A COMPARATIVE ANALYSIS OF SELF-CORRECTION AFTER EACH WORD
VERSUS SELF-CORRECTION AFTER A LIST OF WORDS ON SPELLING
PERFORMANCE BY ELEMENTARY STUDENTS WITH
LEARNING DISABILITIES

A Thesis
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ABSTRACT

This study evaluated the effects of two spelling self-correction strategies; on the acquisition, maintenance, and generalization of words. The study took place in a self-contained elementary classroom for students identified with learning disabilities. Five children, three males and two females, served as subjects.

The students practiced weekly list of 20 spelling words using two self-correction procedures. In both methods the students listened to audiotapes in which the list of spelling words was dictated. Ten spelling words (half of the weekly spelling list) were practiced by self-correcting after each word. The students heard each spelling word dictated, used in a sentence, and repeated. The student opened their “self-correct after every word” folder and lifted up the corresponding cardstock cover displaying only the spelling word that they just attended. The students checked the spelling of the word and placed a check mark next to the word if it was spelled correctly, or rewrote (self-correct) the word, if needed while using the word in the folder as a model. The students repeated this process.

The other half of each week’s spelling list were self-corrected after the student had heard and attempted all 10 words. The words were dictated in the same format as self-correcting after each word, however the student heard all 10 words on audiotape before being instructed to self-correct. The students repeated this process.

Student performance was evaluated by weekly spelling test of the 20 spelling words. The students were posttested on a weekly basis to test for maintenance for previously learned words. Students were also encouraged to use spelling words in written compositions, to test for generalization. All of the students acquired more words using the self-correcting after each word procedure. More words were spelled
correctly that were practiced self-correcting after attempting each word on 31 (77.5%) out of the forty combined weekly tests. Four of the five students maintained more words that were practiced using the self-correcting after every word procedure, on the 1-week maintenance tests. More words were spelled correctly on 82.5% of the five students’ combined (n=40) 1-week maintenance tests; that were practiced self-correcting after attempting each word. Neither procedure proved superior to another in the generalization measure.
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CHAPTER 1

INTRODUCTION

To participate fully in today's information-based society, students need to develop effective writing skills. To function in society most individuals must write in personal, school, and/or professional settings. Generally this requires accurate spelling. Because of the importance of spelling proficiency and because many American children and youth have difficulty in learning to spell accurately, spelling instruction in our schools is essential.

Although correct spelling may not be the most critical component in every writing activity, accurate spelling is an important aspect of formal written communication. The ability to spell is imbued by the admiring public with connotations of studiousness, literacy, and intelligence (Clark, 1994).

Although there is increased attention on written expression and demphasis on direct spelling instruction, teachers across the nation continue to devote considerable time and energy to building spelling mastery with children (Clark, 1994). The traditional textbook method, which usually consists of students alphabetizing spelling words, locating words in the dictionary, and writing them in sentences is not successful for all students (Wirtz, Gardner, Weber, & Bullara, 1996).
Spelling achievement improves, however, when students are required to self-correct their spelling errors. Over the course of several decades, sufficient studies have accumulated to verify the self-corrected spelling test as a valid method of spelling study (Horn, 1947).

Thomas Horn appears to be the first spelling researcher to study the self-corrected test in depth (Fitsimmons & Loomer, 1978). As a result of his original study, Horn (1947) concluded that the self-correction method as the “single most important factor contributing to achievement in spelling” (p. 258).

Effective application of self-correction practice remains an efficient way to learn how to spell unknown words. However Horn’s statement, “When corrected by the students,” leaves questions as to which of many methods of self-correction is most effective (Allred, 1987).

Two recent studies found that students with learning disabilities improved when a “traditional” method of spelling practice (e.g., writing the spelling words three times each, looking up the words in a dictionary, and writing them in sentences) was supplemented by a self-correction procedure in which the students are given a list of spelling words (McNeish, et al., 1992; Wirtz et al., 1996). In both studies, students fold the self-correction practice sheets, so that the students could not see the spellings words that had been pre-written by the teacher. As the words are dictated, students write them on their form. Upon completion of the 10th word, students unfold the self-correction practice sheet to expose the teacher written list and self-correct. McNeish, Heron, and Okyere, (1992) compared the “traditional” spelling approach to a spelling self-correction procedure with five junior high learning disabled students. They found that the spelling words practiced using
the self-correction procedure resulted in greater improvements in acquisition, maintenance, and generalization, versus words, of the same difficulty, practiced using the “traditional” method.

Wirtz et. al. (1996) replicated the McNeish et. al. original study by comparing the “traditional” spelling method and self-correction with third grade learning disabled students. Wirtz’s study also found the spelling self-correction procedure more beneficial for promoting spelling word acquisition, generalization, and maintenance.

While the spelling self-correction procedure appears more effective than the traditional method, numerous questions remain unanswered as to how the self-correction procedure can be implemented. One important variable that has yet to be investigated is when students self-correct. For example, is self-correcting after each word more effective than self-correcting after multiple, or a list, or words?

**Purpose of the Study**

The purpose of this study was to evaluate the effects of two spelling self-correction strategies. The study took place in an elementary classroom for students with learning disabilities. The subjects were five fifth grade students with learning disabilities. The students practiced weekly list of 20 spelling words using two self-correction procedures. In both methods the students listened to an audiotaped on which the weekly list of spelling words has been dictated by experimenter. Ten spelling words (half of the weekly list) were practiced by self-correcting after each word was dictated. The other half of each weeks’ spelling list as self-corrected after the student heard and attempted all 10 words. The experiment was designed to determine if there was a functional relationship between the number of correct words attempted before self-correction and students’ acquisition, maintenance, and spelling of words generalization.
Review of Literature

This section of the chapter reviews three related literatures: (a) research on spelling instruction, (b) research on error correction, and (c) research on self-correction of spelling.

Spelling Instruction

Readiness plays a part in learning to spell just as it does in reading and the learning of other skills. According to Johnson and Myklebust (1967), “Spelling requires more auditory and visual discrimination, memory, sequentialization, analysis and synthesis, and integration simultaneously than perhaps any other skill” (p. 239). Until children have attained sufficient mental maturity and linguistic experience, efforts to drill children in spelling prematurely may result in failure. Readiness is essential for learning to spell at all grade levels (Hillerich, 1955).

Hillerich (1955) states that there is no reason for hurrying children into spelling; the results will have no lasting effects. He believes it is best not to begin systematic work in spelling before the pupil has achieved:

1. A mental age of 7 1/2 years or more.
2. Speaking vocabulary of some 5,000 words.
3. Ability to enunciate words distinctly.
4. Ability to recognize and pronounce 300 - 400 of the most commonly words in reading.
5. A beginning in phonics - the most common letter-sound combinations.
6. The ability to write the letters of the alphabet correctly.
7. The ability to copy a simple word correctly.

8. Ability to write a few simple words from memory.

Because all of these skills are necessary for successful spelling, spelling is often problematic and frustrating for many students (Boothe, 1993). The child’s awareness of progress is probably the most important source of interest and motivation (Columbia, 1926; Diserens & Vaughn, 1931; E. Horn, 1967; McKee, 1939; Thorndike, 1935).

By the time children are in the upper elementary grades, they feel a need to correct spelling and dislike having to stop and ask for help on words they need to write (Hillerich, 1955). Adapting spelling instruction and activities to the needs of individuals is necessary in order to avoid waste and insure the highest achievement for every child. By the beginning of fourth or fifth grade the variations in spelling abilities of pupils in any typical group will range over 3 or 4 grade levels (Boothe, 1980). There are seldom more than 5 or 6 pupils within one class who need the same words or the same kind of help. At this stage the chief question for the teacher becomes, what are the best ways of increasing the children’s independence in spelling correctly.

Heron, Okyere, and Miller (1991) identified various methods that have systematically been used to teach spelling.

**Traditional approach.** The traditional approach has focused on linguistic theory, meaning that instruction focuses on the phonologically and morphological aspects of expressive production (Hammill, Larsen, & McNutt, 1977). Most traditional programs use spelling basals in which prescribed lists words are given each week. The traditional method generally consists of: Monday, introduction and explanation of the week’s word list. On the following three days the students write the word three to five times each, look up the words in the dictionary, use each word in a sentence and/or story. On Friday the students are tested on the week’s word list.
Modeling. Modeling is a form of teaching spelling in which the teacher provides an oral and written model of the spelling word, then the child imitates the model by spelling the work out loud and writing the word. Feedback is given immediately to the student. Imitating children’s errors is another modeling instructional method. With this instructional method the child is praised for each correct spelling. For each misspelled word the teacher imitates the child’s misspelling, telling them that this is how they spelled the word. The teacher immediately writes the word correctly, telling them that this is the correct way to spell the word. The student immediately respells the word correctly using the teachers correct spelling of the word as a model (Gerber, 1982).

Kauffman, Hallahan, and Haas (1978) compared the effect of teacher modeling (i.e., “this is the correct way to spell that word”) to imitation plus modeling (i.e., “This is how you spelled; here is the correct way to spell that word”). In this study, imitation plus modeling resulted in faster acquisition rate and higher percentage of correct spellings for elementary aged developmentally handicapped and learning disabled students. Further investigation of these technique (Ollendick, Matson, Esveldt-Dawson, & Shapiro, 1980) provided evidence that the use of positive reinforcement (a “star” and verbal praise), in addition to practicing a word following a student error, increased the effectiveness of the procedure.

Spelling rules. Teaching spelling rules are designed to enable students to generalize their spelling to similar patterns. General spelling rules are taught directly focusing on: rules governing plurals, affixes, possessives, irregular endings.
Flow list. When using a flow list, spelling words that are mastered (spelled correctly over several consecutive days) are removed from the list and new words are added. Flow list helps to ensure that the students are not spending time studying words previously mastered.

A peer-tutoring format can be implemented to accommodate a flow list procedure (Cooke, Heron, & Heward, 1983). As words are learned, they exit the system and new words are introduced. Students would practice spelling words orally or in writing, receive prompts for initial misspellings (e.g., “Try again.”), and feedback and praise for correct performance.

Directed rehearsal. Directed rehearsal is an overcorrection procedure which involves positive practice learning words spelled incorrectly. Students may be required to write the missed words several times, complete dictionary work, or write many sentences using the words.

Copy-cover-compare. In this method (Grahn & Miller, 1979), the student looks at the word presented by a peer and says it. The student then writes the word twice while looking at the word (copy), covers the word and writes it again (cover), and finally checks the spelling of the word (compare). Emphasis is placed on repeated practice.

Frank, Wacker, Keith, and Sagen (1987) investigated a copy-cover-compare procedure in which the student copied the word, spelled it from memory, and then independently checked the correct spelling. The instructor monitored the situation and provided positive reinforcement. In a comparison of the effectiveness of group and individual implementation of the instructional sequence, the authors reported that effectiveness of group and individual implementation were equal.
Computer-based spelling programs. Many computer programs have been
developed to aid students in acquiring spelling instruction at an individualized pace.
Several software programs have been developed for classroom use to teach spelling.
These programs employ different strategies including phonics, spelling rules, and
word patterns (Mercer & Mercer, 1984).

Hasselbring (1984) compared the relative efficacy of a teacher to that of a
computer as a provider of feedback and modeling. Third grade students with
learning disabilities received spelling instruction from the teacher for half of the study
and spelling instruction from the computer for half of the study. The average
percentage of correct spellings on the weekly tests was similar for the two conditions.

Self-correction. Self-correction (McNeish, 1985; Wirtz, 1996; Okyere, 1990)
is a method of spelling instruction in which students compare their misspelled words
to a model identify the specific type of mistake made, correct the mistake without
teacher assistance, and then write the correct word. Self-correction enables students to
focus specifically on letter sequence. Research (which will be reviewed in a
subsequent section) has established the value of the self-correction as a learning
device.

Error Correction

Students with learning disabilities often perform poorly on learning and
memory tasks because they do not spontaneously use efficient study strategies
(Gerber, 1985). Students can be directed to use effective study strategies through
implementation of study strategies (externally directed instruction), or they can be
taught to make independent use of studying spelling vocabulary (student-directed
instruction).
Research has examined the effect of providing models of the correct spelling prior to and following instruction to spell a word, the effect of feedback to the student following a response, and the efficacy and efficiency of different feedback delivery agents (i.e., teacher, a peer, a computer, or themselves).

In recent years, several studies have examined the effectiveness of error correction techniques. Fox and Jones (1978) found that a “positive practice” contingency resulted in increased percentages of words learned by 4th, 5th, 7th, and 8th grade students. Dineen et. al. (1977) examined the effects of peer-mediated correction of misspelled words. These investigators found that tutees improved their spelling performance regardless of tutoring role.

Dalquadri, Greenwood, Stretton, and Hall (1983) used peers acting as instructors to help students with learning disabilities improve their spelling performance. Working in pairs, the students took turns acting as either the instructor (dictating words and correcting responses) or the student (producing responses). Students scored points for responses, and student team points were totaled to determine a winner. The peer-tutoring game resulted in higher achievement than observed using traditional teacher-centered instruction. In addition, it increased the response opportunities for both the students with learning disabilities and the non learning disabled students.

**Research on Spelling Self-Correction**

Thomas Horn (1947) appears to be the first to study self-correction. His study successfully demonstrated the effectiveness of the self-correction method. Participants included 268 sixth grade students, who were divided into three groups receiving differing spelling instruction. As a result of his original study he found that as much
as 85% percent of the learning in which takes place in spelling occurs as the child locates and corrects his own errors during the pretesting and testing phases.

Ganchow (1983) modified Edlund’s (1979) self-correction format, which gave students five trials to practice spelling the target words. The students worked daily independently until they were able to correctly spell the word. The students’ practice sessions were short (generally 15 minutes per day) rather than one long session. The students used proofreading symbols, omission, insertion, and wrong letter marks, to self-correct errors. The spelling words were dictated on a tape, and the students folded the paper so that the preprinted target words could not be seen while attempting to spell the word. The paper was then unfolded, and corrections were made utilizing the proofreading marks.

McNeish (1985) conducted an experimental test of Ganchow’s self-correction format. McNeish used an alternating treatment format, comparing the self-correction instructional method to the traditional method. The participants were five students with learning disabilities who were 13 or 14 years old.

Under the self-correction intervention, students were taught four proofreading marks: transpositions, omissions, insertions, and wrong letters. The words were dictated by higher leveled peers. Students folded their paper so that the target word could not be seen while attempting to spell the word. They would then unfold the word to reveal the correct spelling. They would use the model to correct their word, if needed, by using the proofreading marks. Then they would write the word correctly in the next column. They would repeat this procedure again for each word.

Under the traditional intervention, students were given daily spelling assignments. On Mondays, students wrote the spelling words as many times as possible during the time period. On Tuesdays, students wrote each spelling word in a
sentence. On Wednesdays, they arranged the words in alphabetical order, and on Thursdays, they wrote stories using as many spelling words as they could. All Friday's were designated for testing.

McNeish found that students learned more words under the self-correction method versus the traditional method. All five students achieved higher spelling scores under self-correction. A delayed posttest was used after each weekly test to measure maintenance. McNeish retested only the words that were previously spelled correctly on the weekly test, and found that students maintained an higher percentage of words learned during the self-correction format. Written work by the students in other subject areas was used as evidence of generality. Students correctly spelled a higher percentage of spelling words learned during the self-correction intervention versus the traditional spelling intervention.

In summary, McNeish found that self-correction is more effective than the traditional approach in the acquisition, maintenance, and generalization of spelling words.

Okyere (1989) replicated the McNeish (1985) study, with six elementary students as subjects. All of the students showed significant learning deficiencies in the area of spelling. Unlike McNeish, Okyere did not compare the self-correction method with the traditional method. Okyere used the words that the students could not spell before intervention as baseline. Okyere used the same self-correction procedures and McNeish. The experimenter dictated the words on audiotapes for the students to listen to individually.

Results of Okyere's study showed that the students were able to spell an average 14 of the 15 previously unknown words on the ten weekly test. On maintenance tests, all six students maintained at least 85% of the words learned after
the self-correction intervention. As a generalization measure students wrote variations of the spelling words. Five of the participants were able to correctly spell 80% or more of the words, and one spelled 73% correctly.

Harward (1994) completed a study comparing two self-correction methods, in which wordwise feedback was compared to listwise feedback. Two-hundred nine fourth graders were randomly assigned to one of the two treatments. In the wordwise method, the students used a self-correcting device which allowed them to visually self-correct after every word. The self-correcting device was a cardstock envelop with a small open window which held a strip of paper on which were printed the 25 weekly spelling words. After the teacher dictated each spelling word, students wrote the word and then slid the strip of paper in the self-correcting device to the corresponding word and self-corrected. In the listwise method, the teacher dictated the entire word list, students unfolded an answer sheet containing the words and self-corrected. Harward found that both methods were effective in teaching students spelling. Both methods were equally effective in maintenance of spelling during delayed posttest. However, wordwise feedback produced higher gains than listwise in acquisition. Students using the wordwise procedure acquired an average of 3.3 more words per week.

Wirtz (1996) completed a systematic replication of McNeish (1985) study, which compared a traditional approach to teaching spelling with a self-correction approach. Six third grade students who had spelling difficulties served as subjects. Their ages ranged from age 8 to 10. Weekly tests were given in order to determine whether or not the student had correctly learned to spell the target words. A higher percentage of words learned during the self-correction intervention were acquired. Delayed posttests were given biweekly to determine if maintenance was achieved.
More words learned during the self-correction intervention were maintained by all of the students. Generalization was assessed with oral spelling. The student was required to say aloud the correct sequence of letters when presented the stimulus word. A higher percentage of words learned during the self-correction intervention were generalized versus words learned during the traditional method of spelling.

**Research Questions**

This study was designed to obtain objective data in response to the following questions.

1. Does self-correction after attempting each of 10 words and self-correction after attempting a series of 10 words have differential effects on students’ acquisition of new spelling words as measured by an end-of-the week test?

2. Does self-correction after attempting each of 10 words and self-correction after attempting a series of 10 words have differential effects on students’ maintenance of previously studied spelling words as measured by 1-week maintenance tests.

3. Does self-correction after attempting each of 10 words and self-correction after attempting a series of 10 words have differential effects on students’ use and accurate spelling of previously studied spelling words in written composition assignments?

Additionally, the students’ and the classroom teacher’s opinions regarding the self-correction procedures were obtained at the study’s conclusion.
CHAPTER 2

METHOD

This chapter describes the procedures used in the study. A description of the experimental design, subjects, setting, and dependent variables is included. A description of the materials used to conduct the experiment is also included.

Subjects

Five fifth grade students identified as having learning disabilities who have experienced difficulty with spelling served as subjects (see Table 1). The students, three males and two females, ranged in age from 11-0 years to 12-5 years. These students were recommended by their special education teacher because they performed below average (70%) on spelling tests and frequently misspelled words in writing assignments.

All students received written parental permission to participate in the study (Appendix A). A letter from the classroom teacher explaining the study accompanied the permission letter (Appendix B).

Setting

The study was conducted in a public elementary school contained in a large midwestern urban school system, with an enrollment of approximately 400 students. The
Table 1: Demographic Characteristics of Subjects

<table>
<thead>
<tr>
<th>Student</th>
<th>Gender</th>
<th>Age</th>
<th>Ethnicity</th>
<th>SES*</th>
<th>IO*</th>
<th>Spelling Achievement*</th>
<th>Spelling Tests*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daren</td>
<td>M</td>
<td>11-1</td>
<td>Black</td>
<td>Low</td>
<td>86</td>
<td>9-4</td>
<td>61</td>
</tr>
<tr>
<td>Maya</td>
<td>F</td>
<td>11-2</td>
<td>Black</td>
<td>Middle</td>
<td>94</td>
<td>10-5</td>
<td>65</td>
</tr>
<tr>
<td>Tanya</td>
<td>F</td>
<td>11-11</td>
<td>Black</td>
<td>Low</td>
<td>87</td>
<td>10-11</td>
<td>68</td>
</tr>
<tr>
<td>Shawn</td>
<td>M</td>
<td>12-5</td>
<td>Black</td>
<td>Low</td>
<td>79</td>
<td>11-1</td>
<td>70</td>
</tr>
<tr>
<td>Cameron</td>
<td>M</td>
<td>12-0</td>
<td>White</td>
<td>Low</td>
<td>81</td>
<td>10-10</td>
<td>56</td>
</tr>
</tbody>
</table>

Notes:

a= based on Cost of Lunch Status (regular, free/reduced)

b= test used: WISC-III

c= test used: Test of Written Spelling (Age Equivalent Score Given)

d= average percent correct on weekly spelling test during current school year
school enrolls grades kindergarten through five. Eighty percent of the school’s students live in families receiving public assistance and are eligible for reduced of free lunches. The study was conducted in the subjects’ self-contained specific learning disability classroom. The study took place at two large tables in a corner of the room, where the students often receive small group tutorial help.

Experimenter

The experimenter is a graduate student at The Ohio State University, pursuing a Master of Arts degree in special education and Ohio teaching certification in specific learning disabilities. She received a Bachelor of Science degree in business education from The Ohio State University and holds teacher certification in comprehensive business and vocational education, grades 7-12.

Definition and Measurement of the Dependent Variables

The primary dependent variables were the number words spelled correctly by each student on weekly tests and 1-week maintenance tests. The frequency and accuracy with which students use of the spelling words in compositions written in response to “story starter” assignments were also measured.

Spelling accuracy

Spelling accuracy is defined as writing the correct sequence of letters (i.e., the orthography of the letters) for the stimulus words. For the word is picture, the only spelling scored as correct would be: p-i-c-t-u-r-e. Any other variation was counted as incorrect. If the stimulus word included a hyphen, the student must have included it in order for the word to be scored correct. Homonyms were counted incorrect if the spelling word does not match the stimulus word. For example if the stimulus word was eight, and the student wrote a-t-e, the response was scored incorrect. Words will be dictated in a word-sentence-word format to alleviate confusion of homonyms.
**Weekly Spelling Test**

A weekly spelling test was administered on Friday of each week. Weekly tests were administered exactly as the pretest and maintenance tests (to be described in the procedures section). Students wrote on a standard teacher-prepared test form (see Appendix F). Test items remained constant \((n = 20)\) for each weekly test.

**Maintenance Tests**

Each maintenance test assessed only the words a student spelled correctly on the weekly test. Presentation of the words occurred in the same manner as presented for the weekly spelling test (word-sentence-word). Students wrote their responses on paper. Number of words spelled correctly was calculated by marking the student’s paper for correct orthography in the same manner as the weekly test.

**Written Compositions**

The students were prompted to use their spelling words in context in class through the use of story starters. The generalization assignment was conducted in the same classroom as the study once a week. The students were given 20 minutes to complete their compositions. The experimenter counted each word correctly spelled (if a word appeared more than once, it was counted as only one word), in order to determine a relationship between both self-correction procedures and generality.

**Procedures to Ensure Accuracy and/or Reliability**

**Dependent Variable**

One half of each students’ unmarked tests, both weekly and maintenance tests, were photocopied. The experimenter scored one copy and an independent observer, the students’ classroom teacher, scored the other. The same previously prepared key was used by both scorers. Accuracy standards were clearly defined (see in definition of dependent variables). If a disagreement occurred, the
experimenter and independent observer would compare the word in disagreement
with the orthography of the word printed in the spelling textbook and co-determine
its accuracy.

**Independent Variable**

The independent variable was monitored for consistency using a checklist
(Appendix C) which outlined the steps the experimenter followed when
implementing both self-correction methods. The checklist also served to ensure that
the students were performing both self-correction procedures accurately (see
procedures). The second observer, the classroom teacher, completed the checklist
every third day.

**Materials**

**Spelling Words**

Weekly spelling lists of 20 unknown words were derived by pretesting the
students with words from McDougal Littel Spelling, (Bohen, 1990) the series that was
currently being used in the classroom. The experimenter divided each weeks’ spelling
list in half, monitoring that each list is of equal difficulty, in terms of: number of
letters, number of syllables, spelling word lesson numbers in the spelling text
(whether the word is from a spelling word lesson list that would have been given in the
fall [e.g., Lesson 3] versus a lesson that would typically be given towards the end of
the school year [e.g., Lesson 28] ). The experimenter also ensured that any possible
word families (e.g., nature, picture, capture, future) were equally divided amongst the
two self-correction procedures. Irregular words, words that are not spelled
phonetically (e.g., weigh) were be equally divided amongst the two self-correction
procedures. The experimenter consulted with the students’ regular classroom teacher and another classroom teacher, in order to ensure that both list were of equal difficult.

**Spelling audiotapes**

Two audiotapes were prepared for each student each week. One audio tape had the 10 spelling words to be practiced using self-correction after each word. The second audiotape had the 10 spelling words to be practiced with self-correction after all 10 words. For example, if the self-correction after every word was the first procedure for the day (see experimental design), the students would listen to the corresponding tape, the tape would dictate 10 words (in a word-sentence-word format). For example, if the spelling word was *picture*, the student would hear, “word number 1 is *picture*, (a 3 second pause), “I would like to take a *picture* of my brother,” (3 second pause) “picture” (3 second pause) “push stop and self-correct.” After dictating the 10 words twice the tape would end.

For the self-correction after all 10 words, the spelling words were dictated on the tape in the same format as self-correction after each word. However, all 10 words were dictated before the student was instructed to self-correct. After the 10th word was dictated, the following instructions were given on the audiotape: “Please stop the tape. Open your spelling folder and self-correct all 10 spelling words. After you have finished self-correcting all 10 words, turn the tape recorder on again” The list of 10 words were repeated a second time, using the same format.

**Self-Correction Practice Sheets**

The self-correction practice sheet contains four columns (A-1, A-2, B-1, and B-2) all of the columns were blank except for the lines on the paper (see Appendix D). Under both self-correction procedures the self-correction practice sheets, were the same.
However, the forms were color coded to match the self-correction procedure folder (see below). The self-correction after each word practice sheet was yellow. The practice sheet for self-correction after 10 word was green.

Self-Correction Folders

The self-correction after each word folder was a device made by the teacher. The self-correcting device was manila folder with 10 small windows (Appendix E). Behind each window was one of the weekly spelling words. A small piece of cardstock was taped above each window to act as a cover. When the student was instructed to self-correct a word they lifted the cover to expose each word as they proceed through the tape. The small windows/covers allowed the students to see one word at a time. Each student had their own self-correction device. The folder/device had a yellow cover on the front (color coordinated with the self-correction after every word form), with the words “Self-correct After each word” printed on it.

The self-correction after a list of words folder (Appendix E) had a green sheet of paper on the cover (color coordinate with the corresponding form). Inside of the folder was the list of the 10 spelling words for this procedure, typed by the experimenter.

Experimental Design

An alternating treatments design was chosen for this experiment. This design was chosen because it provides both an experimentally sound and an efficient method for comparing two or more treatments (Cooper, Heron, & Heward, 1987). Both self-correction procedures were used by the students each day. Two of the practice days the students used the self-correction after every word first. The other two practice days the students used the self-correction after a list of words first
during daily practice. The determination of which procedure was first, was random. The experimenter put four pieces of paper into a hat, on two of the pieces of paper the words “every word” was wrote, on the other two the word “list” was wrote. Before the start of the study the experimenter took out one piece of paper one at a time. The first piece pulled out determined which procedure will be practiced first on Monday of the first week of the study. The second piece of paper determined which procedure was to be used second on Tuesday of the first week of the study. The third piece of paper determined which procedure was to be used on Wednesday of the first week of the study. The fourth piece pulled determined which procedure was to be used on Thursday of the first week of the study. The four pieces of paper were then placed back in the hat. The procedure was repeated seven more times by the experimenter to determine the order of practice for the remainder of the study.

Procedures

Pretests

Weekly pretests were conducted in order to obtain a pool of unknown words. Each subject was given a spelling pretest by the experimenter. Words for the pretest were read aloud by the experimenter to all subjects, then used in a sentence, then read aloud again (word-sentence-word). For example, if the word picture was one of the spelling words, the student would hear the following dication for that spelling word, “Picture (3 second pause) “I would like to take a picture (spelling word would be said with emphasis) of my sister.” (3 second pause) “Picture.”

Students wrote responses on the standard prepared spelling test answer sheets (Appendix F). Pretests were given on Thursdays after the instructional period.
was over. If a student spelled a word correctly on the pretest, the word was removed from the study. If all of the students misspelled a word it was considered unlearned and placed on the master list of words to be chosen for the study.

**Weekly Spelling Tests**

Weekly post test were used as an assessment to determine whether or not the student has correctly learned to spell the target words. Weekly tests were administered on Friday of each week. The teacher dictated the spelling words randomly to the students in a word-sentence-word format. Students wrote on a standard teacher prepared test form. Test items remained constant \( n = 20 \) for each weekly test.

**Maintenance Tests**

Maintenance test scores were used as an assessment to determine maintenance of the correct spelling response over time. The 1-week maintainence tests were given weekly. Students were assessed on only the words they previously spelled correctly on the weekly test. Diction of the words occurred in the same manner as presented for the weekly spelling test (word-sentence-word). Students wrote their responses on the standard teacher prepared test form. Number of words spelled correctly were calculated by marking the student's paper for correct orthography in the same manner as the weekly test.

**Written Compositions**

The students were prompted, by the experimenter, to use their spelling words in context in class through the use of story starters. This measure was conducted in the same classroom as the study, during regular literature arts time. The students were given 20 minutes to complete their compositions. The story starters were used
with the entire class. For example the students were told to complete the following story starter: “This summer I would like to...”. Complete stories must be at least two paragraphs. A complete paragraph was to contain at least six sentences.

Students were encouraged, by use of a reward system, to use their spelling words in their writing. The experimenter and teacher arranged a reward system to encourage students to use their spelling words in the story starters. For each spelling word used and spelled correctly in their stories, a student received one lottery ticket. The students were to write their names on the back of the ticket they receive and put them into the “ticket box”. Every Friday, before recess/lunch (11:45 A.M.) two tickets were drawn by the teacher for prizes (e.g., books, candy, pencils, pens). The entire class participated in the generalization and lottery activities, however, the experimenter only graphed and recorded data from the five experimenter’s subjects. All of the students received a grade on their compositions. The grades were counted towards their language arts grade.

**General Procedures**

Students were first instructed on the use of the cassette recorders. (How to play, rewind, and fast forward the tape). Two days before the start of the study was devoted to practicing with the recorders. Students were also given an explanation and a practice session in using the self-correction form (see Appendix D).

For both procedures students were instructed to self-correct each set of 10 words twice. For example, self-correction after a list of words was first for the first day of the study. The students first followed the procedures for self-correction after a list of words for the 10 designated words for that procedure. Second, repeat the procedures for self-correction after a list of words with the same 10 words. Third, the student would hear the other half of the weekly spelling list and follow the
procedures to self-correction after each word. Fourth, the student would repeat the procedures for self-correcting after each word. Students were instructed to print rather than write in cursive on all pretest and posttest. This procedure helped eliminate most handwriting errors.

Students who were absent on an instructional day (Monday-Thursday) skipped that day’s assignment. If a student was absent on Friday, when the test is given, the test was given on Monday before instruction began on the new spelling list.

Students were exposed to these spelling words only during the instructional time. The students were not be permitted to take these list home. The experimenter collected all assignments at the end of each daily practice session.

The study was conducted on Monday, Tuesday, Wednesday, and Friday from 11:00 -11:45. On Thursday, (because the students participated in physical education in the gymnasium) the study was conducted from 9:15 to 10:00 A.M. The additional 15 minutes (the actual self-correcting time was approximately 25 to 30 minutes) was used for the pretest (Thursday), the delayed posttest (Friday), and the generalization measure (Tuesday).

Self-Correction After Each Word

Before the study began students were instructed on how to use the self-correction after every word device (see materials). Each student had their own self-correction device.

1. Students would clear their desk of all materials except, for the tape recorder, headphones, pencil, self-correction practice sheet, and the self-correction devise. Students put on the headphones, pushed the play button on the tape recorder and listened to the spelling word. The word would be dictated on the tape, the
student would here the word instructions to stop. For example if the spelling word was “Picture,” the student would hear, “word number 1 is picture, (a 3 second pause), I would like to take a picture of my brother, (3 second pause) picture (3 second pause) “push stop and self-correct”. The students would write the word in Column A-1.

2. The student would lift up the cover on their self-correction devise that has:
   WORD # 1- written on it, and check their word.

3. If the word was written incorrectly the student would rewrite the spelling word in column A-2, using the word wrote in the self-correcting device as a reference. If the word was spelled correct they would place a check mark in check mark (√) in column A-2

4. The student would push play, and repeat steps 2-4 until the end of the 10 words.

5. After the last word, for self-correcting after every word, the audiocassette would instruct the student to push stop and take his/her form to the teacher to check.

6. The student would bring the form to the experimenter to make sure the words are written correctly in column A-2, and help fold the paper so that only columns B-1 and B-2 are exposed.

7. The student pushed play, and again listened to the dictated words on the audiotape and followed the same procedure in writing and self-correcting as stated in step 2 (but now writing the words in columns B).

After the last word for self-correcting after every word, the tape would instruct the student to stop.

**Self-Correction After 10 Words**

Students were given a manila folder containing a list of the 10 words, typed by the teacher, to be self-corrected after attempting all 10 words on the list.
1. Students would clear their desk of all materials except, for the tape recorder, headphones, pencil, self-correction sheet, and the closed manila folders containing their spelling words folder.

2. Students put on the headphones, pushed the play button on the tape recorder and listened to the spelling word. The words were dictated on the tape, word-sentence-word. After the 10th word was said, the following instructions were given on the audiotape: “Please stop the tape. Open your spelling list folder and self-correct all spelling words.”

3. The student would open their folder and self-correct. If the word was written incorrectly the student would rewrite the spelling word in column A-1, using the words wrote in the spelling folder as a reference. If the word was spelled correct they would place a check mark in check mark (✓) in column A-2.

4. After correcting all 10 words the student would bring the form to the experimenter to make sure the words are written correctly in column A-2. The experimenter helped the student fold the paper so that only columns B-1 and B-2 were exposed.

The student would push play on the tape, and again listen to the dictated words on the audiotape and followed the same procedure in writing and self-correcting (but now writing the words again in columns B).

Exit Interview

The students’ and the classroom teacher’s opinions regarding the self-correction procedures were obtained at the study’s conclusion. The students were given a questionnaire to be completed regarding their opinions. The teacher was given a separate questionnaire to be completed (Appendix G).
CHAPTER 3

RESULTS

This chapter presents the results of the study. The chapter begins with a report of the interobserver agreement measures, and treatment fidelity. This is followed by the results of each subject's spelling performance on weekly tests, 1-week maintenance tests, and written compositions, as well as a summary. Finally, the results of the questionnaires administered to obtain students' and teacher's opinions are presented.

Interobserver Agreement

The experimenter photocopied all weekly and maintenance tests, and each generalization assignment. The experimenter scored one copy and the independent observer scored the other. The second observer independently scored 50% of the weekly tests, weekly maintenance tests, and the generalization assignments. Interobserver agreement was 100% for the weekly tests, maintenance test, and the generalization assignments.

Treatment Fidelity

The observer was present 11 of the study’s 32 sessions (34.3%). During observation the experiment followed the procedures outlined on the interobserver reliability measure (Appendix C ) 100% of the observations. Four out of five of the students followed all procedures outlined on the interobserver reliability measure each time (100%) they were observed. On sessions two sessions during week three, Maya,
was observed not following the correct procedures for attempting to spell the word and then self-correction after the every word procedure. Maya was observed writing one half of the spelling word during dictation of the word on tape, then completing the word correctly during self-correction while looking at the teachers' model. Maya, then checked the self-correction form as if she correctly spelled the word, before looking at the teacher model during self-correction.

After the second observation of Maya not following procedures, the experimenter reviewed and demonstrated the procedures with her. Once she was aware of being observed, her previous incorrect procedures was not seen again by the observer nor the experimenter.

**Weekly Test Scores**

A pretest was given to the students in order to ensure that all the words on their spelling lists were unlearned prior to intervention. On Friday of each week, students were given a test over the words on the spelling list that they were given on Monday. Monday through Thursday of each week students were given equal opportunities to practice half (n=10) of their word list using self-correction after attempting every word procedure. The remaining words (n=10) were practiced using self-correction after attempting the whole list of 10 words procedure. The results for each student are summarized in Table 2.

**Daren**

Figure 1 shows Daren's performance on weekly tests during the eight weeks of the self-correction study. Daren correctly spelled a mean of 6.6 (66.3%) (range, 5 to 8) of each week's 10 words that he had practiced using self-correction after every word procedure. During the eight weeks of the study Daren correctly spelled an mean of 5.6
attempting the whole list of 10 words. Daren spelled more words correctly that were self-corrected after each word on seven of the study's eight weekly tests.

**Maya**

Figure 2 shows Maya's performance on weekly tests during the eight weeks of the self-correction study. Maya correctly spelled a mean of 6.9 (68.8%)(range, 6 to 9) of each week’s 10 words that she had practiced using self-correction after every word procedure. During the eight weeks of the study Maya correctly spelled an mean of 5.8 words (57.5%)(range, 5 to 7) of the 10 words she had practiced with self-correction after attempting the whole list of 10 words. Maya spelled more words correctly that were self-corrected after each word on seven of the study's eight weekly tests.

**Tanya**

Figure 3 shows Tanya's performance on weekly tests during the eight weeks of the self-correction study. Tanya correctly spelled a mean of 7.0 (70.0%)(range, 6 to 8) of each week’s 10 words that he had practiced using self-correction after every word procedure. During the eight weeks of the study Tanya correctly spelled an mean of 6.3 words (63%)(range, 5 to 8) of the 10 words he had practiced with self-correction after attempting the whole list of 10 words. Tanya spelled more words correctly that were self-corrected after each word on four of the study's eight weekly tests. Tanya correctly spelled an equal amount of words studied using both procedures on two of the weekly tests.

**Sam**

Figure 4 shows Sam's performance on weekly tests during the eight weeks of the self-correction study. Sam correctly spelled a mean of 6.6 (66.2%)(range, 3 to 6) of each week’s 10 words that he had practiced using self-correction after every word procedure. During the eight weeks of the study Sam correctly spelled an mean of 5.6 words (56.2%)(range, 3 to 6) of the 10 words he had practiced with self-correction.
Figure 1. Number of words spelled correctly by Daren on weekly tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
Figure 2. Number of words spelled correctly by Maya on weekly tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
Figure 3. Number of words spelled correctly by Tanya on weekly tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
of each week's 10 words that he had practiced using self-correction after every word procedure. During the eight weeks of the study Sam correctly spelled an mean of 5.6 words (56.2%)(range, 3 to 6) of the 10 words he had practiced with self-correction after attempting the whole list of 10 words. Sam spelled more words correctly that were self-corrected after every word on five of the weekly test. Sam correctly spelled an equal number of words that were practiced during both conditions on two of the weekly tests.

Cameron

Figure 5 shows Cameron's performance on weekly tests during the eight weeks of the self-correction study. Cameron correctly spelled a mean of 4.8 (47.5%) (range, 5 to 7) of each week's 10 words that he had practiced using self-correction after every word procedure. During the eight weeks of the study Cameron correctly spelled a mean of 4.5 words (45%)(range, 4 to 7) of the 10 words he had practiced with self-correction after attempting the whole list of 10 words. Cameron spelled more words correctly that were self-corrected after each word on three of the study's eight weekly tests. Cameron correctly spelled and equal number of words, practiced during both conditions, on three of the eight weekly tests.

Group Summary

The five students performance on weekly spelling test are summarized in Figure 6 and Table 2. All five of the students spelled more words correctly that were practiced using the self-correction after every word procedure. For the five students combined weekly test (n=40),on 31 out of the 40 test more words were spelled correctly that were self-corrected after every word.
Figure 4. Number of words spelled correctly by Sam on weekly tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
Figure 5. Number of words spelled correctly by Cameron on weekly tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
Figure 6. Mean number of words spelled correctly on eight weekly tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words.
Table 2. Mean number of words correctly spelled on eight weekly tests as a function of self-correction after attempting every word and self-correction after attempting a whole list of words.

<table>
<thead>
<tr>
<th>Student</th>
<th>Each Word</th>
<th>Whole List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daren</td>
<td>6.6</td>
<td>5.8</td>
</tr>
<tr>
<td>Maya</td>
<td>6.9</td>
<td>5.8</td>
</tr>
<tr>
<td>Tanya</td>
<td>7.0</td>
<td>6.3</td>
</tr>
<tr>
<td>Sam</td>
<td>6.3</td>
<td>5.6</td>
</tr>
<tr>
<td>Cameron</td>
<td>4.8</td>
<td>4.5</td>
</tr>
<tr>
<td>Group Mean</td>
<td>6.3</td>
<td>5.6</td>
</tr>
</tbody>
</table>
Weekly Maintenance Test

Weekly maintenance test were used as a measure of spelling performance over time. Students were given delayed posttests 10 days after the weekly test. Only words correctly spelled on the weekly test were retested on the maintenance test.

Daren

Figure 6 shows Daren's performance on 1-week maintenance tests during the eight weeks of the self-correction study. Daren correctly spelled a mean of 4.5, on the words that he had practiced using self-correction after every word procedure. During the eight weeks of the study Daren correctly spelled a mean of 3.1, on the words that he had practiced with self-correction after attempting the whole list of 10 words. Daren spelled more words correctly that were self-corrected after each word on seven of the study's eight 1-week maintenance tests.

Maya

Figure 8 shows Maya's performance on 1-week maintenance tests during the eight weeks of the self-correction study. Maya correctly spelled a mean of 4.1, on the words that she had practiced using self-correction after attempting every word procedure. During the eight weeks of the study Maya correctly spelled an mean of 3.0, on the words she had practiced with self-correction after attempting the whole list of 10 words. Maya spelled more words correctly that were self-corrected after each word on six of the study's eight 1-week maintenance tests.

Tanya

Figure 9 shows Tanya's performance on 1-week maintenance tests during the eight weeks of the self-correction study. Tanya correctly spelled a mean of 4.1, on the words that she had practiced using self-correction after attempting every word
Figure 7. Number of words spelled correctly by Daren on 1-week maintenance tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
Figure 8. Number of words spelled correctly by Maya on 1-week maintenance tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
procedure. During the eight weeks of the study Tanya correctly spelled an mean of 3.4, on the words she had practiced with self-correction after attempting the whole list of 10 words. Tanya spelled more words correctly that were self-corrected after each word on six of the study's eight 1-week maintenance tests.

Sam

Figure 10 shows Sam's performance on 1-week maintenance tests during the eight weeks of the self-correction study. Sam correctly spelled a mean of 4.3, on the words that he had practiced using self-correction after attempting every word procedure. During the eight weeks of the study Sam correctly spelled a mean of 3.8, on the words he had practiced with self-correction after attempting the whole list of 10 words. Sam spelled more words correctly that were self-corrected after each word on six of the study's eight 1-week maintenance tests.

Cameron

Figure 11 shows Cameron's performance on 1-week maintenance tests during the eight weeks of the self-correction study. Cameron correctly spelled a mean of 2.0, on the words that he had practiced using self-correction after attempting every word procedure. During the eight weeks of the study Cameron correctly spelled a mean of 2.5, on the words he had practiced with self-correction after attempting the whole list of 10 words. Cameron spelled more words correctly that were self-corrected after attempting a whole list of 10 words on six of the study's eight 1-week maintenance tests.

Group Summary

The group's performance on 1-week maintenance tests is summarized in Table 3 and Figure 12. Four of the five students correctly spelled more words that were
Figure 9. Number of words spelled correctly by Tanya on 1-week maintenance tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
Figure 10. Number of words spelled correctly by Sam on 1-week maintenance tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
Figure 11. Number of words spelled correctly by Cameron on 1-week maintenance tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words during daily spelling practice.
Figure 12. Mean number of words spelled correctly on eight 1-week maintenance tests as a function of self-correction after attempting each word or self-correction after attempting a list of 10 words.
Table 3. Mean number of words correctly spelled on eight 1-week maintenance tests as a function of self-correction after attempting every word and self-correction after attempting a whole list of words.

<table>
<thead>
<tr>
<th>Student</th>
<th>Each Word</th>
<th>Whole List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daren</td>
<td>4.5</td>
<td>3.1</td>
</tr>
<tr>
<td>Maya</td>
<td>4.1</td>
<td>3.0</td>
</tr>
<tr>
<td>Tanya</td>
<td>4.1</td>
<td>3.0</td>
</tr>
<tr>
<td>Sam</td>
<td>4.3</td>
<td>3.8</td>
</tr>
<tr>
<td>Cameron</td>
<td>2.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

| Group Mean | 3.8 | 3.2 |
practiced using the self-correction after every word procedure. Cameron was the only student to correctly spell more words on his eight combined maintenance test, that were practiced using the self-correction after attempting a whole list of 10 words procedure.

Written Compositions

The students were encouraged to use their spelling words in writing assignments during English instruction. The students were provided story starters from the classroom teacher and/or the experimenter. A reward system was implemented by the classroom teacher and the experimenter in order to encourage students’ use of spelling words in a generalized assignment.

Daren

Daren learned 53 out of the total 80 words practiced using the self-correction after attempting every word procedure. On his combined weekly compositions he included and correctly spelled 14 of these words. Daren learned 42 out of the total 80 words that were practiced using the self-correcting after attempting a whole list of 10 words procedure. On his combined weekly compositions he included and correctly spelled 17 of these words.

Maya

Maya learned 55 out of the total 80 words practiced using the self-correction after attempting every word procedure. On her combined weekly compositions she included and correctly spelled 20 of these words. Maya learned 46 out of the total 80 words that were practiced using the self-correcting after attempting a whole list of 10 words procedure. On her combined weekly compositions she included and correctly spelled 15 of these words.
Tanya

Tanya learned 55 out of the total 80 words practiced using the self-correction after attempting every word procedure. On her combined weekly compositions she included and correctly spelled 11 of these words. Tanya learned 46 out of the total 80 words that were practiced using the self-correcting after attempting a whole list of 10 words procedure. On her combined weekly compositions he included and correctly spelled 14 of these words.

Sam

Sam learned 53 out of the total 80 words practiced using the self-correction after attempting every word procedure. On his combined weekly compositions she included and correctly spelled 14 of these words. Sam learned 45 out of the total 80 words that were practiced using the self-correcting after attempting a whole list of 10 words procedure. On his combined weekly compositions he included and correctly spelled 13 of these words.

Cameron

Cameron learned 38 out of the total 80 words practiced using the self-correction after attempting every word procedure. On his combined weekly compositions he included and correctly spelled 7 of these words. Cameron learned 36 out of the total 80 words that were practiced using the self-correcting after attempting a whole list of 10 words procedure. On his combined weekly compositions he included and correctly spelled 9 of these words.
Group Summary

Two of the five students spelled more words in their combined written assignments that were practiced using the self-correction after attempting every word procedure. Three of the five students correctly spelled more words in their combined written compositions, that were practiced using the self-correction after a whole list of 10 words procedure. A total of 66 words were used and correctly spelled in written compositions, that were practiced using the self-correction after every word procedure. A total of 68 words were used and correctly spelled in written compositions, that were practiced using the self-correction after a whole list of 10 words procedure.

Students' and Teacher's Opinions

The students were given questionnaires to complete at the conclusion of the study concerning their preferences for self-correction after every word or self-correction after multiple words (see Appendix G). The students wrote their responses on the spaces provided on the questionnaire. Daren, Maya, Tanya, and Sam wrote that they preferred the self-correction after every word procedure. When responding to why they preferred this procedure Daren and Maya wrote that they felt that they learned more words. Tanya responded that she enjoyed the self-correction devise that was used for the procedure. Sam wrote that he likes to check his work frequently. Cameron responded that he preferred the self-correction after multiple words procedure. He wrote that he preferred this procedure because the self-correction after every word procedure was too much work. Cameron correctly spelled more words using self-correction after attempting every word on his combined eight, weekly tests. However, Cameron correctly spelled more words practiced using self-correction after attempting a whole list of multiple words on his combined, eight 1-week maintenance
Table 4. Total number of words correctly spelled on eight generalization measures, written compositions, as a function of self-correction after attempting every word and self-correction after attempting a whole list of words.

<table>
<thead>
<tr>
<th>Student</th>
<th>Each Word</th>
<th>Whole List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daren</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Maya</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Tanya</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Sam</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Cameron</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Group Total</td>
<td>66</td>
<td>68</td>
</tr>
</tbody>
</table>
tests. When asked which procedure they felt helped them learn more words, four of the students wrote the self-correction after every word. Cameron responded that neither procedure helped him learn more words.

**Classroom Teacher**

The students' regular classroom teacher was given a questionnaire to complete (see Appendix G). The classroom teacher wrote that she did not have a preference for either procedure. She indicated that she had noticed a change in student's attitudes towards spelling and a slight increase in some of the students' spelling. She also responded that she would continue to use spelling both self-correction procedures with her future students.
CHAPTER 4

DISCUSSION

This chapter discusses and summarizes the results of the study based on the research questions presented in Chapter 1. Limitations of the study, implications for classroom practice, and suggestions for future research also are discussed.

Limitations of the Study

There were several limitations to the study. The major limitations included the time of school year, length of the experiment, and the number of participants.

Time of year. The study was conducted during the last nine weeks of school. A week long spring break interfered with the continuity of the experiment. End of the school year activities such as assemblies, parties, and fifth grade graduation may have contributed to the possible lack of attention to academic task.

Length of experiment. The study was conducted over the course of the Spring Academic quarter, which is a ten week period. Additional time would have been beneficial in order to collect more data. The case for a functional relationship between the dependent and independent variables would be strengthened if additional data points confirming this relationship could be demonstrated.

Number and characteristics of participants. The participants in the study were five fifth grade students with learning disabilities. A greater number of
The subjects were initially unfamiliar with both self-correction procedures. The subjects were also unaccustomed to having 20 spelling words per week. The subjects were accustomed to 14 to 16 words per week. It is possible that the self-correction procedures combined with the additional words influenced the results.

**Research Question #1**

Does self-correction after attempting each of 10 words and self-correction after attempting a series of 10 words have differential effects on students' acquisition of new spelling words as measured by weekly test?

All five students correctly spelled more words learned self-correcting after attempting every word. A combined total of 40 weekly tests were completed by the students. On 31 (77.5%) of the tests; more words were spelled correctly, that were practiced self-correcting after attempting each word. Daren and Sam both correctly spelled an average of 10%, more spelling words that were practiced self-correcting after attempting every word. Maya correctly spelled an average of 11% more spelling words, that were practiced self-correcting after attempting every word. In terms of grades, Daren, Sam, and Maya averaged an entire letter grade above their averages for self-correcting after attempting a list of words. Tanya learned an average of 7% more spelling words, that were self-corrected after attempting each word. In terms of grades, Tanya averaged over half a letter grade above her average for self-correcting after attempting a list of words. Cameron correctly spelled an average of 2% more spelling words, that were practiced self-correcting after attempting every word.

These findings are similar to those of Harward (1994) who found in his study that wordwise self-correction methods more effective than listwise methods. These findings are similar to Eicholz’s (1964) who found that immediate feedback
is more effective than delayed feedback with self-correction techniques. These findings are consistent with research in other curriculum areas that indicate memory is facilitated by immediate feedback.

**Research Question #2**

Does self-correction after attempting each of 10 words and self-correction after attempting a series of 10 words have differential effects on students' maintenance of new spelling words as measured by 1-week maintenance tests?

Four of the five students did better on scores after self-correction after attempting each word on 1-week maintenance tests, with a range of 0.5 - 1.5 words difference. Daren did almost 50% better on maintenance of words practiced self-correcting after attempting every word. Maya and Tanya did 33% better on maintenance of words self-corrected after attempting each word. Sam did 13% better on maintenance of words practiced self-correcting after attempting every word. Cameron was the only student to score better on maintenance of words self-corrected after attempting a list of words. Cameron did 25% better on words practiced self-correcting after attempting a list of words. These findings are consistent with Harvard's (1994) study that found wordwise self-correction more effective on the maintenance of previously learned words.

**Research Question #3**

Does self-correction after attempting each of 10 words and self-correction after attempting a series of 10 words have differential effects on students' use and accurate spelling of previously studied spelling words in other academic assignments?

Written compositions in which students were encouraged to use their spelling words was used as a measure of response generality. Two of the students
generalized more words learned during self-correction after every word. A total of 66 words were correctly spelled in written compositions that were learned during self-correction after every word. Three of the students spelled more words correctly in generalization assignments that were learned during self-correction after a whole list of 10 words. A total of 68 words were correctly spelled in written compositions that were learned during self-correction after a whole list of words. Not one self-correction procedure proved more effective in terms of generality versus the other. Only two more words were spelled correctly during written assignments learned during self-correction after a whole list of words. To this researcher’s best knowledge, no research which deals directly with generalization of spelling self-correction, in terms of timing and amount of feedback.

Students’ and Teacher’s Opinion

Four of the five students indicated that they preferred the self-correction after every word procedure. When asked why they preferred the procedure, two students responded that they liked using the self-correction after every word device. One student responded that he liked being able to check his words often. One student responded he thought that it helped him to learn more words. One student wrote that he preferred the self-correction after a whole list of 10 words because the other procedure was too much work. Four of the five students felt that they learned more words during self-correction after every word. The teacher did not state a preference for either procedure. She did write that she would implement both procedures with future students. The teacher indicated that she did notice an improvement in the subject’s attitudes towards spelling, and she did notice an increase in three of the subject’s spelling grades.
Implications for Classroom Application

The experiment was conducted with fifth grade students with learning disabilities. The results of the study indicate that the students acquired more words using the self-correction after every word procedure. Immediate, precise, and differential feedback on students responses improves performance (Van Houten, 1980). The findings of this study, along with previous studies, indicate that immediate feedback has a positive affect on student learning. Another important implication is that students prefer self-correction after every word to the other self-correction method. The likelihood of experiencing success in academic tasks is increased when they engage in activities they enjoy (McNeish, 1985).

Four of the five students’ combined self-correction procedures spelling scores improved compared to their average spelling scores before implementation. Also, number of words acquired increases in comparison to the average number of words per week acquired, before implementation of the study (the previous spelling method was the traditional approach). Thus, the findings of this study, as well as previous studies cited in Chapter 1, indicated that self-correction can be effective in improving spelling performance for learning disabled students.

Self-correction techniques are easy to implement and can be used with any group of students. Both self-correction procedures used in this study are easy and inexpensive to implement; the self-correction after every word folders require additional time initially to construct versus the self-correction after a whole list of words folders. However, both procedures once implemented can easily be adapted to use with large groups, small clusters, and individuals, in a variety of subjects.

The self-correction procedures used in this study can easily be adapted to fit into other instructional strategies, as part of a spelling program that includes more
Page 57 is missing
traditional methods. It can be used to provide additional practice at home or in the classroom. When implemented at home, parents serve as monitors for spelling performance. Well designed home-based education programs help students improve their academic performance (Heron & Harris, 1987).

Finally and most importantly, self-correction sets the occasion for students to take responsibility for their own work. This is an important factor in not only their educational experience, but in their future work and life experiences as well (Wirtz, 1992).

**Recommendations for Future Research**

In a replication of this study the experiment if conducted over a longer period of time, would more effectively demonstrate a functional relationship between the dependent and independent variable.

A replication of the study involving higher achieving students as dictators, instead of using the tape recorder is also recommended. The higher achieving students would receive initial training in the procedures in dictating and prompting. This would result in less teacher time required making and duplicating tapes. Also a peer tutoring system could be implemented with the self-correction procedures.

A replication of either self-correction procedure can be used in other subject areas to determine it's generality. Replication of the study to learn math facts, or increase sight vocabulary is recommended.

Research comparing spelling achievement when students self-correct after hearing the words correctly spelled by the teacher, as opposed to self-correction after seeing a word presented in visual form (oral versus visual). Also an extensive study combining wordwise versus listwise and oral versus visual into four treatments could be implemented. For example, treatment one would consist of
students receiving their spelling words visually self-correcting after a complete list of words. Treatment two, words given orally, students would self-correcting after each word. Treatment three, words given orally, students self-correct after complete list. And treatment four, words given visually, students self-correcting after each word.

**Summary**

Many American children and youth have difficulty in learning to spell accurately, spelling instruction in our schools is essential. Although correct spelling may not be the most crucial component in every writing activity, accurate spelling is an important aspect of formal written communication. The purpose of the study was to evaluate the effects of two spelling self-correction strategies, self-correcting after attempting each of 10 words versus self-correcting after attempting 10 words. The two spelling self-correction methods were implemented in order to determine which method is more effective in terms of spelling acquisition, maintenance, and generalization.

The subjects were five fifth grade students with learning disabilities. The study was conducted in an urban elementary school in central Ohio. The study took place in the corner of the students' regular classroom. Both spelling self-correction procedures were implemented daily. Weekly test were given in order test for acquisition. One week maintenance test, and written compositions, to determine generality, were implemented weekly. The subject's classroom teacher served as the independent observer.

Results indicated that self-correction after every word was more effective in the acquisition of spelling words for all five subjects. Each subject learned more words during the self-correction after every word procedure. All five of the
subjects learned more words practiced self-correcting after attempting every word. Four of the five participants maintained more words learned during the self-correction after every word procedure over time. For the generalization measure, written compositions, neither self-correction procedure was superior to the other. At the end of the study a questionnaire was given to each student. Four of the five subjects indicated that they preferred the self-correction after every word procedure and they felt that they learned more words using this procedure. The classroom teacher indicated that she noticed an improvement in students’ attitudes and test scores with both self-correction procedures. She also indicated that she would continue using both self-correction methods with future students.

Results on weekly spelling test indicated that the self-correction after every word method was slightly more effective in improving spelling acquisition and maintenance than the self-correction after attempting a whole list of 10 words method. However, numerous studies (McNeish, 1992; Okeyere, 1990; Wirtz, 1996) have found that the various methods of spelling self-correction are effective methods in helping students learn and retain spelling words.
REFERENCES


Booth, M.S. (1980). *The Effects of Tutor Instruction, Self-Correction and Graphing, and Informational Feedback to Parents on Spelling Performance.* Unpublished master’s thesis. The Ohio State University, Columbus.


APPENDIX A
Parent Permission Form
Parent Consent For Child's Participation in Educational Research

I agree to allow my child to participate in a research study investigating a teaching self-correction as a method for spelling instruction. The purpose of the study and procedures have been explained to me. This research will be conducted at East Linden Elementary School during normal school hours by Wendy L. Morton, under the supervision of Professor William L. Heward. I understand that the research will be carried out Monday through Friday, with each session lasting approximately 20 minutes. The research will begin in early March and continue through the end of the school year.

I also give consent to the persons conducting this research to have access to my child's school records. I understand that my child's identity will not be revealed to anyone not directly involved in conducting the research or by means of publication, document, computer storage, or any other form of report developed from this research. Additionally, I understand that I may withdraw my consent for my child's participation at any time.

Name of Child

Signature of Parent/Guardian

Date

Teacher

Date

Wendy L. Morton
M.A. Student

Date

Dr. William L. Heward
Faculty Advisor

Date
APPENDIX B

Letter From the Classroom Teacher
February 20, 1996

Dear Parent:

One of my goals as a classroom teacher is to stay informed about methods and techniques that will help me to remain an effective teacher by conducting classroom activities that will result in positive learning experiences for your child. I am writing now to let you know that my class has been selected for a research project that will contribute to this goal.

This semester, Wendy Morton, a Masters student at The Ohio State University will be conducting this research. She will be investigating a self-correction spelling technique that may help students practice and learn more spelling words. She will be working with the students every morning for about 20 minutes at a time. I have been looking for other ways to help my students practice their spelling, and I am excited about what my students may learn from this project.

Your child will have the opportunity to be included in this project. Enclosed please find two copies of a "Parent/Guardian Consent Form." One copy of this form must be signed and returned before your child will be able to participate. We would be grateful if you would read, sign, and return this form (keep the other copy as a record). If you have any questions about details of this project, do not hesitate to call Wendy Morton at 861-3607 (home) or 292-1759 (office). Thank-you for your time and prompt response.

Sincerely,

Rhoda Clowers
Teacher

Enclosure
APPENDIX C

Procedures to Ensure Accuracy for the Independent Variable Checklist
1. Did each student have an opportunity to repeat each self-correction procedure twice?

2. Did each student repeat each self-correction procedure twice

3. Did each student perform each self-correction procedure correctly
   (see procedures)

4. Did the experimenter check each student's self-correction forms during each self-correction procedure?

5. Was the experimenter present the entire time during both procedures?
APPENDIX D

Self-correction Practice Sheets
<table>
<thead>
<tr>
<th>COLUMN A-1</th>
<th>COLUMN A-2</th>
<th>COLUMN B-1</th>
<th>COLUMN B-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write it!</td>
<td>Self-Correct</td>
<td>Write it!</td>
<td>Self-Correct</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>10</td>
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<td></td>
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</tbody>
</table>
APPENDIX E

Self-Correction Folders
Self-Correction After Every Word Folder
Note: Example of a opened folder for a student who is attending to word number 1. Picture words 2-10 are covered.
Self-Correction After a Whole List of 10 Words Folder
1. Spelling word #1
2. Spelling word #2
3. Spelling word #3
4. Spelling word #4
5. Spelling word #5
6. Spelling word #6
7. Spelling word #7
8. Spelling word #8
9. Spelling word #9
10. Spelling word #10

Note: Open folder displaying list of 10 spelling words.
Appendix F

Standard Test Sheet
<table>
<thead>
<tr>
<th>Student's Name</th>
<th>Date</th>
<th>Week Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Circle One (For teacher use only)</th>
<th>Pretest</th>
<th>Weekly Test</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
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<tr>
<td>4.</td>
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<tr>
<td>5.</td>
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<td>6.</td>
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<td>7.</td>
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<td>8.</td>
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<td>9.</td>
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<tr>
<td>10.</td>
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</tbody>
</table>

11.                                |         |             |             |
12.                                |         |             |             |
13.                                |         |             |             |
14.                                |         |             |             |
15.                                |         |             |             |
16.                                |         |             |             |
17.                                |         |             |             |
18.                                |         |             |             |
19.                                |         |             |             |
20.                                |         |             |             |
APPENDIX G

Questionnaires
Questionnaire For Teachers

Directions: For each question below, circle the answer that best agrees with your opinion.

1. Did you notice that any or all five students who took part in this study spelled more words correctly in their written work in your classroom in the past 8 weeks?
   YES   NO   DIDN'T NOTICE
   Comments

2. Did you notice any change in spelling performance in any or all of the students?
   YES   NO   DIDN'T NOTICE
   Comments

3. Did you notice a difference in attitudes of the students in favor of one of the spelling self-correction methods vs. the other self-correction method?
   YES   NO   DIDN'T NOTICE
   Comments

4. Would you use one or both of the self-correction methods with future students?
   SC AFTER EACH WORD   SC AFTER A LIST OF WORDS   BOTH
   Comments
Questionnaire for Students

Verbal Directions: “When I read you the two questions below, choose either self-correction after each word or self-correction after attempting a list of 10 words.

1. Which condition did you like best and why?

2. Which condition do you feel helped you learn your words better?
APPENDIX H

Spelling Word Lists
Self-Correction After Each Word
Spelling Word List
1. suitable
2. movable
3. advertise
4. announcer
5. register
6. magic
7. guest
8. magazine
9. magnet
10. purchaser
11. improve
12. divide
13. practice
14. maintain
15. respond
16. review
17. industrial
18. computer
19. unusual
20. shout
21. try
22. trying
23. reply
24. replied
25. empty
26. emptied
27. paw
28. drawing
29. sawdust
30. fault
31. author
32. saucer
33. applaud
34. pound
35. amount
36. power
37. though
38. cough
39. bought
40. rough
41. could
42. cabin
43. rented
44. spooky
45. pine
46. bucket
47. scent
48. iron
49. nature
50. pasture
51. picture
52. temperature
53. misspell
54. mislead
55. disobey
56. dislike
57. teacher
58. captain
59. pilot
60. dentist
61. camel
62. tiger
63. farmer
64. doctor
65. mountains
66. children
67. action
68. caution
69. section
70. apartment
71. sadness
72. improvement
73. friendly
74. likely
75. surely
76. lively
77. careful
78. shapeless
79. least
80. steak
Self-Correction After a List of 10 Words
Spelling Word List
1. reasonable
2. lovable
3. manufacturer
4. consumer
5. manager
6. producer
7. giant
8. average
9. angel
10. regulate
11. worry
12. worried
13. multiply
14. multiplied
15. outlaw
16. thawed
17. haunt
18. applaud
19. daughter
20. proud
21. ounce
22. blouse
23. thought
24. brought
25. curtain
26. pine
27. stove
28. snapping
29. grudge
30. page
31. orange
32. pitch
33. attach
34. creature
35. pasture
36. temperature
37. brand
38. until
39. plenty
40. unfold
41. mislead
42. disarm
43. waiter
44. spider
45. nurse
46. plant
47. scene
48. table
49. couple
50. section
51. attention
52. basement
53. softness
54. neat
55. given
56. present
57. scoring
58. shining
59. likable
60. hopeful
61. tasteless
62. dream
63. least
64. weather
65. joint
66. moisture
67. niece
68. receive
69. forward
70. lying
71. court
72. story
73. library
74. angrier
75. silliest
76. duties
77. scream
78. arrive
79. backward
80. goal