Considering the New Common Core State Standards for Teaching Spelling to Urban Students with Disabilities

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Abstract

The importance of writing is recognized in the Common Core State Standards (CCSS). CCSS places emphasis on both foundational skills (e.g., spelling) and writing applications such as planning, editing, and revising a variety of texts (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). Ensuring all students become proficient in writing includes providing effective writing instruction for students with disabilities. The purpose of this paper is to describe the effects of explicit spelling instruction and basal spelling instruction for 41 students with disabilities and who attend school in an urban area. Findings show that students who received the explicit spelling instruction outperformed the students who received basal group teaching on regular, irregular and morphograpic word types. Implications are discussed.

Keywords: *spelling, common core state standards, explicit spelling instruction, elementary students, learning disability*

Introduction

A disparity exists between different groups (i.e., cultural background, socioeconomic status) of students' academic performance and the performance gaps are significantly higher for students in urban areas compared to the national overall student population (Teale, Paciga, & Hoffman, 2007). Reading instruction in urban schools have a very heavy emphasis on phonological awareness, word recognition, and fluency; and instruction must go more in depth if students from urban areas are to have successful outcomes later in life (Teale et al., 2007). One suggestion to improve academic performance includes spending more time capitalizing on connections between reading and writing. Moreover, it is critical that all students become proficient in writing because it is an essential skill for living in industrialized societies. Students who have difficulty with writing are at risk regarding a) success in school,

b) attaining higher education goals, c) gaining competitive employment, and d) participating in society in general (Graham, Harris, MacArthur, & Schwartz, 1991).

Specifically the four writing applications addressed in the Common Core State Standards (CCSS) are a) writing for multiple purposes, b) producing and publishing well organized text through increased ability to plan, edit, and revise, c) using writing to build knowledge; and d) apply writing to extend and facilitate learning in a range of discipline specific subjects across purposes and audiences (Harris, Graham, Friedlander, & Laud, 2013). It is important to teach both foundational skills and writing application because writing fluently is connected with skills such as handwriting/typing, spelling, conventions, grammar, word choice, and sentence construction (Graham & Harris, 2013).

Graham and Harris (2013) lay out advantages of using CCSS and writing for students with disabilities. First the emphasis of application of writing increases the likelihood that students with disabilities will acquire such skills. Second, although not perfect, CCSS offers writing benchmarks that surpasses the coverage, coherence, and clarity of many state standards previously used. Third, CCSS will increase the use of performance assessment procedures. Finally, CCSS allows for continuity of writing goals which can reduce disruptions for any student who has to transition from one school to another.

Even though there are several benefits to using CCSS, Graham and Harris explain CCSS is also limited, and researchers must help educators maximize the probability that students with disabilities meet the writing benchmarks CCSS provides. An important limitation of CCSS Graham and Harris address is the vagueness of foundational skill benchmarks critical to writing fluency which do not offer instructional value for teachers. The example of vagueness Graham and Harris provide include "Spell grade appropriate words correctly". The danger of such vagueness is the possibility that teachers emphasize the writing processes of planning, editing, and revising without teaching students foundational skills and strategies which allow for effective planning, editing, and revising to take place (Gilbert & Graham, 2010). To address this limitation Graham and Harris advise that teachers develop differentiated goals for students based on their need, and not approach writing instruction as one size fits all. Therefore, educators must have a repertoire of instructional techniques to build foundational skills for a variety of students' needs (i.e., handwriting/typing, spelling, grammar, etc.)

Fresch (2003) sent out a national survey of spelling instruction. She wanted to investigate teachers' beliefs and practices in spelling. Ninety-eight percent of the 355 teachers surveyed from around the country reported spending specific time each week for spelling and 73% believed that formal spelling instruction was needed for students to achieve. The majority of the teachers reported using practices that resemble the basal speller issued by the school district, and 72% reported using a common list for the entire class. Fifty-six percent of the teachers reported using mini-lessons, 20% used small group instruction, and 11% used one-on-one instruction. They usually reported using practice sheets, spelling games, word sorts and word walls. A large number (84%) used a weekly posttest for grades. The survey concluded with an open-ended question allowing teachers to respond to any other issue of concern as it related to spelling and their teaching. Most teachers responded that they were very concerned about meeting the individual needs of their students. The purpose of this study was to examine explicit instruction as an instructional method to increase the foundation skill of spelling for students who have writing difficulties, who are from an urban elementary school, and who were identified with a specific learning disability or identified behavior problems.

Stages of Word Knowledge Reflected in Spelling

Word knowledge is critical in reading and writing. Spelling reflects word knowledge, and word knowledge develops with meaningful engagement in reading and writing activities (Bear & Templeton, 1998; Flanigan, 2007). Gehsmann (2011) explain there are five stages of word knowledge reflected in writing.

The first stage is the emergent stage. At the beginning of the emergent stage children draw and scribble. As children continue to participate in meaningful reading and writing

activities, they start to develop an understanding of the alphabetic principle (i.e., phonemes or individual sounds correspond to graphemes and are arranged left-to-right on the page). As children continue to grow in their understanding of the alphabetic principle, they begin to realize that a written word represents a spoken word (Flanigan, 2007). The next stage is the beginning stage. In the beginning stage, children have a basic understanding of the alphabetic principle and the conceptualization of a word. Children write words matching letters to sounds at a very basic level in which one letter represents one sound. As children continue to write words in meaningful reading and writing activities, they begin to understand more complex patterns in words. This marks the transitional stage. In the transitional stage, children write words using long and short vowel sounds and develop an understanding of basic word patterns (e.g., words ending with the silent *e*) and single syllable words. After the transitional stage, children begin to understand more difficult sound and spelling features of words. This is the Intermediate stage. In the intermediate stage, children learn patterns involving words with two or more syllables. In this stage children also begin to combine syllables and affixes which involve phonological and morphological relationships among words. The last stage is the proficient stage. This stage is also referred to as the advanced or skilled stage. In the proficient stage, children develop a well-integrated understanding of alphabetic patterns and the morphological relationships of words. Children know that how words are spelled reflects the meaning of words and that words with similar meanings are often related in spelling.

Explicit Spelling Instruction

Regardless of ability level, spelling continues to be a very difficult task for students with specific learning disabilities and behavior problems (Mastropieri & Scruggs, 1987; Nelson, 1980). Spelling requires the production of exact letter sequencing, letter sounds knowledge, an in depth understanding of grapheme-phoneme relationships and, unlike reading, cannot rely on contextual clues for spelling accuracy. Thus spelling instruction is a very complex process that requires educators to use a variety of teaching approaches.

Researchers show that spelling instruction for students from urban areas or students with disabilities need to be explicit, involve phonemic and morphemic analyses of words, and include strategies that lead to teaching students to spell new words through morphographs (Berninger, et al., 2002; Butyniec-Thomas & Woloshyn, 1997; Simonsen & Gunter, 2001).

Explicit instruction is a manner of providing instruction in which an unobservable process (e.g., thinking) is turned into an overt observable task. For instance, a teacher not only explains a concept, but delivers a series of carefully sequenced set of examples and provides students guidance in the implementation of tasks using the new knowledge. Phonemic and morphemic analyses includes building understandings of the relationship between letter-sounds and their corresponding sounds as well as an understanding of how units of meaning (i.e., suffixes, prefixes, and word bases) is utilized in written English. Several researchers have investigated explicit instruction, phonemic and morphemic analyses as a method of teaching students from urban areas or who have reading or writing difficulties foundational skills for spelling. Studies include examination of explicit instruction components, comparisons of instructional methods, integration of explicit writing and spelling instruction, and the use of manipulatives in explicit spelling instruction.

Winterling (1990) examined the effects of instructional components considered to be explicit and systematic. The purpose of his study was to evaluate the effectiveness of constant time delay (student think time), drill-and-practice, and token reinforcement in teaching sight words to a small group of three students with disabilities. Three students (two males and one female) who were receiving services in a resource room participated in the study. Two of the students were classified as having an intellectual disability and the third student was classified as having SLD. The students' average age was seven-years-old. Lessons lasted 20- 30 minutes and were conducted three or four days a week. Data from all three students indicated error rates in spelling dropped and the teaching procedures were effective in teaching students to spell.

Other studies compared the effectiveness of explicit spelling instruction to other methods of teaching students with disabilities such as the use of visual imagery or spelling activities that are not taught in explicit formats. Darch and Simpson (1990) examined the effectiveness of teaching students with SLD to spell through the use of visual imagery mnemonic to explicit spelling instruction that taught students phonemic and morphemic rule-based strategies. In visual imagery the teacher would show a word to students on a screen then implemented the following steps a) the instructor would have students visualize the image of the word in their mind, b) students were asked to imagine the word in their mind on a screen, c) students were asked to imagine each letter of the word, and d) students were then asked to imagine nailing each letter of the word to the screen.

Twenty-eight upper elementary students were randomly assigned to two groups during a four-week summer enrichment program. Overall results of the study indicated that students taught with an explicit rule based strategy approach outperformed students who were taught with the visual imagery strategy. Darch and Simpson explain that it is possible students in the explicit rule based group performed better because explicit instruction allowed for close teacher monitoring and immediate corrective feedback when an error was made.

A study by Darch, Eaves, Crowe, Simmons and Conniff (2006) compared the effects of an explicit rule-based strategy versus a more traditional approach involving spelling activities that are not explicit in nature. Spelling activities included introducing the words in the context of story, defining the meaning of the words, sentence writing, and dictionary skill training. The participants were 42 second- through fourth-grade students receiving special education services, yet both groups performed poorly on retention and transfer tests. Results indicate students who received explicit rule-based instruction significantly increased in spelling performance. Darch et al explain spelling programs should provide sufficient guided and independent practice to mastery so that students can apply a strategy to spell words.

Researchers also examined combinations of explicit spelling and writing instruction for diverse populations of students. Berninger, et al investigated the effects of explicit instruction in both spelling and writing for students with spelling difficulties who live in urban areas. Ninety-six third grade students from seven elementary schools in three urban school districts participated in the study. Four conditions of explicit instruction were examined. They were a) explicit spelling instruction only, b) explicit instruction in composition only, c) combined spelling and composition instruction, and d) contact control in which students practiced writing and received keyboard training but instruction was not explicit. Findings suggest that explicit spelling instruction lead to greater gains for students in spelling. Overall, spelling instruction, with or without writing instruction, improved spelling of words taught to students. Writing instruction with or without spelling instruction, improved the quality of students' persuasive essay writing. Explicit instruction in both the alphabetic principle and its alternations improved the phonological-decoding component of spelling but did not improve word-specific learning of spelling words taught to students. Lastly spelling instruction that focused on the alphabetic principle and its alternations transferred to students' spelling while composing a persuasive essay. Berninger et al suggest students need writing instruction that combines both explicit instruction for spelling as well as composition.

Graham, Harris, and Chorzempa (2002) conducted a study of a supplemental explicit spelling instruction to explore effects on writing fluency and word recognition. The spelling instruction focused on analysis of phonemic and morphemic spelling patterns of words for students in urban areas who were at-risk for spelling difficulties. Participants included 77 students in the second grade who had difficulty spelling. Of the 77 participants, 23 students received school services for special education. Students who received the supplemental instruction made greater gains than their peers on spelling, writing fluency and word recognition measures. Six months after instruction, students who received the supplemental spelling instruction maintained their scores in spelling, and spelling instruction had a positive effect for maintenance of word recognition skills for students who scored the lowest in word recognition.

Explicit spelling instruction with manipulatives has been shown by researchers as an effective method of instruction for students with intellectual disabilities. Joseph (2002)

investigated the effectiveness of explicit spelling instruction with the use of word boxes and word sort instruction for students with intellectual disabilities. The use of word boxes and word sorts use manipulatives to teach spelling through phonemic awareness and letter-sound correspondences activities. All instruction was individual and took place over 29 days. Participants were two females and one male with an average age of ten years and two months. A multiple baseline design across participants was employed to examine changes across baseline, instruction, and maintenance conditions on spelling performance. All three students demonstrated increases in performance relative to baseline conditions for spelling accuracy during the intervention.

An explicit, whole-word approach to spelling has also been shown to be effective in teaching students to spell words (Pratt-Struthers, Struthers, & Williams, 1983). Explicit whole word spelling instruction employs individualized spelling lists. Typically the words in the lists are grouped together based on some similarity. For example words would have a common theme (i.e, words seen in poetry) or words would have common sounds such as words that begin or end with /th/. Students study their lists daily using various techniques including the study, copy, cover, and compare strategy. At the end of each lesson, students take a test on their spelling words. A student is considered to have achieved mastery when he has spelled the word correctly for three consecutive days. The mastered word is then dropped from the list and a new word is added. In the study conducted by Pratt-Struthers at al in which they investigated if spelling instruction transferred into creative writing assignments for nine students who received special education for a specific learning disability. Students significantly improved in spelling words (an average of 0 % correct to 90 % correct) they were taught correctly in their journals.

Burnette, Bettis, Marchand-Martella, Martella, Tso, et al (1999) compared different explicit approaches to spelling instruction. One instructional method utilized phonetic and morphemic rule based learning and the other instructional method utilized a whole word approach. Specifically the researchers wanted to know if greater improvements in students' spelling over time on predictable and unpredictable words were found when correct letter sequences in words were analyzed. A total of 446 students participated in the study. Findings suggest spelling skills of students exposed to instruction that emphasized letter sound correspondence greatly improved compared to instruction that emphasized a whole word approach. It is important to note that students in this study were exposed to different reading instruction and curriculum formats, therefore confirmation of the effectiveness of one instructional approach over the other cannot be confirmed.

In conclusion, spelling is a critical feature for improving the reading and writing skills of students. All of these studies reported that when students were exposed to explicit instruction their spelling improved. Unfortunately, a survey found most teachers used practices that resemble the basal speller (Fresch, 2003). It is very important that studies focus on effective teaching strategies for students within the context of spelling. This research now poses the question, which of these strategies is the most successful?

Method

The purpose of this study was to examine explicit instruction as an instructional method to increase the spelling skills for students who have writing difficulties, who are from an urban elementary school, and who were identified with a specific learning disability or identified behavior problems. This study compared a traditional approach to spelling instruction (currently used in classrooms) and explicit instruction which teaches spelling rules students can employ to spell words. The traditional approached used a test-study-test method. While explicit instruction used six different strategies ranging from phonemic generalizations to dictation. The general research questions in this study were: (a) Are there specific methods of teaching spelling that are more successful for students with mild learning and behavior problems?, (b) To what extent are there differences in different instructional methodologies in teaching irregular words?, (c) To what extent are there differences in different instructional methodologies in teaching regular words?, (d) To what extent are there differences in different instructional methodologies in teaching morphographic words?, and (e) What

differences in specific spelling error type when provided different methodologies of instruction?

Participants

There were a total of 41 participants from an urban elementary school in the Southeast area of the United States. Students in third through fifth grade were eligible for the study if they meet at least one category of the following three criteria. First, students who were considered at-risk and scored in the "intensive" (significantly at-risk) or "strategic" (one or more skill areas not mastered) categories of the Dynamic Indicators of Basic Early Literacy (DIBELS) were eligible for the study. These two DIBELS categories indicate that the students' present level of performance in reading is considerably below grade level. Second, students who qualified for Title I services according to state guidelines were eligible to participate in the study. Third, students who were identified as having a disability in accordance with the state guidelines for identifying students with special needs and according to the Individuals with Disabilities Improvement Act (IDEIA, 2004) were also eligible to participate in the study.

In addition to the criteria, all participants had to score 60% or below on the pretest to participate. This pretest established that participants were functioning below average in the area of spelling. Demographic information such as gender, exceptionality, ethnicity, and grade level are provided in Table 1 below.

The *Test of Written Spelling-4* (TWS-4) was administered to ensure equality among the two groups. The *TWS-4* is a standardized achievement test for measuring spelling achievement. This test was standardized on more than 4,000 students. Internal consistency and test-retest reliability coefficients are greater than .90. There is also support for construct, content, and criterion-related validity on the *TWS-4* (DeMauro, 1999). The test yields information such as standard scores, percentiles, spelling age, and grade equivalents. The *TWS-4* has four purposes, one of which is to identify students whose scores are significantly below those of their peers and who might benefit from interventions designed to improve spelling proficiency (Larsen, Hammill & Moats, 2005).

Table 1. Subject Demographics by Intervention Group

Traditional		Explicit Rule-based	
Characteristics	*N*	Characteristics	*N*
Gender		Gender	
Male	14	Male	10
Female	6	Female	7
Exceptionality		Exceptionality	
At-risk	11	At-risk	11
SPED	9	SPED	6
Ethnicity		Ethnicity	
African American	9	African American	13
Caucasian	2	Caucasian	1
Hispanic	2	Hispanic	0
Other	7	Other	3
Grade		Grade	
3rd grade	0	3rd grade	9
4th grade	14	4th grade	3
5th grade	6	5th grade	5
Traditional Method		Explicit Rule-based Method	

Assessments	SD	*M*	Assessments	SD	*M*
TWS-4	13.57	83.4	*TWS-4*	10.14	88.7

M = mean SD = standard deviation

Instructional Procedures

The traditional spelling instruction and explicit rule-based instruction descriptions that follow will vary. The traditional spelling instruction is described by its weekly components, whereas the explicit rule-based instruction is described using a typical daily lesson. The rationalization for this is due to the variations between the overall instructional goals of these methods. The traditional method focuses on a set of words taught Monday through Friday, with little or no cumulative review. Explicit rule-based instruction develops spelling skills daily with consistent review and teaching to mastery through a variety of activities. Explicit rule-based programs generally have an extensive scope and sequence lasting over longer periods of time.

Procedures

To gain access to participants, a detailed, but brief research proposal was sent to a local school system for consideration. Once administrators had granted permission and designated an approved school, the researcher then contacted the principal and provided him with information about the study. Meetings with the principal, teachers and other personnel were scheduled so that an overview of the study could be presented. The presentation included suggested benefits to the school, and answered any questions or concerns the administration might have had. A letter of consent to parents was then distributed to all students identified as possible participants in the study. The letter explained the study, ensured confidentiality, and notified parents of their rights to disallow their children's participation at any time during the study. Parents were asked to provide written consent for their children to participate in the study.

Students who returned consent forms were randomly assigned to one of two treatment groups. Random assignment was used to control for the effects of history, maturation, testing, and instrumentation (Stanley & Campbell, 1963). Students' names were drawn from a hat and placed into two stacks representing the two treatment groups.

Control for extraneous variables. Since this study was designed to compare the effects of two highly dissimilar approaches to spelling, several controls were implemented to ensure that extraneous variables were not the cause of any differences between the dependent measures. Some critical variables were held constant throughout all treatment groups. Features of instructional presentations were controlled for across both groups. First, instruction was limited to four times a week (Monday through Thursday) with a spelling test on Fridays for the three consecutive school weeks (total of 15 days). Adhering to typical elementary spelling lesson lengths, instructional sessions lasted around 20-25 minutes. Instruction was administered in small groups with no more than nine students per group. Second, the spelling words used in each of the treatments were identical and represented the three types of spelling patterns. Third, lessons for each of the treatment groups were semi-scripted. All semi-scripted lessons included the essential components of each lesson, including daily objectives, teacher wording, and lesson concept(s) or strategy. Scripted lesson plans allowed the researcher to be guided through the lessons, and ensured consistent implementation across groups.

Several efforts were made to control for possible teacher effects. The researchers taught both treatment and experimental groups. There are variables associated with how a teacher's actions could be probable confounding variables. Any effect the teacher had was

equally distributed among all groups. In order to control for order effects, the teaching of two treatment groups were alternated.

Teacher Training. The primary researcher served as the teacher for all the intervention groups. The instructor has been a special education teacher for five years and has been thoroughly exposed to the explicit instructional methods. She has modeled and trained undergraduate and graduate students on the implementation of explicit instruction materials for three summer teaching clinics. A trained doctoral student with a background in explicit instruction and nine years of experience teaching special education students served as the trained observer and critiqued the experimental teacher. This critique was done before the intervention began in order to provide feedback to improve instruction. The observation forms, "DI Checklist" and "Traditional Checklist" were used as guides. Features such as following instructional formats, signaling, pacing, error-correction, and reinforcement were emphasized. Behavior management focused on using positive verbal reinforcement. The trained observer assessed the implementation of both teaching methods throughout the intervention.

Fidelity of treatment. To ensure fidelity of treatment, the teacher was visited and observed for at least 30% of the 12 sessions, over the duration of the study. Observations can be described as unobtrusive watching of behavior in a small group setting to ensure that teachers are implementing instruction correctly. The trained observer had a checklist to use for each lesson she observed. Checklists included length of lesson, students' time on task, implementation of lesson formats, pacing, and behavior management. These forms ensured that the two spelling instructional methods were administered appropriately.

Explicit Rule-Based Approach. The explicit instruction used for the study consists of six exercises. They are as follows:
Exercise 1. Students work on orally identifying sounds that compose words. This can be long or short vowel sounds, blends, or whole words.
Exercise 2. Students review previously taught phonemic generalizations (rules or sounds). For example, the sound /a/ is spelled *–ay* when it comes at the end of a word (day, play, stray). Practice allows for students to become automatic in their spelling.
Exercise 3. Students write two to three sentences from dictation. Sentences are made up only from words that have been previously taught. This exercise allows for a review of words, while modeling for different ways in which words can be used.
Exercise 4. A pair of commonly confused words are taught in the same sentence (where and were). Prompts are provided in order to prevent confusion among the words.
Exercise 5. Sets of five to eight words previously taught are dictated. This is a review and provides practice.
Exercise 6. Students are provided a picture and are asked to write a sentence that tells what the characters could be saying. This allows for transfer of words from practice into sentence writing. Students are encouraged to use previous words to compose their sentences.

Traditional Instructional Approach. Traditional spelling lessons are designed to last from Monday to Thursday with instruction varying each day. These programs describe the test-study-test method as the single most effective strategy for teaching spelling. Once students have seen their spelling words for the week, they take over responsibility for their own learning. Just as in the explicit rule-based approach, the lessons in the traditional approach were semi-scripted so the experimental teacher could follow the program just as the authors have intended. The instructional methods typically found in popular basal programs currently used in many schools were utilized. In general, these programs are designed to integrate spelling skills with everyday language arts skills. This is incorporated through a variety of activities (e.g., rhyming words, puzzles, find the misspelled word, vocabulary builders) that can be linked to other content areas. Furthermore, students are prompted to check their

spelling and grammar, and are encouraged to use dictionaries and spell checkers for clarification.

Measurement Procedures and Instrumentation

As mentioned before, students were administered the TWS-4 to identify group differences (Larsen & Hammill, & Moats, 2005). No differences were found among the groups of students who were to receive spelling instruction. During the three weeks, students were taught one of three different word types each week (regular words, morphemic words, and irregular words). On the 5th, 10th, and 15th days of the intervention, students were tested on their ability to spell the particular word type that had been taught earlier that week. Following the three weeks of intervention (15th day), students took the last unit test. Additionally, the following types of errors on the unit tests were recorded and analyzed: (a) orthographic errors, (b) phonological errors, (c) sequence errors, (d) substitution errors, or (e) gross errors (Gettinger, Bryant, & Fayne, 1982).

Three Weekly Unit Tests. After every fourth lesson (on the 5th, 10th and 15th day) a 20-word item test was dictated to the subjects in both groups. The purpose of the unit tests was to evaluate the participants' ability to spell words that were specifically presented in the groups. Students were given paper and instructed to number and write their spelling words as they were read aloud. If a student asked for help, they were reminded to use the skills they had been taught during the week. However, rate of word presentation was slowed when necessary.

Results

Findings for Unit Test Measures

A multivariate analysis of variance was used to determine the effects of the spelling instruction. Statistical differences were found using the Wilks' Lambda (F = 93.715, df = 2,37, $p < .05$. All students increased in their spelling performance, regardless of instructional type, however the students who received explicit rule based instruction had higher scores on all three unit tests which measured performance for spelling regular words, morphographic words and irregular words (see Table 2).

Table 2. Means and Standard Deviations for the Traditional and Explicit Rule-Based Groups

Measure	Mean	Standard Deviation
Pretest		
Traditional	43.90	16.79
Explicit rule-based	47.85	13.59
Unit Test 1 (regular words)		
Traditional	78.50	25.13
Explicit rule-based	84.71	17.45
Unit Test 2 (morphographic words)		
Traditional	45.50	25.64
Explicit rule-based	54.41	23.37
Unit Test 3 (irregular words)		
Traditional	43.25	27.44
Explicit rule-based	58.53	17.74
Posttest		
Traditional	62.19	23.72
Explicit rule-based	71.40	20.30

Findings for Error Analysis

The percentage of error types on the three weekly unit tests were analyzed to ascertain differences between treatment groups. The following five types of errors were recorded and analyzed:

1. Substitution errors—the error includes an incorrect placement of a digraph.
2. Orthographic errors—the error is phonetically correct but orthographically incorrect (i.e., cote for coat).
3. Phonological errors—the error includes one or more grapheme mistake that changes a word (i.e., barn for born).
4. Sequence errors—the error includes an incorrect order of two graphemes (i.e., baot for boat).
5. Gross errors—the error does not represent either correct orthographic or phonological presentation of the word (i.e., cote for soap).

The results of spelling errors indicated that the effects of the treatments on error types differed according to instructional method. The explicit rule-based group made fewer total errors on all five-error types. The largest difference in scores was seen during Weekly Unit Test 3 (Irregular words) with 228 errors (traditional group) and 142 errors (explicit rule-based group). Table 3 presents error percentages for each type of error on the three weekly unit tests. Except for orthographic errors spelling morphemic words and gross errors spelling irregular words, students who received explicit instruction made fewer errors.

Table 3. Percentages of Spelling Error for Each Unit Test Based on Error Type

Error Type	Weekly Unit Test 1 (Regular words)	Weekly Unit Test 2 (Morphemic words)	Weekly Unit Test 3 (Irregular words)
Substitution Errors			
Traditional	5%	14%	6%
Explicit rule-based	2%	5%	5%
Orthographic Errors			
Traditional	6%	8%	17%
Explicit rule-based	6%	16%	14%
Phonological Errors			
Traditional	9%	4%	8%
Explicit rule-based	5%	1%	1%
Sequence Errors			
Traditional	0%	4%	8%
Explicit rule-based	1%	1%	1%
Gross Errors			
Traditional	0%	10%	11%
Explicit rule-based	1%	2%	17%

Discussion

A large body of empirical data related to spelling instruction exists; however, there is a need for more research to be conducted that examines effective programs for students with learning difficulties and behavior problems in urban schools (Vaughn, Schumm, & Gordon, 1992). Researchers have shown students with mild behavior and learning difficulties have frequent questions when spelling and have greater difficulty with writing than their peers. Generally, students with specific learning difficulties have more problems producing writing that is polished, expansive and coherent than students without disabilities (Harris & Graham, 1999). Based on Graham and Harris (2013) this is problematic because the CCSS is limited in that foundational skills are not addressed, and students with disabilities must meet the writing benchmarks CCSS provides. Perhaps explicit instruction is a way of offering students more opportunity to practice foundational skills such as spelling with direct feedback.

The explicit rule-based group outperformed the traditional group on all three unit tests (based on percent correct). For regular words, the explicit rule-based group had a mean

of 85% compared to the traditional group mean of 79%. For morphographic words, the explicit rule-based group had a mean of 54% compared to 46% average of the traditional group. Weekly unit test 3 of irregular words yielded a mean of 58.53% for the explicit rule-based group and 43.25% for the traditional group. The explicit rule-based group mean differences (58.53%) were highest for unit test three (irregular words) compared to the traditional group (43.25%). The multivariate Wilks' Lambda test for treatment was significant (F = 93.715, df = 2,37, $p < .05$). These findings mirror the results of Graham et al (2002) and Berninger et al (2002).

Results of this study suggest that features within the traditional method and explicit rule-based method are both effective in teaching students from urban schools with mild learning and behavior problems to spell. Error analysis indicates that students who received explicit instruction made overall fewer errors than students who received traditional basal instruction. Interestingly, students who received explicit instruction made fewer substitution, phonological, and sequencing errors even when spelling irregular words. Similar to Darch and Simpson's explanations, instructional features within the explicit rule-based group such as guided practice and immediate feedback on student performance could have caused the group who received explicit instruction to perform better.

Limitations

With any type of research, there are limitations and unforeseen circumstances that the researchers may encounter while collecting data in the field. Schools and classrooms also have preexisting situations that the researchers may not be able to anticipate. Although subjects represented different race, gender, disability, and spelling achievement, generalizations of the results to different populations may be problematic. The study was also isolated to one urban school in the Southeast region of the United States, which makes it difficult to generalize to other settings. The students were randomly assigned and not randomly selected due to the small sample size. There were some classroom situations the researcher was unable to overcome.

One teacher in particular was reluctant to release her students to go to spelling instruction. Pressures to increase student performance on federal and state tests concerned teachers who allowed their students to participate. Even though instruction lasted 20-25 minutes daily at a predetermined time, some teachers had changed their schedules to prepare for testing, and spelling small groups had become somewhat of an inconvenience.

During week two of the intervention, all students were preparing for the anti-drug assembly they were having on Friday. These daily preparations were unscheduled and also took place during small group spelling instruction Tuesday through Friday. Monday of that week was also a major holiday, so one day of instruction was not implemented. On Monday of week three, students began preparing for classroom Valentine's Day parties for Wednesday afternoon. This preparation also took place during small group spelling instruction. Friday of that same week, students also had to prepare for "Community Learning Friday." Once a month, a community leader or business comes to the elementary school to talk about their career or business. For this particular Friday, it was the local karate school that was performing and students had begun to practice their karate skills for the assembly. This too, took place during spelling instruction. These distractions may account for poor performance on unit 2 and 3 unit tests. Some students stated that they had some of their words as spelling words before. It would have been virtually impossible to construct a set of unfamiliar words for the study due to their prior exposure to spelling words.

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