to the practices of institutions than it does to the visual images and verbal texts. Its methodology is usually left implicit. It tends to be more explicitly concerned with issues of power, regimes of truth, institutions and technologies," (Gillian, 2001, pp.151).

Photographs are classified as a form of data under the visual methodologies (Gillian, 2001). Visual methodology is often called the mirror with a memory. Photography takes the researcher into the everyday world where the issues of observer identity, the subjects point of view are revealed" (Denzin and Lincoln, 2003, pp. 50).

Discourse analysis of photographs from this study was done following seven steps described by Gill (2001).

i) *Looking at the sources with fresh eyes.* Researchers were present when PT showcased their research projects. They reviewed photographs of the presentations afresh in the analysis phase.

ii) *Immersing yourself in your sources.* Researchers reviewed the photographs several times.

iii) *Identifying key themes in your sources.* Key themes were identified from the photographs.

iv) *Examining their effects of truth.* Researchers examined the photographs to identify aesthetic features of different cultures and embedded tenets of diversity.

v) *Paying attention to their complexity and contradictions.* Researchers reviewed photographs to identify the complexities of cultures and contradictions in elements of their themes.

vi) *Looking for the invisible as well as the visible.* Researchers examined photographs to identify visible and hidden attributes of various cultures.

vii) *Paying attention to details.* Researchers observed photographs to identify minute details that distinguish different cultures.

Results

The following key themes emerged from discourse analysis of the photographs of preservice teachers showcasing their research of different countries to kindergarten students at a local elementary school.

1) Cultural attires and appearances.
2) Historical figures and monuments.
3) National flags and locations on the globe.
4) National foods, games, dances, art, crafts.
5) Use of technology.

6) Diversity

These themes are represented in the tables below.

Table 1: Cultural attires and appearances

France	Male Preservice teacher wearing a French hat
Italy	Preservice teacher male with Italian scarf and moustache like Italian men who ride on Gondola
Spain	Preservice teacher male with Italian scarf and moustache like Italian men who ride on Gondola, Spanish hat, Table cloth decorated like the Spanish flag
Mexico	Preservice female teaching wearing a Mexican wrap in rainbow colors, 3 sombreros (Mexican hats), table decorated paper art in very bright colors, Piñata at the back table
India	Preservice teachers wearing Indian costumes and clothes -*Rajastani* skirt, *Chuni* (Indian Scarf) and *Panjab* costume with *Chuni* on her head wrap work by many women in India as a sign of respect. Children dance (*Garba* dance) to Indian music

Table 2: Historical figures and monuments

France	Eiffel tower, *Arch De Triomphe*
Italy	Leaning Tower of Pisa
Spain	Poster picture of the bull run, a famous sport in Spain, Pictures of Spanish monuments on poster
Mexico	Famous beaches in Cozumel and Cancun
Israel	Biblical historical monuments, such as dead sea, the old city of Jerusalem and holocaust museum
India	Famous people from India-- Mahatma Gandhi, Mother Teresa; Famous places on the poster Taj Mahal, Carvings of Elephants on the table, a famous animal in India

Table 3: National flags and locations on the globe

France	Flag of France on the poster, Position of France on the globe and paper passport to enter France
Italy	Children's Flag of Italy, position of Italy on the globe, paper passport stamped to enter Italy
Spain	Position of Spain on the globe, children's paper passport to enter Spain
Mexico	Position on the globe, Children's paper passport to enter Mexico
Israel	Position of Israel on the globe, Children's passport stamped to enter Israel
India	Position of India on the globe, Poster decorated as the flag of India, includes a detailed *Chakra* with 24 spokes depicting King *Ashoka's* virtue wheel. Each spoke stood for virtues like love and truth. Stamped paper passport to enter India * Role play/ Children's theatre, preservice teachers dressed as flight attendants and children simulate flying across all six countries

Table 4: National foods, games, dances, arts and crafts

France	French bread and French pastries
Italy	Garlic bread
Spain	Spanish food in a basket, Fish game on the carpet, learning to count number of fish in Spanish.
Mexico	Preservice teachers working with children to make their own Mexican musical instrument (tambourines)
Israel	Children wearing headband with feathers of different colors like that of a queen. Children learned to perform a dance used to teach counting in schools in Israel
India	Indian bread for the children

Table 5: Use of technology

France	Music from different countries was played as students displayed their research using power point presentations. Group communication through the semester was done through Skype, Google Hangout, WhatsApp on Cell phones, I-pads and Computers

Table 6: Diversity

France	Diversity was observed in many forms among the preservice teachers, kindergarten students, their families and teachers in the following dimensions: race, gender, physical appearances such as hair textures, skin color and in cultural experiences

Discussion

The main research question that guided this study was: How can teacher educators utilize expressive arts to prepare preservice teachers to be responsive to diversity (racial, ethnic, gender, cultural, linguistic, national and socioeconomic) in their future classrooms?

Findings from this project demonstrate teacher educators can use expressive arts as a tool to teach diversity to preservice teachers and to young children. Gay (2013) noted there is a lot of opposition to culturally responsive education due to ambiguities and uncertainties on how to engage in it. Preservice teachers utilized expressive arts to identify forms of diversity (racial, ethnic, gender, cultural, linguistic, and socioeconomic) in the countries they researched. Through the semester, the preservice teachers' increased their knowledge about various forms of diversity of their assigned countries: cultural attires, traditions, artifacts, food, music, dance, drama, stories, languages and games.

The findings of the study were affirming and encouraging. The kindergarten children worked with preservice teachers who were both African American as well as Caucasian. The preservice teachers' accepting attitude of the diverse children as seen in the photographs were indicative of their positive understanding of diverse issues. The findings from the photographs support that the learning that occurred through utilizing expressive arts to identify various forms of diversity, exhibits the preservice teachers' deep understanding of diversity, and their ability to make it developmentally relevant for the kindergarten children. For example, the preservice teachers wore costumes that were identified with the country being researched. The children got their play passports stamped as they visited each country and were welcomed in the language of the country. For example, when they visited France ,the children were greeted with a happy '*Bonjour*", and a folded hands "*Namaste*" when they visited India, and '*Hola*' when they entered Spain. The kindergarteners were introduced to cultures and lifestyles like new places, costumes, foods, crafts, music, dance and games they had never heard or seen before.

The diversity project as seen through the photographs, planted seeds in the hearts and minds of the kindergarten children, encouraging small steps in their journey to becoming global citizens. For example, as the kindergarteners visited France, they met a preservice teacher dressed as a Frenchman wearing a French hat, who helped the children find France on the globe and taught them the French word' bonjour' as seen in the photograph. As the kindergarteners journeyed to Italy, another country in the European continent, they met a preservice teacher dressed as an Italian gondola boat driver from Venice, Italy. The pictures on the tri fold posters created by the preservice teachers took the children on a visit to the two famous places of interest in France and Italy, namely the Eiffel Tower in France and the Leaning Tower of Pisa in Italy.

The acquired knowledge as evidenced in the photographs also created an awareness and understanding in the pre-service teachers of one of the essentials of 21st century learning skills. It created and developed in the pre- teachers a spirit of respect for diverse cultures, traditions and lifestyles. This research journey of enhanced awareness and understanding of diverse cultures enabled the pre-service teachers to change their stereotypical beliefs regarding minority and less affluent students and the fear and discomfort they felt regarding interacting with diverse students (Kumar & Hamer, 2012). The knowledge, awareness and understanding the preservice teachers gained through their research regarding diversity, carried over into the project with a more open minded, positive, enthusiastic and beneficial interaction with the Kindergarten students as seen in the photographs.

Preservice teachers as seen in the findings (photographs),were animated and excited to share their knowledge as they taught the kindergarteners a song from Israel, as the children learned the position of Spain on the globe, as the kindergarteners immersed themselves in the music and rhythm of the *Garba* dance from India. The preservice teachers were actively engaged as they worked with a special needs student as well as other students on crafts as in the photograph from Mexico or even as the preservice teachers between the ages of 40-50 years of age worked with and included a special needs child in a wheelchair with the singing of a song in Israel. The research enabled an attitude of openness to diversity on the part of the young (20-30 years of age) as well as the older(40-50 years of age) preservice teachers. This accepting attitude in spite of a difference in age among the preservice teachers was infectious, and led to the kindergarten children becoming open, willing and ready to be eagerly engaged, to learn about and appreciate diverse cultures other than their own culture as evidenced in the photographs.

In addition, the preservice teachers were enabled to be agents of change in assisting their learning communities to be equitable. The preservice teachers developed essential characteristics to embrace diversity in their classrooms. These include; a) sociocultural consciousness, an understanding and respect for multiple perspectives and viewpoints b) a critical examination of their own socio cultural identities, inequalities, biases, values and beliefs and c) applying knowledge learned to confront any negative attitudes they might have towards any cultural groups. They also recognized the importance of affirming students from culturally diverse backgrounds which they will carry with them into their future classrooms. The study also provided opportunities for inclusiveness in the classroom community. Other attributes developed were the crucial role of commitment to confront barriers and obstacles and develop skills for collaboration.

Kea, et. al. (2006) noted that constructivist views of learning, such as those demonstrated by Vygotsky, scaffold students between what they already know through their life experiences and what they need to learn. This study applied these constructivist principles of knowledge, teaching, and learning to empower preservice teachers to be responsive to diversity. As teachers assist students construct knowledge, build on their personal and cultural strengths, and examine the curriculum from multiple perspectives, an inclusive classroom community is created. This constructivist teaching promotes critical thinking,

problem solving, collaboration and the recognition of multiple perspectives. In this project, the pre-service teachers made collaboration efforts with one another to design and implement their research. These collaborative efforts included various forms of technology and apps like Skype, Google Hangout, WhatsApp, on cell phones, i-pads and computers .to communicate and collaborate with each other The research on various countries provided the skills, knowledge and authentic experiences of other cultures that led to a building of meaningful relationships and a strong classroom community.

Learning about children's experiences, home and community culture, and world both in and outside of school helps build relationships and increase the prospective teachers' use of these experiences in the context of teaching and learning (Kea, et.al., 2006). This aligns with one of the goals of this project—for pre-service teachers to understand the culture within their own classroom as well as cultures they have never experienced. As is evident in the findings, the pre-service teachers learned about various forms of diversity from different countries they researched. They also learned about their own cultures and those of other students they worked with.

Recommendations for Practice

1. Kindergarteners, with support from adults, have the potential to effect change in their classrooms, schools and homes through respect and appreciation of others, open multi-lateral communication, open-mindedness, dialogue, and flexibility.

2. Effective change can be attained through collaboration, networking, deliberation and engaging with issues in the classroom that are pertinent within our proximity at home and in the further distance, abroad in a developmentally appropriate manner

3. Educators can create a sense of community in the classroom by allowing children to share stories and artifacts of their home and family lives. This sharing provides insight into the lives of the child and family and encourages acceptance and inclusiveness in the classroom.

4. Educators are encouraged to be champions and advocates for multicultural education by including it as a major component of the daily classroom schedule.

Conclusion

Expressive arts provides a unique opportunity for educators and preservice teachers to provide students with learning opportunities to be accepting , respectful and appreciative of diversity and other cultures, and to nurture meaningful cross-cultural communication among racially, ethnically, linguistically, religiously, socio-economically diverse educators and students.

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Appendix A: Preservice Teachers Showcasing Research to Kindergarten Students

France Group	Italy Group
	

Mexico Group	Mexico Group Working with a Special Needs Child and other Children
	

Israel Group	Israel Group Working with a Special Needs Child and other Children
	

India Group	Spain Group
	

RESHAPING PRACTICE: AN ACTION RESEARCH PROJECT EXPLORING WRITING INSTRUCTION

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Abstract The purpose of this action research study was to explore students' attitudes toward writing instruction during the implementation of a literacy project focused on authentic tasks. Data included student surveys, interviews, assessment data, observational teacher notes, and recorded teacher and student sessions. Using qualitative analysis, findings reveal the process by which authentic literacy opportunities during writing instruction supported the sophistication of student discourse in writing, attitudes, and perceptions, and an awareness of students' literacy skills. Implications for practice and future research are discussed as a way to support and empower teachers and students.

Keywords: teacher action research, writing instruction, action research, authentic literacy instruction

Introduction

Since the release of the report *A Nation at Risk* (1983) outlining the low achievement of today's youth, the nation has implemented a series of educational reforms aimed at improving the quality of education and literacy achievement. The landmark passage of the No Child Left Behind (NCLB) in 2001 and the subsequent adoption of the Common Core State Standards (CCSS, National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) were efforts aimed at achieving this goal. These reforms have changed the content and delivery of literacy instruction in schools across the country. The role of testing has been elevated to unprecedented heights and literacy curricula has narrowed emphasizing a skills and drills approach to instruction (Au, 2005; Vaughn, 2013; Rowan, Camburn, & Correnti, 2004).

Scholars have documented the negative impact of these recent educational reforms on the nature of writing instruction in today's schools (Vaughn, Penney-Pinkham, Hillman et al., 2015; Shanahan, 2006). Moreover, scholars have found that since writing is not measured by standardized assessments, teachers do not often include writing in their language arts block or may use the reading curricula as the primary mode of writing instruction (McCarthey, 2008). Despite this, some teachers support the teaching of writing and writing instruction as a process by which to engage students in critical thinking (Ghiso, 2011), projects that engage students in social justice issues (Vaughn, Hillman, McKarcher et al., 2017), and activities that serve as a catalyst to reengage reluctant readers (Gambrell, 2015).

To more closely examine the nature of writing and authentic writing instruction (building upon Author's 1 experience as a literacy educator and experienced educator of 5 years), Author 1 conducted a three-month action research project in her first grade classroom to document the implementation of an authentic writing project. Specifically, this action research project focused on creating authentic tasks anchored in writing for real purposes. The following question guided the research: What resulted for students as a part of their participation in an authentic writing project?

Literature Review

Writing instruction has evolved during the last two decades in schools ranging from (a) the process approach, (b) writing as a cognitive process, and (c) the role of genre (Klein & Boscolo, 2016). Briefly, these processes are outlined to contextualize the research. Within the process approach, notable teacher educators Calkins (1986) and Graves (1983) developed the Writer's Workshop approach that included providing opportunities for students to write about topics of interest, writing for real audiences, developing drafts via the revision process, and sharing work with peers. This approach is marked by a modeled mini-lesson led by the teachers followed by independent writing and teacher conferencing. Scholars note the impact of this approach. For example, Ghiso (2011) documented the impact of the Writer's Workshop on first graders as they discussed and analyzed writing that connected to their lives. Similarly, Tracy & Headley (2013) found a positive impact on fourth grade students' writing abilities when engaged in the workshop model.

Within the cognitive approach to writing, teachers emphasize instructional tasks targeted at producing a complete draft using explicit teaching strategies. Scholars documented the success of this approach (Olson & Land, 2007; Graham & Harris, 2006) but found that the cognitive approach emphasized a one size fits all to writing instruction that often neglected to support individual classroom contexts and the variability of instructional settings. Critics of the genre approach to writing emphasize how writing rarely aligns within a linear fashion as delineated by specific genres.

Within elementary schools, teachers adopt various forms of these three approaches to writing instruction. Yet, opportunities to engage students in writing instruction that is authentic as it pertains to writing for authentic purposes has been limited. According to Madda, Griffo, Pearson and Raphael (2011), many literacy educators engage in literacy

instruction which emphasizes unrealistic tasks often related with "doing school rather than doing life" (p.44). In other words, when it comes to writing instruction, students are rarely engaging in authentic writing opportunities.

Authentic literacy opportunities highlight tasks and instruction that are connected to students' real lives, student-centered, open-ended, involves choice, and may include a project-based approach (Jones & East, 2010; Duke, 2014). Duke, Purcell-Gates, Hall, & Tower (2006) describe authentic literacy activities as activities "that replicate or reflect reading and writing activities that occur in the lives of people outside of a learning-to-read-and-write context and purpose" (p. 346). An example of an authentic literacy activity includes students writing a brochure for a nature center after researching and reading about animal life in ponds.

Highly authentic experiences take into account both the *text* used and the *purpose* or *function* of a specific literacy task. To be highly authentic, the tasks must consist of a "context and purpose to serve the communicative, real-life purposes or functions" (Purcell-Gates et al., 2007, p. 14). Duke, et al. (2006) identified three categories of authentic literacy experiences: a) literacy as response to *community need*; b) literacy as part of *problem solving*; and c) writing for a *specific audience*.

Scholars report a relationship between positive growth in student achievement or attitude as they pertain to authentic literacy experiences. For example, Chohan (2011) found in a year-long study of an authentic letter writing program that students' had greater gains in literacy, vocabulary skills, and writing development. Similarly, in their study of daily journal writing, Jones and East (2010) found, "All three categories—correct spelling, words used, and correct punctuation—depicted a steady upward trend in mean scores" (p.116). Authentic literacy experiences are designed to capitalize on real-world contexts, authentic learning opportunities, and instruction that fits the unique needs of her students. Such experiences according to Parsons and Ward (2011) are instrumental in developing engaging literacy spaces and "encourage a variety of oral language experiences, including teacher-generated questioning practices, explicit instruction, and large-and small-group discussion" (p. 464).

Methodology

Theoretical Framework. This study was informed by theories of social constructivism. Social constructivism suggests that learning is situated in settings and locally constructed (Vygotsky, 1978). In the context of this action research project, the student and teacher talk are highlighted to document the ways in which students used language and the tools available to make meaning of writing instruction, content, their understandings of literacy broadly, and their work as writers.

Author Background. Author 1 went to a large, urban university at the very beginning of the NCLB era and obtained her undergraduate degree in teacher education. After graduation, Author 1 taught for three years at a public charter school in a multi-age classroom. In this position, she was able to put into practice the elements of developing authentic literacy

opportunities for her students. In this context, she ultimately had the freedom to select instruction and materials that were needed given the unique instructional needs of her students.

After taking a hiatus from the classroom, Author 1 returned in 2013 when CCSS (2010) was in place. In the years that Author 1 had been absent from the classroom, the climate of public education had drastically changed. Reform efforts such as NCLB (2001) was 12 years old and the CCSS was recently adopted by 46 states in the nation. Given these changes, when Author 1 returned to the classroom the expectations for selection and delivery of literacy instruction were very different. Although, the district Author 1 returned to had adopted a literacy program that contained many of the elements of the Balanced Literacy Framework (Fountas & Pinell, 1996), instruction was not necessarily centered on authentic tasks. That is, the curriculum provided leveled texts that contained weekly sight words, vocabulary, and phonics patterns but lacked engaging texts and opportunities for writing for authentic purposes. Despite this, Author 1's district and administrator encouraged Author 1 and fellow teachers to develop literacy instruction in support of the individual and targeted needs of students. With this in mind, Author 1 started this action research project, as part of her capstone project for her graduate degree in curriculum and instruction where Author 2 was her major professor. The research reported here documents this capstone project and serves to examine how students' attitudes developed when engaged in authentic literacy tasks during writing instruction.

One of the functions of action research is to provide a method for thoughtful reflection on one's own professional growth and practice. Samaras and Roberts (2011) highlight the importance of teacher reflection in practice and state, "teachers critically examine their actions and the context of those actions as a way of developing a more consciously driven mode of professional activity" (p. 43). By sharing the results of this action research study, it is possible to offer insights for other educators interested in the issues surrounding authenticity and writing.

Setting. The location for this study took place at Duncan Elementary (pseudonym), a K-5 elementary school in the Pacific Northwest region of the United States. Situated in a rural region of the country, the school serves approximately 275 students in grades kindergarten through fifth grade. The town is located near two large public universities. The community also has a strong agricultural presence. At the time of the study, 37% of students enrolled in Duncan Elementary were free or reduced lunch, and 91 % of the students were of European American descent, 3% were Latino, and 7% were African American or identified as Other. The study took place over the course of three months in Spring 2016.

Participants. A letter of consent inviting students in Author 1's class was sent home. Fifteen out of the twenty students returned the consent forms. One student moved during the course of the study. The student demographics included 1 African American student and 13 European American students. One student was from an Eastern European background with

a second language spoken at home. Another student was on an Individualized Educational Plan for speech and language issues. In order to protect student identities, all student names used in the research are pseudonyms.

Authentic Writing Unit. The guiding question for the writing unit was, "How do we care for pets?" This topic was selected based on informal feedback and student responses about what they wished to write about for the semester. The Writing Workshop (Caulkins, 2006) model was used to structure lessons and occurred for approximately 30 minutes 2-4 times a week over the course of project. As part of the unit launch, a local veterinarian visited the class. She described her job and spoke to the issue of animal care. As she concluded her visit, she issued students a writing challenge, "Other kids need to know how to take care of pets too. Can your class help by writing how-to books about pet care? You can put them in your classroom library and make them available online for other kids." In this way, the writing task: a) met a need within the community (other kids need to know how to take care of pets too); b) would solve a problem (teaches others to care for pets); and c) set a specific audience (other kids). Thus, the unit was considered "authentic" as described by Duke et al. (2006).

After meeting with the veterinarian, students chose a pet to research. They gathered information about how to care for their pet from a variety of sources including other books, information from the veterinarian, and through discussions with one another, family members, and in-class discussions. Throughout the writing process, students participated in mini-lessons (See Appendix A) focused on a specific writing task (i.e., voice, writing for a real audience). Two types of writing conferences were held once a week during the duration of the project: student-to-student and student-to-teacher. At the conclusion of the unit, the veterinarian, parents, and other adults from the school community were invited back the classroom for an author celebration. Products of the unit were shared with the larger community via in-school library and at the veterinary clinic.

Data Collection and Analysis. The data collected during this study consisted of interviews, assessment data, reflective teacher notes, and recorded teacher and student sessions. In the following, data collection and data analysis procedures are discussed.

Interviews. Pre and post student interviews were administered in this study. Questions were open-ended in nature and pertained to broad questions about students' attitudes towards writing (i.e., How do you feel about writing? Are you a good writer? Why do you think that? Why do we write? What kind writing you do at school? In your journal, is there a page that you really like, why that page? Tell me about something you have written? How do you feel about what you wrote?). These interviews were audio recorded and transcribed for data analysis.

Reflective teacher notes. Teacher reflections were collected throughout the study (roughly about twice weekly) as a tool to examine the affordances and obstacles of implementing this action research project. These reflective notes included journal reflections about the project and anecdotal notes about practice as it pertained to the project. These methods of inquiry about practice are consistent within the effective design and implementation of action research (Bradshaw & Vaughn, 2016; Mertler, 2008; Rose, Vaughn, & Taylor, 2015). These reflections were read by both authors for important themes and patterns as they pertained to the research question. Such analysis provided the direction of findings as they pertained to the analysis and data within action research (Cochran-Smith & Lytle, 2009).

Recorded teacher and student sessions. A total of seven whole group sessions were audio recorded and transcribed. Additionally, five student-teacher conferences were audio recorded and transcribed. The purpose of this data was to determine the kind of discourse that occurred between teacher and students in the context of the project. The data were used to contextualize the findings.

Data Analysis. Using a grounded theory approach (Creswell, 2013), authors reread each interview transcript and made memos and notes. In this way, salient themes were uncovered and two categories were drawn from the data (positive and negative/other) that related to students' attitudes toward writing based on the student interviews. Positive responses were noted when students reported words like "fun, good, proud." Negative/other, responses were coded based on student responses like, "I don't like it, kind of, not good at, a little bad and little good, nervous, etc." Frequency counts were tracked and totaled. This data provided information about overall student attitudes.

Then, student interview responses were further examined to understand the focus and content of student discourse. To examine the underlying themes within the discourse, student interview responses were examined to determine if they fit into one of Ivanic's, (2005) six categories of writing discourses (skills, creativity, process, genre, social practices, and socio-political). After reviewing the literature, this framework for analysis was used to document the writing discourse because it provided a lens by which to explore the curricular aspects of writing instruction in schools and the specific writing discourse students may adopt within writing activities. Student responses were coded as pertaining to skills discourse, creativity discourse, genre discourse, process discourse, or social processes discourse. In order to be coded as skills discourse, the response had to contain language about "set linguistic skills" (Ivanic, 2005) such as letter or word formation, punctuation, handwriting, phonics, etc. Responses coded as creativity discourse contained language about imagination, self-selection of topics, or writing from life experience. "Within this discourse the writing has value in its own right, so no purpose or context for writing needs to be specified, and most of the content comes from the students' own experience" (Ivanic, 2005, p. 229). Responses falling into the genre category mention specific types of writing including non-fiction, and how-to writing. Within the process discourse, dialogue that mentioned the writing process (pre-writing, drafting, revising) were coded. Responses coded as creativity discourse contained language about imagination, self-selection of topics,

or writing from life experience. Similarly, responses coded as process discourse mentioned the writing process: pre-writing, drafting, revising, editing, publishing, etc.

Students were then sorted into two groups according to their perspectives about writing instruction: six of the twelve interviewed students fell into Group A and reported positive feelings about writing in the pre-study interview, and six students were categorized into Group B because they expressed negative feelings about writing in the pre-study interview. Sorting the students into two groups provided a context to explore the findings. Each group's transcripts were then reread to examine student attitudes and talk as they pertained to the research question. Themes from each group were compared to determine changes in student attitudes and the discourse used. The teacher reflective journal was then analyzed for themes relating to implementation and teaching practices.

Results and Discussion

When asked about writing instruction and purposes for writing, students expressed positive and negative feelings about writing. Overall, students who were in Group A were overwhelmingly positive about writing instruction in the pre-interview. For example, when asked, "How do you feel about writing?" Cecile said, "I love writing, I can't stop. I love making stories" (Interview, 3/1/2016). She was not alone in this feeling as others in this group shared similar responses. For example, Mark said, "I feel happy because you can use your imagination and write like what you think might happen in the future" (Interview, 3/1/2016). Similarly, Elizabeth shared that writing was also about having a good time. She said, "It's[writing is] fun. You can do funny things" (Interview, 3/1/2016). When asked why she wrote, Felicity responded positively "It's fun," and "because I can make-up whatever I want" (Interview, 3/1/2016).

Interestingly, there appeared to be a connection for Group A between positive feelings and their ability to choose what they wanted to write. For example, when answering the question "Is there a page in your journal that you really like?" Elizabeth responded, "if you [get] to think of something, you usually just like it" to the question, (Interview, 3/1/2016). Cecile said something similar in response to the same question and "I like all of them because I've used my imagination and I've done what I want in my journal" (Interview, 3/1/2015). By stating that she gets to write about what she wants, such a response suggests that choice in topic was an important dimension in considering her perspective on writing.

When looking at the pre-study interview, responses from Group B, indicated a more negative attitude toward writing. Specifically when asked, "How do you feel about writing?" responses to this question included feelings of boredom or negativity as seen in the following, "Umm… pretty bored, cause I don't like writing" (Interview, 3/1/2016),"I don't really like writing" (Interview, 3/1/2016) and "Kinda nervous, that I might mess things up" (Interview, 3/1/2016). When asked, "Are you a good writer?" students responded with negative feelings. For this group in particular, skills held high importance in their relationship to writing. For example, Linda reported, "I'm not very good. I make a lot of mistakes. I always think it's a letter and then it's a different letter sometimes." Ian

responded similarly, “I say medium but I do really good [at writing] a’s” (Interview, 3/1/2016). When asked, “Is there a page in your journal that you really like?” Sean responded negatively stating, “I don’t really like it at all” (Sean, 3/1/2016). Ian shared, “I feel like I don’t even want to write. I just want to draw pictures but [the teacher] asks me to [write]” (Ian, 3/1/2016).

Post study interview analyses revealed that Group A continued to remain positive about writing with 97% of their responses positive. All students in this group responded positively to the question “How do you feel about writing?” and often gave responses similar in nature to those given in the pre-interview, “Good, it’s just fun” (Jason, 5/13/2016). In the post study interview, Group B had a shift in their perspective. That is, Group B was initially negative about writing in school but changed to have a more positive attitude toward writing that in their pre-study interview. Overall, in the post-interview for Group B, 76% of responses were positive. For example, Brandon, a student in Group B, when answering the question, “How do you feel about writing?” in the pre-interview responded, “I don’t really like writing” but after the project reported, “I feel kind of happy [about writing]” (Brandon, 3/1/2016 and 5/15/2016). A similar result was found in Ian and Linda when asked in the post study interview, “How do you feel about writing?” both shared positive responses: “[I feel] pretty good… when I practice I gain confidence” (Linda, 5/16/2016) and “[I feel like I’m a good and normal [writer]” (Interview, 5/16/16)

Writing Discourse. Initially, the most frequently occurring discourse used across groups in the pre-study interviews was the creativity discourse. The creativity discourse contained language about imagination, self-selection of topics, or writing from life experience. Interestingly, groups did not use any language from the genre discourse in the pre interviews. In the post study, Group B used more language form the skills discourse than they did in the pre-study interview. In the following, each group’s results as they pertained to the type of discourse used is discussed.

Group A. In the pre-interview, 65% of the responses from Group A contained language from the creativity discourse including events from the students’ lives and imaginative stories. For example, Cecile, when talking about what she liked to write about at school, responded, “Journal writing because everything that I imagine and some things in real life I write about like my little brother, he drives me nuts” (Interview, 3/1/2016). The journal was a place for her to record her thoughts and ideas about her life. Ownership was also an important theme within the language of the creativity discourse occurring in many of the student responses. As one student shared, “when you think of something, if you think of something you usually just like it” (Interview, 3/1/ 2016). Felicity, Cecile, and Mark also shared that they too liked “doing [my] own writing,” (Interview 3/1/2016) when interviewed about their writing which indicated a sense of ownership about their writing.

Within Group A, language from the skills discourse occurred in 15% of the pre-interview responses. These responses generally referred to learning a skill like handwriting, spelling, or practice of a skill from a previously taught lesson. Elizabeth talked about the writing at

school, “we write for our spelling test and sometimes we have to write for our packet [seatwork]” (3/1/2016). This kind of skills language was also found in responses from Jane and Cecile. When answering the question, “Why do you write?” Jane explained a need to practice, “So we can get better at writing” (3/1/2016).

Language from the social practices discourse occurred in 21% of Group A’s pre-interview responses. Students discussed the importance of text messaging, writing for teaching purposes, and to share knowledge. Interestingly, only one student from Group A used language from a social practices discourse in relationship to writing. When asked, “What kind of writing do you do at school?” Jane responded “At writing time, in my journal and I get to write letters to [teacher] because I read a book with her and I need to write letters to her so she can know how I think about the book” (Jane, 3/1/2016). Such a response underlines the purpose of writing as a mode of sharing communication with others.

Figure 1: Discourses in Group A

In the post study interview, the largest change in discourse for Group A was a decrease in language from the creativity discourse to an increase of language to the genre discourse. There were no responses from the genre discourse in the pre-interview; however, in the post-interview, language from the genre discourse was found across 21% of responses. Students in this group talked more about the importance of writing how-to books, nonfiction, and fiction genres. Cecile shared in the post study interview, “We do non-fiction and make up stories” (5/16/2016). The identification of genres such as nonfiction and fiction was found in other responses about writing. Mark, when asked what kind of writing he does at school, shared, “We write how-to books” (5/13/2016). Statements like this were also found in Elizabeth, Jane, Jason, and Felicity’s responses.

Social practice discourse decreased slightly in this group from 21% of responses in the pre-interview to 17% in the post-interview. This may be due to a shift in student thinking about the purpose and function of writing. Responses pertaining to a skills discourse within Group A remained generally consistent throughout the study.

Group B. In the pre- study interview, 39% of the responses contained creativity discourse language. Typical responses from the creativity discourse were similar to those given by the students from Group A. Life experience and creative stories were featured heavily within this category. When asked to tell about something important, Brandon shared, "I have written about my mom and dad and that's it." (Interview, 3/13/16). Adam shared about a big storm that had recently happened in the following response, "It was about a storm, a real life storm. I did draw a picture of it breaking down a fence, it damaged a car" (3/1/2016). Linda wrote about a dragon and a hunter. "I feel proud that I worked so hard on a story" (3/1/2016). This group also used language from the skills discourse in the pre-study interview almost as frequently as language from the creativity discourse. Within the responses from skills discourse, students often mentioned skills based activities like spelling, handwriting, letter formation, and practice. When asked if she was a good writer, Linda responded, "I'm not very [good]. I make a lot of mistakes. "Why do you think that?" (Author) I always think it's a letter and then it's a different letter sometimes" (Linda, 3/1/2016). For Linda, good writing was linked to letter formation. Skills discourse language also appeared in the responses to the question about the kind of writing done at school. Several students from this group mentioned school-only tasks like seatwork, spelling tests, or handwriting. "We do work writing [seatwork]," Edward says (3/1/2016). Ian mentioned handwriting "we do these joke things [handwriting practice] now" (3/1/2016). "We do a spelling test…and that's it" (Brandon, 3/1/2016).

Figure 2: Discourses in Group B

Post study interviews revealed that students in Group B changed in the way they thought about writing as evidenced in their discourse in several ways. First, the number of responses from the skills discourse decreased from 32% to 27% in their responses. Second, responses containing language from the creativity discourse remained generally stable but changed minimally from 39% of the responses in the pre-interview to 38% in the post-interview. Third, in the pre-study interview no responses from this group contained language from the genre discourse. In the post-study interview, 8% of responses contained language from the genre discourse. Specifically, students in this group spoke of how-to

books and non-fiction writing now in their responses. Social practices discourse decreased slightly from 29% of responses in the pre-interview to 27% in the post-interview.

Reflections from teacher notes and an anonymous Writing Attitude Survey (Kear, Coffman, McKenna, & Ambrosio, 2000) administered to the students before and after the study revealed insights about writing instruction. After administering and scoring the survey according to the procedures outlined by Kear et al. (2000), Author 1 reflected about the overall attitude of her class before and after the intervention as found in the following:

In the pre writing survey, there was a very obvious split in my class. The students who felt positively towards writing felt extremely positive. Five of the eleven students that correctly completed the WAS were above the 75th percentile on the survey indicating that they felt very positive about writing. The remaining seven students scored below the 25th percentile indicating that they felt very negatively about writing. After the intervention, only two students were below the 25th percentile on the Writing Attitude Survey (WAS). Overall, the percentage of students at or above the 40th percentile on the WAS increased after the intervention by five students or 42%. Overall, the students felt more positive after the writing project. (Journal, 6/1/16)

Other reflections revealed the increased enthusiasm about writing that students seemed to feel after the writing project. For example, Author 1 shared the following, “One of my students from Group B was so excited about the author celebration he convinced his mom to come into school immediately after I announced it, one week early” (Journal, 5/14/16) and “Another student whose father worked an hour away, convinced his dad to take time off from work to come in.” (Journal, 5/18/16). When examining the discourse that was used during student and teacher sessions, it was interesting to note the type of language used during sessions. Author 1 shared the following insight about the project:

This of course makes sense; my goal was to teach writing skills, processes and features of genre. In fact, during the mini-lessons was the only time throughout the entire project when process discourse was used. Process discourse was used frequently talk about the next steps in the project like drafting, conferencing. The only time that students used process discourse was in direct response to my questioning.

The skills discourse was also found throughout the discourse between student and teacher. Perhaps not surprisingly, most of this type of discourse was used either teaching an explicit skill based lesson (e.g. how to edit) or during teacher-student conferencing. Despite this focus on skills discourse during writing conferences, conferences were not overwhelmingly discoursally hybrid (Ivanic, 2005), or conversations where the language went back and forth between a variety of discourses. However, in the recorded sessions, one conference was indeed discoursally hybrid where the conversation switched seamlessly back and forth between skills discourse and social practices discourse. Notice in the following how the discourse started as the social practices discourse but then moved to the skills discourse where discussion ensued about adding clarifying details to help the reader understand the

text- switch to skills discourse- spelling patterns, and then switch back to social practices discourse.

> Author 1: (*reading aloud*) "it needs the right size…" right size what?
>
> Mark: shelter…
>
> Author 1: (*reading aloud*) "Then give your hamster exercise. He should have a wheel and a ball." To do what in?
>
> Mark: um…run around in…
>
> Author 1: To run around in. (*reading aloud*) "Last, care of for your hamster" How do you spell CLEEN? Do you need to have check ups"… who does he have check ups with?
>
> M: with the vet.

This exchange illustrates not only how quickly the discourse switches back and forth, but as Ivanic (2005) stated, how social practices discourse often involve implicit understandings while skills discourse is more about explicit teaching of skills. Mark recognized the need to write for an audience (social discourse), but then the use of correct spelling came into the conversation which signified skills discourse.

Overall, students appeared to feel more positive about writing after engaging in this authentic writing project. This writing project was designed to be highly authentic as described by Duke et al. (2006) in that it had both a specific purpose (i.e., to educate other kids) and replicated a real world writing task (i.e., how-to book). Students appeared to increase in their attitudes toward writing as well as the kinds of discourse used to explain their ideas about writing. Although Group B was more negative before the project than Group A, they also showed the most growth in attitude. The discourse in both Groups A and B held true to a variety of discourses. The benefits of conducting an authentic writing unit like this are seen in the growth of students' positive responses about writing and the increase in the kinds of discourse used to describe writing. Incorporating authentic writing projects into the fold of literacy instruction is an important step in the right direction for students, teachers, and schools.

Conclusion

This study documented writing instruction and the type of discourse students engaged in as they participated in writing activities. One recommendation for administrators and policy makers is to encourage action research as a reflective tool of one's practice and the potential benefits of such careful thought and reflection on student outcomes. As seen in this action research study, action research was used as a tool to uncover students' attitudes about writing instruction and their interest in writing pursuits. Implications for other educators include exploring the dialogue students engage in as they participate in writing activities. Future research should explore the long-term impact of authentic writing instruction on students' attitudes and achievement.

The need to support authentic writing instruction in classrooms today is imperative. Instead of mandating teaching to fidelity to mandated literacy programs, honor teachers' creativity, flexibility, and their adaptive decision-making. In doing so, authentic writing activities like the one documented in this action research can become commonplace in schools rather than viewed as an add-on. Our students deserve to engage in authentic writing activities like the one documented in this research.

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Appendix A: Writing Unit Activities Sample

Lesson 1: Unit Launch (2 Days)	
Overview	Unit anchor and launch- veterinarian visit Create anchor chart of what pets need based on visit. Pick animals to write about.
Activities-	• Explain to class that a special visitor will be coming to talk with them today. Host a local veterinarian in the classroom for a talk about pet care. Make arrangements ahead of time to have the speaker issue a writing challenge to students. • "*Other kids need to know how to take care of pets too. Can your class help by writing how-to books about pet care? You can put them in your classroom library and make them available online for other kids."* • After the veterinarian leaves create a chart with notes students remember from the presentation. (*Pets need: Food, Water, Shelter, Exercise and Care).* • Create a class list of the pets students would like to write about. • Between this session and the next gather information in the appropriate reading level for students to use/ OR schedule a trip to library.
Lesson 2: Researching and Defining the "How-To" Genre (2 Days)	
Overview	Research by reading exemplars of the how-to genre Create a class definition.
Activities	Day One: • With the class discuss the challenge issued by the guest speaker. *We need to create "how-to" books that explain to other kids how to take care of a pet. What makes something a how-to book?* Draw attention to this question, elicit ideas from students and keep a list on chart paper under the heading, What makes "how to" writing? • After exhausting students' ideas, pose the question, *Are you sure that this list contains all of the things that make "how to" writing*? Students should recognize that there might be features that are not yet on the list. • Pose the question, *How can we find out what else might be a part of writing a "how to" book?* If students don't come to the idea naturally, suggest looking at how to writing already published. • Introduce the mentor texts. Using the resources from the school library create a bin of how-to texts, saving one example back to serve as a read-aloud. Explain that students will be working with a partner to buddy read one of these books. • Assign partners to a "how to" text. As they finish, ask them to go back and re-read a second time looking for the features that make it a "how to" book. Ask them to record their thinking on the "How-to book Recording Sheet" • Start class Anchor chart of what makes a book a how-to book. Day Two: • Gather students together. Briefly review the task issued by the veterinarian. Discuss the progress on researching the "how-to" genre so far. Explain that today you will read aloud a "how to" book. Ask them to listen for the features they noticed yesterday and add to anchor chart. • Read aloud the selected book (or a section) of it. Discuss the features of a "How to"

	texts and complete anchor chart. Make sure at a minimum it includes: o Step by Step directions o Use of transition words: First, then, next, last or numbered steps o Pictures for each step o Procedural warnings o Text features: table of contents, glossary, index, etc. • Post the class definition in the room for further reference.

WRITING IN MATHEMATICS TO INCREASE STUDENT UNDERSTANDING

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Abstract The purpose of this action research study was to understand the impact of introducing writing into the mathematics sequence of a third-grade class. The teacher-researcher sought to understand students' perceptions of as well as her personal perceptions of introducing writing into mathematics and how this impacted student achievement. Data was collected through writing samples, assessment scores, observations and reflections, surveys, and interviews. The data was analyzed using the constant comparative method as well as quantitative methods of analysis. Three major themes emerged from the qualitative analysis of the data: process of introducing writing into mathematics, student attitudes and ideas, and developing mathematical understanding. The analysis of students' assessment scores showed that four students' achievement increased. This study will enable educators to gain a better understanding of what it looks to introduce writing into the mathematics sequence of a classroom as well as how it impacts students' perceptions and achievement.

Keywords: teacher action research, mathematics, writing, elementary, communicate understanding

Introduction

"Why do I have to show my work? I got the right answer. Why does it matter *how* I got my answer? I got it right. I can't explain how I did it. I just did it and got the answer." I would be willing to bet that most classroom teachers have heard these phrases before, and, to be really honest, I even remember saying some of these things to my teachers when I was growing up. Traditionally, mathematics instruction focuses on calculating the correct answer and places the majority of the attention on the end result. However, the National Council of Teachers of Mathematics (NCTM) encourages teachers to focus on the process, and one of the five process standards developed by the NCTM is communication (NCTM, 2000). Teachers not only have to teach their students the processes of doing mathematics, but they also have to give their students the skills necessary to be able to communicate their understanding. This job is easier said than done. However, some teachers have been incorporating writing into their daily mathematics routine in order to help their students

gain a deeper understanding of mathematics concepts as well as to give their students a way to communicate that understanding.

Literature Review

Incorporating writing into mathematics has been found to have several positive impacts on students. One positive effect of writing in mathematics is increased student achievement. Kostos and Shin (2010) found that students' assessment scores and use of mathematics vocabulary increased after writing in their mathematics journals for five weeks. In addition to influencing student achievement, the use of writing in mathematics has been found to increase student participation. Baxter, Woodward, and Olson (2005) concluded that students who typically did not engage in class discussions, in a class where writing in mathematics was routine, did meaningfully participate in writing about mathematics. Teachers, researchers, and teacher-researchers have noticed these positive impacts, but they are not the only ones. Jurdak & Zein (1998) concluded that, when given the opportunity, students expressed positive attitudes towards writing in mathematics journals. Albert (2000) found that students believed writing in their mathematics journals made mathematics easier.

What contributes to these positive impacts? Writing in mathematics enables students to think reflectively and communicate their understandings, and it allows teachers to see what their students understand. John Dewey (1933) made the claim that thinking reflectively is the best way to think because it deepens one's understanding. The act of writing requires this kind of reflective thinking. The writing samples collected and analyzed by Pugalee (2001) indicated that students were using metacognition and became aware of their own thinking as they wrote about mathematics. The NCTM encouraged teachers to focus on teaching the process of doing mathematics by helping students communicate their understandings (NCTM, 2000). Students have to make their understandings known to others. Baxter, Woodward, and Olson (2005) concluded that writing in mathematics gave students the opportunity and the skills necessary to be able to communicate their understandings to their teachers. Dewey (1933) explained that teachers are responsible for knowing what their students understand. After looking at how effective mathematics journals were in a second grade classroom, Kostos & Shin (2010) concluded the teacher was able to adjust her instruction for individuals and the whole class after reading students' mathematics journals.

What does writing during mathematics actually look like in a classroom? Mathematics journals are a popular way to incorporate writing into the routine of a classroom's mathematics sequence. Wilcox & Monroe (2011) explained that learning logs, or mathematics journals, can serve as a valuable, meaningful way to begin or end a lesson. Burns (2004) described eleven strategies for utilizing writing in mathematics including establishing a purpose, using prompts, providing time for sharing, posting vocabulary, and establishing an audience. Jurdak & Abu Zein (1998) utilized two types of prompts in their study including cognitively oriented prompts that focused on mathematics concepts and affectively oriented prompts that focused on students' strategies, explanations, and

feelings. Writing a letter to a friend who was absent in order to teach their friend what he or she missed or writing to someone who was struggling to understand a specific mathematics concept are additional prompts used in a separate study (Shield & Galbraith, 1998). Several researchers have used mathematics journals in their studies as a way to incorporate writing into the routine of a classroom's mathematics sequence (Baxter et al., 2005, Jurdak & Abu Zein, 1998, Kostos & Shin, 2010, Shield & Galbraith, 1998).

Previous research studies have found positive aspects to writing during mathematics, shown how writing during mathematics impacts students' understandings, and suggested several strategies for incorporating writing into mathematics. Most of the research studies regarding writing in mathematics include participants in middle school and high school (Albert, 2000, Baxter et al., 2005, Jurdak & Abu Zein, 1998, Pugalee, 2001, Shield & Galbraith, 1998). My study will add to the current body of research by looking at how writing during mathematics impacts elementary students. While other research studies have focused on either academic achievement or the perceptions of students, this study will provide teachers with a better understanding of both students' perceptions of writing during mathematics as well as my perceptions of introducing writing into mathematics for the first time in addition to student achievement.

Methodology

Purpose. The purpose of this study was to understand the impact of using writing in mathematics as a way to gain an understanding of mathematics concepts. I aimed to understand my students' perceptions regarding writing during mathematics. In addition, I examined my own perceptions about the process of introducing the use of writing into mathematics. Finally, I sought to understand what impact the act of writing in mathematics has on student achievement. The research questions that inspired this study included the following: What happens when a clinical teacher introduces writing as a way to help students develop an understanding of mathematics concepts?

> Sub Question 1: What are my students' perceptions about using writing to develop an understanding of mathematics concepts?
>
> Sub Question 2: What are my perceptions as a clinical teacher about the process of introducing the use of writing into mathematics as a way to help students develop an understanding of mathematics concepts?
>
> Sub question 3: How does the act of writing in mathematics, as a way to develop an understanding of mathematics concepts, impact end of unit mathematics scores?

During the study, I was a graduate student completing my yearlong clinical teaching experience as part of the master's program at my university. This study was conducted at an elementary school (all names have been changed to pseudonyms) in a west Texas town with a population of around 120,000 people. The elementary school was one of fourteen elementary schools in the school district. Each elementary school in the district was identified as a Title I school. The portion of the student population at the chosen elementary

campus who were economically disadvantaged was higher than the district's percentage, as 75% of the student population was economically disadvantaged.

Method. The following describes a mixed-methods action research study conducted in a third-grade classroom. The study was completed during the second semester of the school year. The students were comfortable with my presence in the classroom as a teacher and a researcher because this was part of my yearlong clinical teaching placement. The students were used to writing and mathematics, but writing in mathematics was completely new. As I introduced writing into the routine of our mathematics sequence, I set the expectations for writing in mathematics and modeled how to respond to each prompt.

Participant Selection. There was a total of 22 possible participants coming from one self-contained, inclusion classroom. The class was ethnically diverse and included 15 boys and seven girls. Three students were receiving accommodations and modifications through their Individualized Education Programs for ELAR as well as mathematics instruction. These students were not asked to participate because they were not in the classroom at the time of our mathematics sequence. Therefore, they did not have the opportunity to write during math. Two students were receiving accommodations as documented on their Behavior Intervention Plans. Additionally, two students were receiving academic accommodations through pull-out tutoring programs.

Every student, with the exception of the three students being pulled out during the mathematics sequence, was informed of the study and received an informational letter and consent form for their parents to read and sign. Each student who received consent was given the opportunity to fill out an assent form in class. A total of 12 students received consent and gave assent to participate in the study. Each of the 12 participants completed a survey, was observed, and had their assessment scores and writing samples collected. Students were then selected to participate in the interview portion of the study based on their responses to the survey questions.

Data Collection. Several forms of data were collected including writing samples, assessment scores, observations and reflections, surveys, and interviews. Data was collected through samples of students' writing in the form of mathematics journal entries. Students were asked to write journal entries two times a week for four weeks by responding to a teacher-given prompt. Throughout my study, I continued to implement the direct instruction, guided practice, and independent practice portions of the mathematics sequence the same way I had since the beginning of the school year. When I introduced writing into the mathematics sequence, I did so right after the independent practice portion of the mathematics sequence. The students were given approximately five to seven minutes to respond to the prompt in their mathematics journals. In order to collect their writing samples, I had my students keep their mathematics journals open to the page they were writing on when our writing time was over and stack their journals on the back counter where they usually turned in their work.

Data was also collected through weekly assessment scores. The students' scores on the end of week assessments were collected. Scores were collected on the four assessments prior to the introduction of the use of writing in mathematics. In addition, student scores were collected on the four assessments taken during the four weeks students were writing in their mathematics journals. The students' scores on a total of eight end of week assessments were collected.

Additionally, data was collected in the form of observations and reflections. I kept a reflection journal throughout the study. I wrote in my journal each day the students were asked to write in their journals. I observed the students during our mathematics sequence and wrote field notes that briefly described significant events regarding how the students were responding to writing during mathematics (Hendricks, 2017). I fleshed out my head notes and recorded my reflections after reading the students' journal entries at the end of the day. The reflections were based on general observations during the mathematics lessons as well as the students' writing samples.

Data was also collected in the form of student surveys. The students responded to ten statements by marking an answer on a four-point Likert Scale. The survey also included three open-ended questions about the students' past experiences with writing in mathematics as well as their initial perceptions about writing in mathematics. The surveys were completed during the third week after the introduction of writing in mathematics as a way to better understand mathematics concepts.

Finally, data was collected through student interviews. Six individual student interviews were conducted. The interviews were conducted utilizing a semi-structured interview format (Hendricks, 2017). The same planned questions were brought to each interview, but the questions varied, and additional questions were asked depending on the answers of the participants. Each interview lasted approximately 10-15 minutes, and all interviews were conducted during the fourth week after the introduction of writing into our mathematics sequence.

Data Analysis. The constant comparative method (Glaser & Strauss, 1967) was used to analyze students' writing samples, my reflection journal, the open-ended questions on surveys, and interviews. I identified major themes as well as supporting codes after the initial coding. Approximately 15-20 level I codes were identified after manually coding the first 20 percent of the data. The level I codes were then used to analyze the remaining 80 percent of the data. After looking closely at my level I codes, I created level II codes based on the major themes I identified (Tracy, 2013). The level I codes were descriptive and focused on answering the who, what, when, and where questions about the data. The level II codes included my interpretation of the data and focused answering the why and how questions about the data. I created a codebook (see Appendix A) that lists all of my level I and level II codes as well as definitions and examples of each code. I was able to gain an

even deeper understanding of my level II codes by writing memos for each one that included my reflections and understandings of each level II code (Tracy, 2013).

The closed ended questions on the surveys were analyzed based on the answers students gave to each question. The students responded to each statement on the survey by marking that they strongly agreed, agreed, disagreed, or strongly disagreed with the statement. Each statement was worded so that "strongly agree" always indicated the most positive perception and "strongly disagree" always indicated the most negative perception of using writing in mathematics. Four percentages were calculated for each student. One percentage was found for the amount of times they chose each of the four answer choices. Based on this analysis, six students were interviewed: three students with positive perceptions and three students with negative perceptions about the use of writing in mathematics.

The students' assessment scores were analyzed by calculating measures of central tendency (Hendricks, 2017). Individual student scores were calculated by finding the percent of questions students answered correctly. The individual student scores were then used to calculate a mean, median, mode, and range of scores for the four assessments taken before and then for the four assessments taken after writing was introduced into the mathematics sequence.

Process of Introducing Writing into Mathematics. The idea of establishing procedures and expectations continued to emerge throughout my data. Although this was definitely more prominent during the first couple of weeks of my study, establishing procedures and expectations continued to appear in the data until the very last day I collected data. I wanted writing in mathematics to be consistent and become a routine. In my reflection journal, I continuously noted different aspects of our routine for writing during mathematics including, how I called the students to our whole group meeting area with their mathematics journals, how I spent about ten minutes reading my students' writing samples after school, and how I planned to make adjustments to my lesson plans for the following day based on the information I learned about their understanding of mathematics concepts. In addition, my students highlighted different components of our routine including how I read each prompt aloud to them and showed them my writing responding to each specific prompt.

In addition to having a defined procedure, I wanted to establish specific expectations. It was important to me that my students knew what I expected of them as we wrote during mathematics. I wanted my expectations for their behavior as well as for their quality of writing to be clearly communicated. My reflection journal contained a record of the behavior expectations I set for my students throughout the study including staying in one spot, being at voice level zero, and keeping your pencil on your paper the whole time. My students echoed these expectations in their interviews. In addition, my reflection journal contained snapshots of the moments I set expectations for their quality of writing including not worrying about spelling or punctuation, focusing on getting all of their thoughts down

on paper, and having the option to include examples. My students explained in their interviews that I communicated these expectations clearing by walking my students through my example writing. I pointed out my misspelled words, my numbered lists, my picture examples, and my labels for each picture. The importance I placed on establishing procedures and expectations became very apparent to me as I analyzed my data. I spent a lot of my time explaining the procedures and expectations to my students as well as reflecting on these aspects of my research study. I believe that spending the time to set a firm foundation of procedures and expectations helped me to have a more positive experience introducing writing into mathematics because it gave me structure, consistency, and stability.

Along with establishing procedures and expectations, the writing prompt, showing examples, and giving students additional prompting became very important to the process of introducing writing into mathematics. Each time the students were asked to write in their mathematics journals, they responded to a prompt either about a friend who was absent or a friend who didn't understand a concept. A full list of writing prompts can be found in Appendix D. As I analyzed my students' writing samples and data from students' interviews, I noticed that the students became familiar with these prompts and took ownership of having the opportunity to help a friend. David explained in his interview that he felt excited about writing during mathematics "because last time we wrote, Erica and Abigail were absent, and now anyone in the class can share their different writing with them and how they do it in their steps." By analyzing my reflection journal, student interviews, and writing samples, I found that showing students examples of my writing made a positive impact on the process of introducing writing into mathematics. My examples showed my students what it looked like to write during mathematics as well as what I was expecting of them each time I asked them to write. When the writing prompt and my examples fell short of what my students needed in order to start writing on their own, I gave them additional prompting. My additional prompts were given verbally and almost always included questioning. I would ask my students to define mathematics vocabulary or explain mathematics concepts verbally. After they were able to say the information verbally, it became easier for my students to write about the information.

I have come to understand that the process of introducing writing into mathematics is a continually evolving process. My reflection journal was filled with descriptions of a chaotic classroom, of confused students, and of a clinical teacher who seemed to be in over her head. These less than picture-perfect situations gave me the opportunity to adjust the process of writing in mathematics. I rephrased directions, clarified the purpose, implemented additional scaffolding, and changed the procedures on more than one occasion. With adjustments, the process became smoother and more refined. Although there were times that I was overwhelmed with the process of introducing writing into mathematics, I quickly became familiar and comfortable with the process. I appreciated that the process of introducing writing into mathematics was flexible. The flexibility of the process enabled me to make the decisions, changes, and adjustments necessary for

integrating writing into the mathematics sequence of the classroom in a way that was meaningful, productive, and practical for both my students and me.

Student Attitudes and Ideas. The students' attitudes and ideas were either explicitly stated by the students or inferred by me through their actions and writing. I inferred my students' attitudes about writing during mathematics by observing their behavior. After analyzing my observations contained in my personal reflection journal, I was able to see that some students avoided writing by getting up during the writing time, playing with their pencils, talking to their peers, and even sleeping. While those behaviors indicated to me a negative attitude, other students wrote quickly, continued writing after the time was up, and wrote without looking up or talking to anyone else. These behaviors showed me that the students were eager to write. Student confusion and student confidence was identified by the students' verbal responses. Using the information I gained from my observations, my personal reflection journal, and student interviews, it became clear that some students asked questions about the concepts and procedures indicating that they were confused, while other students showed their confidence by explaining how easy it was. By observing the students and listening to them, I was able to gain a better idea of students' perceptions towards writing in mathematics. As the students wrote, I observed many students pause to look up and reference the writing prompt. Having the writing prompt available seemed to help students when they felt stuck or couldn't think of anything else to write. However, even though students referenced the prompt, I often heard the phrase, "I'm done." The students were positive that they had written absolutely everything they knew about the specific mathematics concept mentioned in the prompt. If I didn't hear that phrase, I heard, "I don't know what to write." Students who said this felt like they were stuck. They either didn't know how to begin their written response or didn't know how to continue it. The students speaking these phrases seemed to have a negative attitude towards writing in mathematics and were not motivated to persevere through the writing period. I often felt at a loss hearing these phrases from my students. I was not quite sure how to respond. However, I found that engaging the students in conversations about the mathematics concepts increased their confidence and ability to continue writing. Although I had hoped all of my students would have had nothing but positive attitudes and perceptions towards writing in mathematics, finding a strategy that enabled my students who were unmotivated and frustrated be successful enabled me to have a more positive attitude.

As I interviewed students, I quickly became aware of both the good feelings as well as the bad feelings students had as they wrote during mathematics. Some students felt relaxed, confident, and excited about having the opportunity to write while other students felt anxious, bored, and unmotivated. Similarly, there were times when I felt confident, empowered, and enthusiastic about introducing writing into mathematics while at other times I was overwhelmed, frustrated, and perplexed. Martin had a difficult time picking one favorite part about writing in mathematics, so in his interview he explained, "I don't really have a non-favorite part. I like all about it. There's nothing I really don't like about it." However, everyone did not share those positive feelings. Jacob explained during his interview that, if he were a teacher, he would never ask his students to write during

mathematics, “because writing during mathematics sometimes could get boring…just sitting there and just picking up a pencil and write, write, write.” These good and bad feelings influenced the students’ ideas about writing during mathematics. The students expressed their ideas about writing in mathematics during their individual interviews by including and explaining specific aspects that they felt needed to change as well as components that they thought could stay the same. Students wanted to change the amount of time we wrote and where we wrote, but they wanted the writing prompts and my writing examples to remain consistent. Gaining a more accurate understanding of my students’ attitudes and ideas towards writing in mathematics enabled me to evaluate the way I introduced writing into the regular mathematics sequence of the classroom. There were components that the students did not like, aspects that the students tolerated, and elements that the students looked forward to. I was thankful that there was flexibility in how I implemented writing in mathematics. This enabled me to adjust the process in response to my students’ attitudes and my own attitude. The flexibility to adapt the process to meet the specific needs of my students and myself was one of the most exciting and meaningful components of introducing writing into mathematics because I felt as though it made a deeper and more profound impact on the whole classroom.

Developing Mathematical Understandings. Developing mathematical understanding included the key ideas of the purpose of writing as well as remembering and understanding. The purpose of writing was not only something that I explicitly explained to my students but also something that my students brought up in their interviews. I explained that the purpose for writing in mathematics was for all of us to know what they really knew about the mathematics concepts they were writing about. I elaborated on this idea by describing that the purpose for writing in mathematics was to slow down and think about what we really know and share our mathematics thinking to others. In their interviews, my students explained that the process of writing showed them what they knew and made them realize what they didn’t fully understand yet. Gabe explained in his interview the purpose of writing in mathematics when he described that writing in mathematics is important “because then we can understand mathematics more and learn about it more and teach other people.” Remembering and understanding was a theme that emerged from the student interviews. The students described how writing about mathematics helped them remember the concepts when they saw questions later. Steven explained during his interview that writing during mathematics “helps me remember it…I can look back on the paper or mathematics journal.” My students made it clear in their interviews that they understood the mathematics concepts better and more fully after they wrote about them. Natasha described in her interview how writing during mathematics helps her understand mathematics concepts “because once you write, you can comprehend stuff way better…because once I write, it helps me understand more stuff that I need to know.” My motivation behind this research project was to increase my students’ understanding of mathematics concepts. I was excited to see, through student interviews, that my students understood and valued this purpose too. Seeing that my students believed in the benefits of writing during mathematics gave me a deeper appreciation for the entire process of introducing writing into mathematics.

Through examining the students' accurate written responses, the examples they included in their writing, and their inaccurate written responses, I was able to see that my students' writing mirrored what they described in their interviews. Their second writing each week seemed to be more accurate and more thorough than their first. Looking specifically at their written accuracies, inaccuracies, and examples, I was able to gain a deeper understanding of how my students' mathematical understanding of concepts was developing. For example, Natasha defined equivalent fractions as "fractions that may look different but are equal to each other." She also included an example as shown in Figure 1. Her written response was very similar to many other students' responses. By reading their responses I knew that I did not need to spend more time on the definition of equivalent fractions. I was able to see that I now needed to give my students the opportunity to apply their knowledge of equivalent fractions to a variety of different contexts.

Figure 1. Natasha's writing sample.

Results and Discussion

There were three major themes that emerged from the analyses of students' writing samples, students' survey responses (The survey questions can be found in Appendix B, and the survey results can be found in Appendix C.), student interviews, and my personal reflection journal: process of introducing writing into mathematics, student attitudes and ideas, and developing mathematical understandings. In addition to discussing each of the key themes, I will describe the significant findings found from the analysis of students' assessment scores.

In contrast to accurate written responses, Steven described one part of a division problem as the "dividend is a times answer." After reading several other students' responses that were similar, I knew that I needed to spend more time defining and describing the parts of a division problem before I moved on to having the students apply this knowledge. Being

more attune to my students' mathematical understanding, had a positive impact on my future instruction. I was able to adjust my instruction to meet the immediate, specific needs of my students. Having this ability was, for me, the most meaningful component of introducing writing into the mathematics sequence of the classroom.

Assessment Scores. I compared the mean of students' assessment scores from the four weeks before I began introducing writing into mathematics to the mean of students' scores during the four weeks students were writing during mathematics. During weeks one, two, three, and four the mean scores were 71.67, 74.83, 83.85, 69.83 respectively. The mean score for the four weeks students were participating in mathematics the same way that had been since the beginning of the school year was 74.98. During weeks five, six, seven, and eight the mean scores were 66.75, 67.50, 67.42, and 80.90 respectively. The mean score for these four weeks was 70.64. During these four weeks, the students were writing twice a week. The mean score on students' assessment decreased 4.34 points during the implementation of writing during mathematics.

In addition to studying students' assessment scores by week, I examined the assessment scores of individual students before and after the introduction of writing into mathematics. Eight students' scores decreased after the introduction of writing during mathematics. Erica's scores decreased the most. Her mean score on the assessments before writing during mathematics was 75.75 while her mean score during the implementation of writing during mathematics was 37.50. Her mean scores decreased by 38.25 points after she started writing during mathematics. Four students' assessment scores increased after they began writing during mathematics. Henry's scores increased the most. His mean score on the four assessments before writing during mathematics was 70.75, and his mean score increased by 15.50 points to 86.25 when he began writing during mathematics. In Figure 2, you can find the mean scores for each individual student, and all of the students' assessment scores can be found in Appendix E.

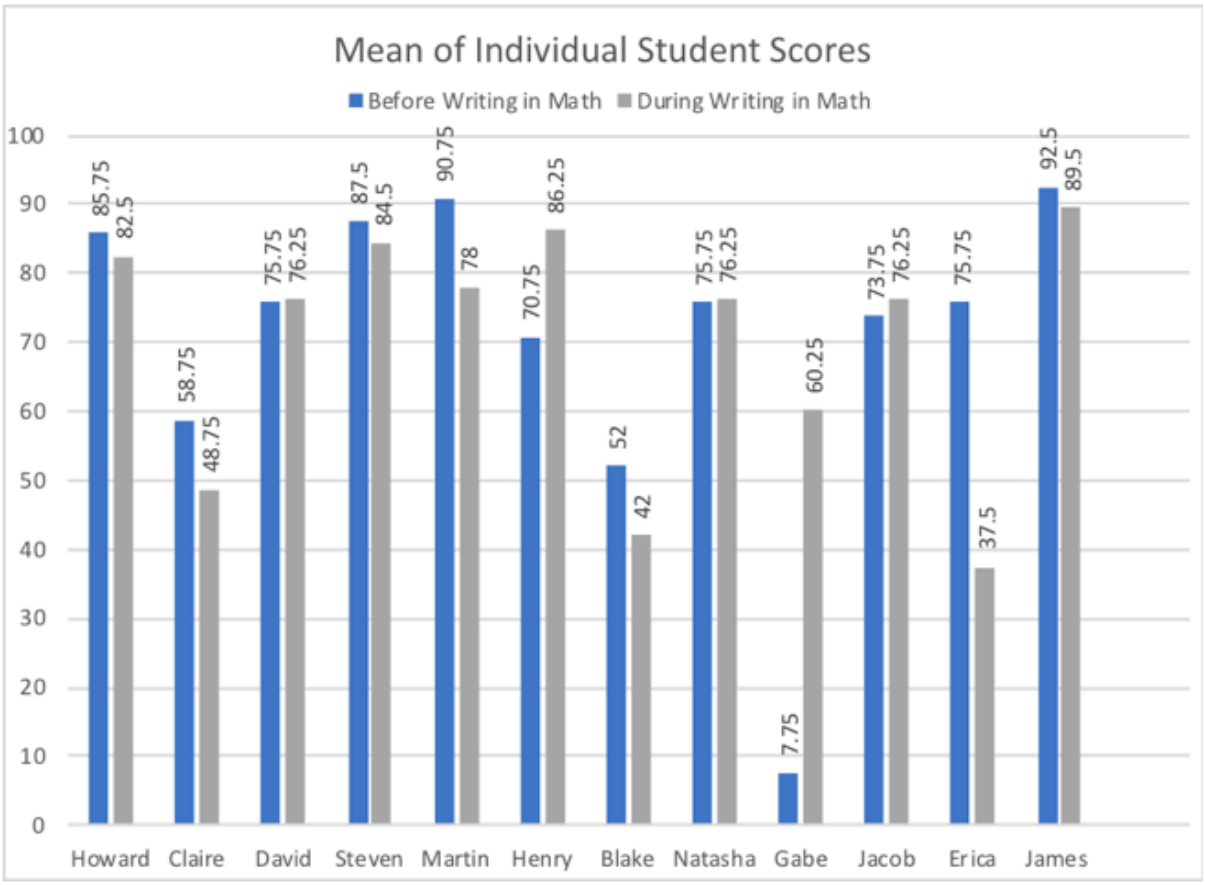

Figure 2. Graph of students' assessment scores.

There are limitations to analyzing students' assessment scores. We covered a different mathematics concept each week. During the four weeks before I introduced writing into mathematics, we covered multiplication with no regrouping, multiplication with regrouping, area, and equivalent fractions. During the four weeks students were writing during mathematics we covered equivalent fractions in sets of objects, place value and multiplication, problem solving strategies, and division. Another limitation of analyzing students' assessment scores was other factors that could have potentially impacted students' scores. During my study a lot of students were absent. Some students were only absent once while some students were absent multiple days within the same week. There were also several students who were absent on one or more Fridays during the study. When students missed the assessment on Friday, they had to wait three to five days to take the assessment. The increased time between the instruction and their assessment as well as missing the instructional time spent on the mathematics concepts could have impacted their assessment scores. Because students were assessed over a different concept each week and there were outside factors that could have impacted students' assessment scores, it is difficult to determine the extent to which students' assessment scores were impacted specifically by the act of writing during mathematics. Initially, I was disappointed not to see a dramatic increase in students' assessment scores. However, I had to remember that there were still, as there always will be, factors that were outside of my control. I believe that the process of introducing writing into mathematics was a good first step in helping my students

gain a deeper understanding of mathematics concepts. I hope to have the opportunity to continue collecting and analyzing data in order to find more trends and be able to adjust the process that will ultimately result in my students having the ability to not only increase their assessment scores but also to comprehend the mathematics concepts at a deeper and more meaningful level.

Implications

Traditionally mathematics instruction has focused on preparing students to calculate an accurate answer. Recently the conversation within the educational community has shifted to not only asking students to produce a correct answer but also requiring students to explain their process. Writing in mathematics enables students to think reflectively and communicate their understandings, and it allows teachers to see what their students understand. Previous research studies (Albert, 2000, Baxter et al., 2005, Jurdak & Abu Zein, 1998, Pugalee, 2001, Shield & Galbraith, 1998) have shown that writing in mathematics has been met with positive attitudes from teachers, teacher-researchers, and students as well as increased student achievement. In contrast to the majority of other research studies, my research was conducted with elementary school students. However, my study produced results that were similar to the previous research studies conducted with middle school and high school participants (Albert, 2000, Baxter et al., 2005, Jurdak & Abu Zein, 1998, Pugalee, 2001, Shield & Galbraith, 1998).

Although not all of my participants' achievement increased based on the analysis of their assessment scores, several students' scores did increase. I think that there were many factors that could have contributed to seeing increased achievement in some students and decreased scores from other students. Students' assessment scores could have been impacted by the number of absences students had during the week, their attitude on the day the assessment was given, and how focused they were as they took the assessment. In addition, I believe that the students whose scores decreased may have benefited from additional time practicing the match concept, while the students whose scores increased benefited from being able to engage in reflective thinking and write. Writing during mathematics did take away between five and ten minutes of instructional time during our mathematics sequence two days a week. It is hard to determine how much of the students' assessment scores were impacted specifically by introducing writing into mathematics.

Personally, I consider my most significant finding to be the emergence of developing mathematical understanding as a key theme. I was able to see, through the data I collected, that my students believed writing during mathematics helped them understand and remember the concepts better. I had the opportunity, from looking at my students' writing samples, to gain a more detailed picture of exactly what my students understood and what concepts still caused confusion. By reading my students' writing, I was able to identify when students needed additional instruction, scaffolding, and tutoring as well as when my students had mastered a concept, were ready to move on, and would benefit from enrichment. Developing mathematical understanding was the goal from the very beginning.

The data I collected and analyzed provided evidence that writing during mathematics can help my students develop mathematical understanding as well as enable me to provide my students with more meaningful instruction.

As teachers begin to introduce writing into the mathematics sequence of their classrooms, I would encourage them to be flexible. Although writing during mathematics became a routine in my classroom over the four weeks of my study, I am still making minor adjustments to the process as I continue to make writing in mathematics a priority in the classroom. It took me about a week to find a routine that worked well for my students as well as myself. Writing during mathematics may look different in each classroom, and I think it should. It is important to, like you would with any new instructional practice, take the time to find what will make your students successful. In addition, it is important to understand your students' perceptions towards writing during mathematics. I found that some students really enjoyed writing during mathematics while other found it boring. In the future, I will be exploring ways to make it more engaging for all of my students. I am hopeful that introducing writing into mathematics from the very beginning of the school year and allowing students to provide input into how it is implemented will cause students to really take ownership in the process.

Although this research study is informative, important, and influential to the educational community, I am still left with questions about how writing during mathematics impacts students, student achievement, and teachers. How much of student achievement is impacted solely on the act of writing during mathematics? How can teachers make writing during mathematics engaging for all students? How much instructional time should be dedicated to writing during mathematics? It is essential for additional research to be conducted across multiple grade levels, various settings, and diverse student demographics. Because of the outcomes of this study and the results found in other studies, writing during mathematics will be an intentional instructional practice that I implement in my future classroom.

Conclusion

This study was conducted to gain a deeper understanding of the impact that the process of writing in mathematics has on elementary students. Writing during mathematics gives students the opportunity to reflect on their personal understanding of mathematics concepts as well as communicate their understanding to others (Dewey, 1933, Pugalle, 2001). In addition, I found that writing during mathematics enables teachers to gain a deep understanding of what their students know as well as become aware of any misconceptions their students have. Students have been found to have positive perceptions towards the act of writing in mathematics (Jurdal & Abu Zein, 1998). Writing in mathematics has been found to not only increase students' understanding of mathematics concepts but also increase students' mathematical achievement (Kostos & Shin, 2010). Because of the benefits reported in other studies as well as the benefits I found throughout this study, I continued to implement writing during mathematics in my current placement, and I plan to make

writing during mathematics a priority in my future classroom. Engaging in the reflective process of writing during mathematics has the power to not only increase students' understanding of mathematics concepts but also enable students to have the ability to communicate their understandings of those concepts to others.

About the Author

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Appendix A: Codebook

Code Name	Level	Definition	Example
process of introducing writing into mathematics	II	any mention or description of the process of introducing writing into mathematics	"Today we are going to start something new in math. We are going to start writing in math."
writing prompt	I	mention of introducing the writing prompt or the students talking about the writing prompt	I began reading the writing prompt. "Today we are going to respond to this prompt. Imagine one of your friends was absent…"
establishing procedures and expectations	I	when I describe or the students talk about the procedures or expectations for writing in math	"Each time we write, you will write in your mathematics journals and you will respond to a prompt."
showing examples	I	mention of me showing the students an example of a mathematics journal entry or the students talk about my example	"Here's an example I wrote..." I placed my writing under the iPad and read my writing to them.
additional prompting	I	giving students verbal prompts during writing in addition to the writing prompt	"If you are having trouble getting started, you may want to write an example number and talk about the place value of the digits."
adjusting writing in math	I	making changes to the procedures and expectations of writing during mathematics	Next time, I will have the vocabulary words typed write under the prompt so that all of the students can see it from their desks.
adjusting future instruction	I	mentioning or planning future instruction based on student's mathematics journal entries	Before the assessment tomorrow, I want to reiterate that specific part of our definition of equivalent fractions.
developing mathematical understandings	II	any description of students acknowledging their mathematics understanding or of me understanding my students' mathematical	"Because you can understand it more. Like you write it and you can understand it more. What

		understandings	you think."
purpose of writing	I	when a student or I describe or identify the purpose of writing in math	"When we write in math, we just want to take the time to slow down and really think about what we know."
accurate verbal response	I	students responding with accurate information verbally or describing talking during mathematics	She replied, "fractions that are the same."
accurate written response	I	describing students' accurate responses in their mathematics journal	Equivalent fractions are fractions that may look different but are equal to each other
including examples in writing	I	describing examples in writing or students mentioning the examples they used in writing	"So, they know how to do it and see how to do the steps and what I did with them."
inaccurate written response	I	describing students' inaccurate responses in their mathematics journals	"Dividend is a times answer."
remembering and understanding	I	students explaining how writing during mathematics helps them remember or understand mathematics concepts	"Because once you write, you can comprehend stuff way better."
student attitudes and ideas	II	any mention or description of the students' attitudes, opinions, or ideas about writing during mathematics	"I don't really have a non-favorite part. I like all about it."
student confusion	I	describing situations when students show confusion about mathematics concepts, expectations, or procedures through their verbal responses, written words, or actions	Students started asking what they were supposed to do and how to spell words.
avoiding writing	I	describing off task behaviors students display to avoid writing	He was looking around the room and playing with his glue stick inside his desk.

eagerness to write	I	describing student behaviors that show they are excited to write	He began writing before I finished talking. He wrote for four minutes without stopping.
"I don't know what to write."	I	students explaining that they don't know what to write	"But I don't know what to write"
"I'm done."	I	students explaining that they are done writing	After about four minutes of writing, he put his pencil down and said, "I'm done."
referencing prompting	I	observing students looking back at the writing prompt	She looked up a couple times toward the writing prompt and vocabulary.
student confidence	I	students using language or behaviors that show their confidence in mathematics	"There's no hard part about writing in math."
suggestions about changes	I	students making suggestions about changes in writing during mathematics	"To have more time…like two more minutes."
suggestions about keeping it the same	I	students making suggestions about keeping writing during mathematics the same	"That we get to write and there's quietness and there's no yelling."
good feelings	I	students describing good feelings towards writing during mathematics	"That it's fun and I really enjoy writing."
bad feelings	I	students describing bad feelings towards writing during mathematics	"Because writing during mathematics is boring…just sitting there and just picking up a pencil and write, write, write."

Appendix B: Student Survey Questions

1. Writing can help me show other what I know about math.
2. Writing during math can help me understand new math concepts.
3. Writing in mathematics can help me think about what I understand about math.
4. Writing in mathematics can help me think about what I do not understand about math.
5. It is important to write during math.
6. My teachers have asked me to write during math.
7. I want to write during math.
8. I write a lot during math.
9. It is easy to write during math.
10. I enjoy writing during math.
11. How do you feel about writing during math?
12. What will be the easiest part, for you, about writing during math? Why?

Appendix C: Student Survey Analysis

Percentages of Survey Responses

Survey Responses

Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Howard										
Claire										
David										
Steven										
Martin										
Henry										
Blake										
Natalie										
Gabe										
Jacob										
Erica										
James										

Strongly Agree	Agree	Disagree	Strongly Disagree

Name	Strongly Agree	Agree	Disagree	Strongly Disagree
Howard	30	70	0	0
Claire	0	60	30	10
David	60	0	30	10
Steven	0	30	40	30
Martin	20	20	30	30
Henry	20	40	40	0
Blake	30	30	30	10
Natasha	60	20	20	0
Gabe	40	30	20	10
Jacob	10	20	20	50
Erica	30	40	20	10
James	40	20	20	20
student interviewed for positive perceptions			student interviewed for negative perceptions	

Appendix D: Writing Prompts

Week One, Day One

What are equivalent fractions? How do you know if fractions are equivalent? What questions do you still have about equivalent fractions?

Week One, Day Two

Imagine one of your friends was absent. He/She needs to know everything we've learned about equivalent fractions. How would you explain everything we've learned about equivalent fractions to your friend? What questions do you still have about equivalent fractions? Math words: equivalent, fractions, numerator, denominator

Week Two, Day One

Imagine one of your friends was absent today. He/She needs to know everything we've learned about place value. How would you explain place value to your friend? What questions do you still have about place value? Math words: hundred thousand, ten thousand, thousand, hundred, ten, one, place value, expanded form, expanded notation

Week Two, Day Two

Imagine one of your friends is have trouble remembering how to multiply. How would you explain the different strategies he/she could use to multiply? What questions do you still have about multiplication? Math words: array sketch, numeral, area model, distributive property, multiply

Week Three, Day One

Imagine one of your friends was absent. He/She needs to know how to solve word problems. How would you explain the steps to solving a word problem to your friend? What questions do you still have about solving word problems? Math words: problem solving, understand the problem, plan, solve, evaluate

Week Three, Day Two

Imagine one of your friends is struggling to solve this word problem. Justin collected 57 cans for the local food bank. Alex collected 43 cans for the food bank. How many cans did Justin and Alex collect for the food bank? How would you explain to your friend how he/she could solve this problem? What questions do you still have about problem solving?

Week Four, Day One

Imagine one of your friends was absent. He/She needs to know all of the different parts to a division problem. How would you explain to your friend the three different parts to a division problem? What questions do you still have about division? Math words: dividend, divisor, quotient, divide, division

Week Four, Day Two

Imagine one of your friends asked you for help. He/She wanted to know how to solve a division problem and how to check his/her work. How would you explain to your friend how

he/she could solve this division problem and how to could check his/her work? 18 ÷ 6 = ____ What questions do you have about division? Math words: dividend, divisor, quotient, divide, division

Appendix E: Student Assessment Scores

Name	Score (percent correct)							
	Before Writing in Mathematics				During Writing in Mathematics			
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Howard	70	83	90	100	100	75	75	80
Claire	70	25	80	60	25	50	50	70
David	70	83	70	80	75	75	75	80
Steven	70	100	90	90	75	83	80	100
Martin	90	83	100	90	75	67	70	100
Henry	70	70	83	60	75	100	100	70
Blake	40	58	70	40	50	38	38	n/a
Natasha	70	83	90	60	75	75	75	80
Gabe	70	75	80	90	75	63	63	40
Jacob	70	75	80	70	75	75	75	80
Erica	80	83	70	70	13	17	20	100
James	90	80	100	100	88	92	88	90

PERCEPTIONS OF FLEXIBLE SEATING

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Abstract With flexible seating becoming more common in elementary classrooms, it is important to understand what participating parties think of flexible seating. This study looks at the perceptions of second grade teachers, students, and parents. Data was collected through classroom observations, questionnaires of parents, and interviews of students and teachers. The purpose of this study was to understand the perceptions of students, teachers, and parents towards flexible seating, to see if perceptions changed after experiencing the new seating, and to understand what lessons were learned after implementing it for one year. The findings indicated that parents believed flexible seating to be good, if their child was learning. Teachers found many benefits for students, and students enjoyed the seating that allowed them to move. These findings will provide information for teachers who are implementing flexible seating.

Keywords: teacher action research, flexible seating, perceptions, kinesthetic intelligence

Introduction

Their eyes lit up when they walked into the room for the first time and looked upon the new seating in the classroom. Mrs. Byrd (all names are pseudonyms) had told the students of the new types of seating that was purchased for our classroom, but it seemed that nothing could have prepared them for what they saw walking into the classroom that morning. Their smiles and enthusiasm told it all, but what were they really thinking? They had only been given a small taste of flexible seating since the beginning of the year. Would they like the new types of seating? What would be their favorite? Would the limited numbers of each type of seating cause bitterness and arguments between the students? These questions circled through my mind the first day of the new flexible seating in our classroom.

What do teachers think of flexible seating? What about parents and students? These are important questions to ask before purchasing types of flexible seating for a classroom. Knowing what other teachers, parents, and students think about flexible seating can help teachers best provide for their classroom community to create a positive learning environment.

Purpose. The purpose of this study was to understand the perceptions of students, teachers, and parents towards flexible seating. Flexible seating is the supplement of "traditional desks and chairs with seating that accommodates greater flexibility and comfort" (Kennedy, 2016, p. 21). In this study, I sought to understand the lessons learned through the implementation of flexible seating. My purpose was to understand how perceptions changed from the initial implementation of flexible seating to having used flexible seating for almost a full school year.

I conducted the research in the classroom in which I was completing a yearlong clinical teaching experience as a requirement for my M.Ed. in Teaching and Learning. Because of this, the participants knew who I was and were comfortable sharing their thoughts on flexible seating. My research focused on three initial questions that drove this study. What are teachers', students', and parents' perceptions of flexible seating in a second-grade classroom? What are the lessons learned from using and implementing flexible seating in a classroom? How did perceptions change from the beginning of implementation to the end of the school year?

Literature Review

In recent years, an increasing number of teachers have chosen to implement flexible seating into their classrooms. Types of flexible seating include stools, therapy balls, small portable lawn chairs, cushions, boxes, seats with wheels, beanbags, and lofts (Kennedy, 2016). Kennedy (2015) says that, "Classroom spaces need to be flexible and adaptable enough to accommodate these quick changes in tactics and tempo" (p. 26). As classroom practices start to evolve in the use of stations, centers, and small groups, which requires students to use many different parts of the room per day, flexible seating gives students multiple options to sit in different types of seating all over the classroom. With this movement towards flexible seating in the classroom, there have been multiple studies conducted to understand more about flexible seating.

Using flexible seating gives students the chance to move around more in their seats, whether that involves swiveling on a wobble stool or lightly bouncing and rolling on a therapy ball. Gardner (2011) believed that there are nine different intelligences that people best relate to and learn from, which is called the Theory of Multiple Intelligences. We are all born with a mix of the intelligences, possibly including bodily-kinesthetic (Gardner, 2011). It is known that "students with high kinesthetic intelligence process information through their bodies-through muscle, sensation, and movement" (Tamilselvi & Geetha, 2015, p. 4). This means that they can best learn and focus while moving. Their movements can be getting up and walking around a classroom or small movements like swiveling on a wobble stool. Gardner's (2011) work suggests that perhaps the movement flexible seating allows may benefit students who learn through kinesthetic movements a chance to move without interrupting a classroom.

While theory states that movement, like the movement from flexible seating, could help students who are inclined towards bodily-kinesthetic intelligence (Gardner, 2011), there are

many studies that focus on the benefit flexible seating gives to special needs students. Particularly, researchers have examined the benefit that flexible seating gives to students with Autism Spectrum Disorder, students who had Attention Deficit Hyperactivity Disorder, and gifted students. Benefits include an increase in learning, behavior, and health.

Two studies focused on students with Autism Spectrum Disorder (Schilling & Schwartz, 2004; Umeda & Deitz, 2011). In Umeda and Deitz's (2011) study, they found that therapy cushions do not produce any benefit for behavioral changes because of the lack of adequate amounts of sensory input given from the cushions. Umeda and Deitz (2011) did not see a change of behavior because of the flexible seating, but for Schilling and Schwartz (2004), results showed behavior improvement with flexible seating. The study showed "substantial improvements in in-seat behavior and engagement across all four participants when seated on therapy balls" because of the active engagement the seating brings to the classroom (Schilling & Schwartz, 2004, p. 430). Although these studies are insightful and show the different effects of two types of flexible seating for children with Autism Spectrum Disorder, they provide no data on the perceptions the students had towards flexible seating.

While these two studies attempted to determine whether flexible seating benefited students with autism, two more studies researched the impact on students with ADHD (Schilling, Washington, Billingsley, & Deitz, 2003; Pfeiffer et al., 2008). The purpose of the study conducted by Schilling et al. (2003) was to investigate the effects of therapy balls on student behavior and productivity for students with ADHD. They concluded that therapy balls helped students with ADHD demonstrate better behavior and productivity (Schilling et al., 2003). Interestingly not only do students with Autism Spectrum Disorder benefit from flexible seating, specifically therapy balls, but students with ADHD also benefit from flexible seating. While one study found the benefit of therapy balls for students with ADHD, another study focused on students using cushions (Pfeiffer et al., 2008). Both studies showed the improvement of students' behavior through of the use of flexible seating because of how flexible seating allows the students to move and not stay still in a desk and chair. Although this strengthened the argument for implementing flexible seating, there was no mention of perceptions towards the therapy balls used as seating in the classrooms.

Another benefit of flexible seating present in the research is the health benefits. Wendel, Benden, Zhao, & Jeffery's (2016) research included 380 students in three elementary schools where they studied the students' BMI for two years. The group who used standing desks for the two years decreased their BMI while the group who used standard desks increased their BMI (Wendel et al., 2016). Not only does flexible seating benefit the mental health of special education students, it can also benefit the physical health of all students. Although the Wendel et al. (2016) study showed the positive outcome of using flexible seating in the classroom, it too failed to examine the perceptions of the flexible seating used in the study.

Within studies that focused more on types of students and how they can best learn or how to increase positive behavior, two studies reported on their special populations participants' perceptions about flexible seating. In a study, Rayneri, Gerber, and Wiley (2006) focused on how gifted students learn and how they like to learn. They found that gifted students prefer

classrooms with flexible seating (Rayneri et al., 2006). Rayneri et al. (2006) mentioned their participants' perceptions, but provided little supporting data to verify the statement. Schilling et al. (2003) in their study found some data-supported findings about the perceptions of flexible seating. Schilling et al. (2003) mentioned that of their participants, twenty students preferred therapy balls to regular desks. The students mentioned liking the therapy balls because of increased back comfort, increase of appropriate movement when sitting, helping them have better handwriting, and how the therapy balls helped increase their attention span (Schilling et al., 2003).

These studies produced research describing how flexible seating is helping and benefitting students, but only one study has provided perceptions of flexible seating. Even with a study providing perceptions of flexible seating, there is still no research that addresses students', teachers', and parents' perceptions. Because the studies found were focused on the benefit of flexible seating, whether behavior or health, my study brings new information to the teachers and parents who want to learn more about flexible seating. By only focusing on what parents, teachers, and students think about flexible seating in the classroom, my study helps them understand multiple perceptions of flexible seating. By understanding perceptions of flexible seating, teachers will have the opportunity to modify their classrooms to make their flexible seating more enjoyable for their students, and parents will understand why flexible seating is used in their child's classroom.

Methodology

This action research study included qualitative data collected from teachers, parents, and students. I interviewed, observed, handed out questionnaires, and took pictures of my classroom. Through the year, I built relationships with the other second grade teachers and the parents of our students. Because of this, many participants volunteered to be in the study. After collecting data, I analyzed my data using the constant comparative method where I compared my new findings to previous findings.

Participant Selection. Within this study, there were three types of participants: students, teachers, and parents. Students were selected from one second-grade classroom. Participation was solicited from every student. The students were informed of the study and received an informational letter and consent form for their parents to read and sign. Every student who received consent and assented to the study participated in the observation. I interviewed four students from my classroom, two girls and two boys. I used my data from observations to select which students I interviewed. I sought three second grade teachers' permissions and interviewed those who gave me permission. I interviewed three teachers who were selected based on their use of flexible seating in their classroom. This meant that I chose the teacher I am co-teaching with, one teacher who successfully implemented flexible seating, and one teacher who temporarily stopped using flexible seating after the first six weeks but later brought it back into her classroom. For parents, I sent out letters explaining what I would be doing in their child's class and an attached permission form for if they wanted to participate in the study. All who turned in the permission form participated in the study by filling out a questionnaire.

Data Collection. Data for this study was collected through interviews, questionnaires, observations, and pictures. The interviews included three teachers using semi-structured questions. These interviews lasted around 20-30 minutes. The four students I chose, using purposive sampling (Patton, 1990), were individually interviewed once. Their interviews only lasted 10-15 minutes. The interviews were semi-structured (Hendricks, 2012), which meant that open-ended questions lead to further discussion with the interviewee. Questionnaires with open response questions were sent home to all the parents along with a letter that gained consent of their participation in the study. I observed the class twice a week for three weeks. On these days, I observed and took notes about the students' attitudes towards flexible seating and how they used flexible seating during the day. I also used photographs of my classroom. This was the classroom the students and parents were familiar with when they described flexible seating. I took the pictures before or after school when there were no students in the classroom.

Data Analysis. Qualitative data was analyzed using the constant comparative method with initial coding followed by identifying major categories with supporting codes (Hubbard & Power, 2003). Through the coding, major themes appeared. The first twenty percent of my data was coded, which created 15-20 level I codes (Tracy, 2013), as seen in Appendix A. These themes helped relate the data from the field notes, interviews, and questionnaires to the original research questions. To refine the 15-20 level I codes, I coded the remaining eighty percent of my data and narrowed down to 3-5 level II codes. These codes were chosen to "explain, theorize, and synthesize" the existing level I codes (Tracy, 2013, p. 194). The codes helped me organize my data to write up my findings.

Results

Through my data collection, I encountered many different and similar perceptions from my participants, as seen in Table 1. After coding my data, I narrowed my findings down into several major themes. These included choice, positive outcomes, social impacts, implementation, and classroom management. I will discuss these themes as I address each major research question.

Initial Perceptions. This section focuses on the findings that answer my question about what are parents', students' and teachers' perceptions towards flexible seating. The perceptions I encountered were given after the participants had experienced flexible seating for about a full school year. Since I did not collect data immediately after their first experience with flexible seating, the perceptions I found are considered the initial perceptions because they were the first perceptions I gathered from my participants. The next three sections explain the initial perceptions of the parents, students, and teachers who participated in the study. Their perceptions are based on flexible seating like the types of seating pictured in Figure 1.

Therapy Balls

Reading Loft

Wobble Stools

Figure 1. Pictures of types of flexible seating.

Parents' perceptions. Through the parent questionnaires, I learned that most parents perceived flexible seating as a benefit to their child's education; however, some parents believed that flexible seating had a negative effect on the learning of their child. Sergio's mother believed that there "is no structure when seven-year olds can play, learn, or whatever throughout a classroom." This mother also asked for her son to not participate in flexible seating. His assigned desk and chair are attached to the teacher's desk, and he is not even able to sit on the carpet during whole carpet time. The parents' believed that their child's behavior was poor because of the lack of structure that flexible seating creates in the classroom.

Table 1: Overall Perceptions from all Participants

Overall Perceptions from all Participants	
Positive	Negative
• Benefit to education • Great for active children • Gives students a choice • Sit near friends • Each subject needs a different type of seating • "It's great!"	• Lack of structure • Distracting Atmosphere

Another parent believed that along with the lack of structure, it created an atmosphere that was distracting for children. One mother substituted in a classroom where flexible seating had been implemented, and she found the room noisy because of the seats and that the

children were never focused. It seemed that parents worry about classroom management once flexible seating had been implemented.

While a few parents voiced their opinion about the negative aspects of flexible seating, the other parents seemed enthusiastic about their child's seating experience. These parents mainly focused on the positive outcomes and student choice in their questionnaires. One mother believed flexible seating to be "fantastic, especially for active children". Other parents agreed that the movement the seats allowed created a positive learning environment for their children because their bodies are engaging their limbic system, and it allows them to "get their wiggles out" which allows them to pay better attention to the lesson being taught.

Along with students becoming more engaged with their learning, parents perceived flexible seating as a great way for students to make decisions for themselves. As Zoe's mother put it, "it lets the kids feel in charge as they get to make a choice on where to sit." As you will learn, teachers do not believe the students are "in charge", but if the students are enjoying the seating and learning, that is what matters the most. Heather's dad thinks that flexible seating makes his daughter feel valued because of the decisions she gets to make on where to sit that best fits her needs. As I mentioned before, some students need that kinesthetic movement to best help them learn, but there are those children who need to be still to focus. The different choices of seating help students pick the seat where they will best learn, and this makes the parents feel good about the new experience with flexible seating.

Students' perceptions. Students seemed to agree with the positive perceptions their parents had about flexible seating. In my observations and interviews with students, I did not encounter negative perceptions towards flexible seating. Some comments made it clear that some students would learn better with standard seating. One of the most common perceptions that students had was that they get to sit by their friends because of the choice flexible seating gives. Three of the four student interview participants mentioned this with a smile on their faces because they enjoy getting to sit by their friends. But as Mark mentioned, if he had an assigned seat, he would not sit by people he would talk to, making it easier for him to learn. Even though he admits that learning would be better with standard seating, Mark, like his peers, agreed that he would rather have flexible seating in his third-grade classroom.

In my observations, I saw the importance of sitting near friends. Students saved seats for friends, moved to a different seat to be near a friend, or waited for their friend to get to school in the morning to choose their seats together. On multiple occasions, I had two girls wait for each other to get to school before choosing their seat. In my interviews, the theme of friends seemed to emerge frequently when talking about the choice flexible seating gave them.

Along with the students getting to sit with their friends because of the choice aspect of flexible seating, they also could choose their favorite type of seat. Overwhelmingly, the favorite seats were the therapy balls and the wobble stools (pictured below). While observing, I noticed that the first seats to be chosen each morning were the therapy balls, and the stools were usually chosen second. The students described these seats as comfortable and fun. Heather liked the wobble stools because "you don't have to sit still and be stiff all day." John explained that his back becomes cramped after sitting still for an extended period, and that with the therapy balls and stools, he gets the flexibility that he needs to make his back feel better. Zoe said that she likes all chairs that move, which would be the therapy balls and wobble stools. It seems that maybe all students need or prefer that slight kinesthetic movement in the classroom that the therapy balls and stools offer.

When asked, the students who participated in the interview all mentioned that they wished that along with choosing where to sit and who to sit by, they could pick their seat for each subject. They enjoyed the fresh and new experiences the choice of seating brought them each day; however, they believed that they would learn best if they were able to change seats for each subject. One student, Zoe, wanted to just have her own space, or in her perfect classroom, a personal loft (see Figure 1). The other three students believed that the different subjects call for different types of seating. John needed stability from the camp chairs or boxes while learning about science or when writing; however, he liked the movement the other seating gives him during math and reading. Other students had their own preferences about which seating is best for which subject, but the way the seating was implemented did not allow the students to change seats throughout the day; the teacher made this decision based on her own findings.

Teachers' perceptions. As I mentioned, teachers made changes in how the students used flexible seating each day after implementing the seating for two months. Two of the three teachers who were interviewed changed their classroom plan by allowing students to choose one seat for the entire day. They originally thought that having the students choose a different seat for each subject or activity would be best. As Mrs. Byrd said, "I think that I liked the idea that the kids had a choice in the classroom," while Mrs. Red wanted freedom for her students. The teachers originally implemented flexible seating to give their students choice, but they quickly learned that having them choose a seat per activity was too much choice and freedom for one day.

Not only did the teachers implement flexible seating because they thought it would give their students more choice, but they also believed that flexible seating would help students who need the kinesthetic movement. Mrs. Red mentioned in her interview that she wanted to do something about her fidgety kids. After reading research, the teachers were interested in seeing if giving students therapy balls and stools would help the students who needed movement. Along with believing that the moveable seats would help their active students, Mrs. Byrd just wanted to take away the chairs because "some kids just do not know how to sit in a chair. Period. So, it is kind of good to take away that stress, instead of me fighting about if they sit correctly." The perception of flexible seating was that it would

help the active students, and there would be fewer problems of students sitting correctly. However, they quickly learned that the therapy balls created new problems with students bouncing on them or popping them.

While thinking that flexible seating would help the active students and give all students choice in the classroom, the main perception the teachers had about the new seating was that "it was great!" The teachers could view a first-grade teacher's room the previous year that inspired them to implement it in their own classrooms. Once they researched flexible seating and became excited about the new types of seating, as Mrs. Red said, they "just did it." They jumped into the new school year with seating that would hopefully help their students learn and make them feel included in the workings of the classroom by giving them choice.

Perceptions After One Year. As previously stated, I was not collecting data when the students, parents, and teachers experienced flexible seating for the first time. Because of this, I am limited in the extent to which I can fully answer my research question about if perceptions changed throughout the first year the participants experienced flexible seating. Teachers and students did not mention much about their changed perceptions. Teachers still had positive feeling towards the seating, and the students said that they had always liked it and that they still do like the seating in the classroom.

One parent was the only participants who mentioned a change in their perceptions. On the parent questionnaires, I had one parent mention that their perception had changed because when she was first introduced to the idea she never thought it would work because the "children would play around and not take their work seriously," but after seeing it implemented in her daughter's classroom for a year, she saw "it is a setup that actually works for children."

Other parents mentioned that they have always wanted flexible seating, and that now that they have experienced it, they want flexible seating for their child every year. Carrie's mother's perception was always positive because she thought it was a great idea at the beginning and still believes so. Comments like this were consistent with most of the answers to questions about how participants' perceptions changed after having flexible seating for a year. No participant who had a positive perception about flexible seating had their perception turn negative throughout the year.

Discussion

Although the teachers' perceptions stayed positive throughout their implementation and first year of flexible seating, it was not always perfect in the classroom. The three participating teachers answered my question about what they learned throughout their first year of using flexible seating.

Make clear expectations. "Go slow." This was the most important piece of advice the teachers had for peers when explaining how to implement flexible seating in a classroom. The three teachers all mentioned that they were so excited that they jumped right into the school year with the new seating. They recommended teachers try it, but they learned that there must be clear expectations, and that you should introduce the seating options little by little. One teacher recommended that you "go through every single scenario in your classroom that you can possibly think of and come up with a procedure for it before you implement it." This will help the classroom run more smoothly, especially with a substitute in the room.

One teacher learned that without explicit directions and expectations, a substitute might not know the regular routines of the classroom. After a bad note from a substitute, Mrs. Asher took away flexible seating for a couple of weeks. She made her students earn back the privilege of the seating. That is where she came up with the idea of introducing the seating little-by-little until they prove they are ready for a new type of seating.

Along with the clear expectations and introducing the seats one at a time, Mrs. Byrd recommended that teachers spend time explaining the rules, procedures, and expectations for each seat to the students. This is where they all agreed that teachers need to "go slow". Next year, when Mrs. Byrd introduces flexible seating to her new class, she plans on explaining every detail about each seat instead of jumping right into using the flexible seating.

You will learn as you go. Before implementing flexible seating in their classrooms, the teachers read research online and asked a first-grade teacher, who used it the previous year, about her opinions. She mentioned that students enjoyed sitting on the floor, therapy balls, and stools. Because of this, the participating teachers included floor seating as a flexible seating option. They bought small rug circles and cushions for the students to use, but to their surprise, the students did not like sitting on the floor. This is when they realized that every year is going to be different. When using flexible seating, the teacher must be flexible as well. They must learn as they go to make sure that the students are enjoying the seating options. Another teacher learned about the type of table she and her students enjoyed. Mrs. Red learned she did not like the big round tables because the students' workboxes would sit on top of the table, blocking their view of the board. When using flexible seating, teachers will have to learn what is best practice for their students and classroom.

It costs money. A major theme that emerged in the interviews with the teachers was that the seating costs money. Two of the three teachers were fortunate to receive a grant to help pay for their seating; the third teacher had to pay out of her own pocket. Mrs. Asher gave herself a budget that she did not want to exceed. She knew the previous year that she wanted to implement flexible seating the following year, so that summer, she constantly looked for sales and deals. Even with the sales she found on different types of flexible seating, Mrs. Asher also prioritized her list of seats. She knew she wanted stools and

therapy balls, so they were first on her list to buy. Knowing her budget and what she wanted in her classroom, Mrs. Asher furnished her classroom without straining her wallet.

Mrs. Red had not received her grant yet, but she knew she wanted to implement flexible seating, so she looked at garage sales and on Facebook for seats that would be enjoyable for her students. One day, her friend posted a Facebook post about two therapy balls that she wanted out of her house. When Mrs. Red saw that post, she went straight to her friend's house and received two free therapy balls for her classroom. As she said, "you have to be thrifty" when buying all the seats for your classroom because it can get expensive.

Another idea that emerged in my interviews was that teachers can slowly add throughout the year so the teacher does not have to purchase it all at once. Not only would this help with spreading out the expense, but it would also help the teacher make clear expectations about each type of seating he or she brought into the classroom, and it would give the teacher more time to learn what types of seating her students like before wasting money on seats they do not enjoy.

It helps you get to know students. One of Mrs. Byrd's favorite parts of flexible seating was that she could get to know her students better. She better understood the students' personalities, and it gave her more "of an idea of who [were] friends and who [were] not friends" in her classroom. She believed that she learned information about her students that in previous years she had not.

All three teachers mentioned that there were groups of students who sat by each other each day. Mrs. Red had students take their friend's "choice folder" out of their locker and put it by the desk where they were sitting to make sure that they would get to sit by their friend that day. Mrs. Red saw this as an opportunity to make her students feel good because it showed the students that they were wanted and cared for by their peers. Without flexible seating, the teachers would have a more difficult time learning which students were friends with whom.

Implications

The lessons above are the lessons that the teachers learned through their experience this past year. However, they are not the only participants who learned through this research. When interviewing my students, they seemed to have come to realize that because they chose to sit by their friends, they did not learn as much as they could. Three of the students mentioned that because of the choice and movement that flexible seating allows, they could learn better, but once they started talking about the social aspect of flexible seating, their minds somewhat changed. They said that of course they talk more sitting next to friends, and if they chose their seat based on the type of seat instead of which friend to sit by, they would learn more each day. Although they realized their mistake of sitting next to friends, their choices each day did not change. They might have learned about their poor decision-making, but that did not change whom they sat by after the interviews and realizations.

I learned that overall, perceptions of flexible seating were positive. Parents wanted their children to learn, which was the same goal as the teachers. If teachers had good classroom management and procedures with the flexible seating, seventy-five percent of students seemed to believe that flexible seating helped them learn. Because of this, I learned that flexible seating is beneficial for student learning. The students enjoyed the choice they were given each day, and they enjoyed moving in their seat without getting in trouble. The only hindrance for student learning seemed to be the social aspect of flexible seating. One procedure that teachers need to address is what to do when students make a bad decision and sit by a friend whom they talk to when working at their seat. Once that is fixed, flexible seating seems to be beneficial for the classroom.

Conclusion

For future studies, I would want to know if flexible seating really does help student learning. My study found out that parents, teachers, and students perceive that the new seating helps the students learn, but does it really? People can perceive that flexible seating is beneficial for students learning, but without research to support it, teachers will not know if it helps learning or not. As one mother said, she cannot "get on board with it until she sees more research". I know that kinesthetic movement is good for students, especially if they are kinesthetic learners (Gardner, 2011), but there has not been an implementation study to track student growth. To best help students learn, I believe that answering the question of does flexible seating truly help with student learning is extremely important. As teachers, we need to know the best practices for our students. For now, I can say that parents', teachers', and students' perceptions are positive, and that they enjoy flexible seating. So as Mrs. Red said, "Just try it!"

About the Author

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Appendix A: Codebook

Code Name	*Level*	*Definition*	*Example*
Choice	I	Students can choose where they sit each day and on whatever type of seat they want to sit on.	"I also like kids having some freedom to make choices" (Red Interview, p. 1).
Focus	I	Any perceptions that believe that flexible seating either helps or hinders focus.	"If it is proven that it helps students focus and stay on task, then I think it's a good idea" (Natalie's Mom Questionnaire, line 11-12).
Implementation	I	Any descriptions of the ways the teachers implemented flexible seating in the classroom.	"Take your time with your procedures and take your time introducing different seats" (Byrd Interview, p. 3).
Get to know students	I	Any descriptions of how teachers can get to know their students' personalities and social circles through observing their use of flexible seating.	"Now that they are used to the seats a little more, they choose who they want to sit by. It gives me more of an idea of who is friends and who is not friends" (Byrd Interview, p. 3).
Traditional	I	Any descriptions of traditional seating (desks and non-moving chairs) and how students and teachers feel about them.	"I think that when I substituted in a class and they were in traditional seating, there were definitely some things that make that a little bit easier. Having kids in a row and at a desk where you know exactly where you sit. That makes management simpler." (Byrd Interview, p. 2).
Movement	I	Any descriptions of the movement the students can do, including moving seats, bouncing, spinning, wobbling, and fidgeting.	"Children learn more when they can move" (Heather's Dad Questionnaire, line 12).

Optimal Learning	I	Any perceptions of whether flexible seating helps or hinders student learning.	"Some research has shown that it is very good for children in their learning. If they can worry less and being comfortable or uncomfortable they can then focus more on academics" (Asher Interview, p. 1).
Enjoyment	I	Any explanations of why teachers and students enjoy flexible seating.	"I think I can just tell form years past that they are happier" (Asher Interview, p. 2).
Research	I	Any description of the research that was viewed before implementation.	"I had read quite a bit this summer about it, and I became very interested in it" (Red Interview, p. 1).
Normality	I	Any description of how flexible seating is now "normal".	"Well I am kind of used to it" (Heather Interview, p. 1).
Do it!	I	These words were spoken by two of the three teachers when explaining their advice for teachers who want to implement flexible seating.	"I would say, do it!" (Byrd Interview, p. 3)
Classroom Management	I	The descriptions of procedures and rules that were created for classrooms with flexible seating.	"Sometimes the chair is the answer" (Red Interview, p. 4).
Distracting	I	Descriptions of how flexible seating can be distracting to students.	"It seems like it could be a little, or a lot, distracting. I found it somewhat distracting when I substitute taught in a room with flexible seating. The kids on the big therapy balls moved a lot and made quite a bit of noise with their 'seats'" (Natalie's Mom Questionnaire, line 3-6).

Upsetting	I	Descriptions of how conflicts were created because of flexible seating choices each morning.	"Ellen beat Lane, and then Lane was upset that he didn't get the ball, so he started calling her mean names" (Observation #3, line 17-18).
Multiple Options	I	Description of the multiple options of seating that the students can choose from.	"I have exercise balls, wobble stools, ottoman box cubes, camp chairs, and then regular chairs" (Byrd Interview, p. 1).
Balls/Stools	I	Any mention of the ball and stools, whether chosen to sit on or their perceptions of them.	Talking about what is her favorite. "The balls... because you don't have to sit still... you don't have to sit still and be stiff all day" (Heather Interview, p. 2).
Friends	I	Any data on students choosing to sit by friends when choosing their seats each morning.	"If we had desks, we would sit by people we wouldn't talk to" and "I like to sit by my friends" (Mark Interview, p. 4).
Cost Money	I	Descriptions of how flexible seating costs money, some teachers received grants while others paid out of their own pockets.	"I knew I wanted yoga balls, so that was the first thing I got. I made a list of what I wanted, so I spent the whole summer shopping, looking for sales." (Asher Interview, p. 4).
Choice	II	The students have choice and freedom each day by choosing to sit by friends and traditional seating over flexible seating.	"They feel valued to make decisions about how/where to sit to learn that best fits their needs" (Heather's Dad Questionnaire, line 3-4).
Positive Outcomes	II	Flexible seating has created positive outcomes including helping students who need to fidget, the students enjoy the seating and freedom, and it	"Zoe seems to love to do class work since she's able to choose her own seat" (Zoe's Mom Questionnaire, line 6-7).

		can help learning and focus.	
Social Aspects	II	Teachers can understand students and their social circles because of the seats they choose each day, and the students are able to sit next to their friends each day.	"I like to sit by my friends. If I sit by John, you know that I am going to talk. And Lane, and Steve, and Edison. That is why I want actual seating for every year. And ,it will help me learn" (Mark Interview, p. 4).
Implementation	II	The description of how teacher implemented flexible seating in their classroom, including the cost of it.	"I think my first thing was when I first did it, they picked a spot every time for every subject. Three or four times throughout the day, and I quickly learned that that was not going to work. That made too long of transition times. So, I quickly make it where they just picked one spot for the day" (Asher Interview, p. 1).
Classroom Management	II	The description of the procedures and rules that are in place because of flexible seating, and the classroom environment because of the different types of seating.	"They come in the morning and pick their spot. That is the spot they are at for the whole day unless they make bad choices of those spots and then I pick a new spot for them" (Asher Interview, p. 1).