THE USE OF SELF-MANAGED PROOFREADING FOR DETECTING AND CORRECTING MECHANICAL ERRORS BY STUDENTS WITH A LEARNING DISABILITY

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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ABSTRACT

Recent research in writing indicate that some learning strategies benefit the writing of students with specific learning disabilities. Therefore, the purpose of this study was to explore the use of a learning strategy involving self-managed proofreading by seven students with specific learning disabilities on their detection and correction of capitalization errors, punctuation errors, and spelling errors. Specifically, this study investigated whether using self-managed proofreading involving a visual prompt and written cues increased the number of errors detected and the number of errors corrected on experimenter-prepared writing samples during a 1-minute counting period.

During a no practice sheet condition, the experimenter set the timer for 1 minute and asked the students to circle all the errors they could find. At the end of the 1-minute counting period, the students were then instructed to correct those errors found. During a practice sheet condition, the experimenter modeled how to proofread for mechanical errors on experimenter-prepared practice sheets and provided students the opportunity to complete the practice sheet before the 1-minute counting period. The self-managed proofreading condition followed the same sequence described above with self-managed proofreading instruction added. First, the student was asked to write the letters CPS (for capitalization, punctuation, and spelling) at the top of each practice sheet/writing sample. Second, the student was instructed to write, at the end of each sentence, the corresponding letters for the types of error (C for capitalization, P for punctuation, and S for spelling) he was proofreading.
An examination of the no practice sheet and practice sheet data for the students indicates that providing students practice sheets did not appear to make a difference for six of the seven students in the number of mechanical errors they were able to detect in a minute. However, the results of this study suggest a functional relationship between self-managed proofreading and improvement in the count of errors students detect.
I will give thanks to you, O Lord, with all my heart, for you have heard the words of my mouth; in the presence of the angels I will sing your praise;
When I called, you answered me; you built up strength within me.

(Psalms 137, Verse 1 and 3)

To my wife, Rene I. Seevers, for her eternal love,
support, and encouragement, and
two sons, Jeffrey and Bill, for their patience and understanding,
and in loving memory of my mother,
Twila J. Seevers

TDID
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CHAPTER I
INTRODUCTION

Over the last decade (1986-1996), the educational system in the United States has taken its share of criticism. Indeed, the American public has expressed concern in recent years that public education has lost its sense of priorities and should focus on academic learning (i.e., student achievement in basic skills) as a major goal (Committee for Economic Development, 1995). Reading and writing, two major components of literacy, are regarded as essential and basic skills that all children need to function in today's society. To a large degree, children's success in school depends on what many of us associate with literacy (Howell, Fox, & Morehead, 1993).

Literacy in schools has been viewed in a variety of ways (Beach, 1995). Among them is the view that literacy is acquiring a repertoire or set of skills whereby explicit and systematic instruction is provided. Reading and writing of words to the point they are automatically recognized and produced are underlined in this approach to literacy. Adams (1990) reports an increasing data base which supports such an instructional approach to literacy, particularly for students who experience difficulty (Mather, 1988).

A second view of literacy in school incorporates the view of the first and extends it to a way of thinking that is more abstract and analytical. It goes beyond the notion of simply acquiring skills. Based on higher level thinking skills (i.e., a focus on critical thinking, evaluation, and problem solving), students are expected to interpret meaning of texts (Brown, Bransford, Ferrara, & Campione, 1983; Pressley, Rankin, & Yokoi, 1995).
Another popular and more contemporary conception of literacy is grounded in sociocultural theory. Creating learning environments in which students experience authentic reading and writing and immersing these students into high quality literacy environments generates and promotes the development of literacy (Weaver, 1990).

Hirsch (1987), on the other hand, espouses the view that literacy includes being knowledgeable about the events of one's own culture. Students are acquainted with information that literate people should be expected to have in order to give themselves and the teachers more time to go into more detail about other things.

Such varied and dynamic principles underlying literacy is recognized by educators. Attention to the basic skills of reading and writing, however, is fundamental to any definition of literacy. Terms used to define literacy in one form or another usually describe our understanding of the complexities of reading and writing.

As Wallach (1990) points out, access to printed media plays a vital role in providing opportunities for students to explore one's culture; whether it be as readers via new words and concepts, or as writers through personal communications and ways to store information. Gee (1990) maintains that in today's society, reflective of a high technology culture, people engage less in face to face interactions; they rely more and more on written types of communication. Consequently, being able to read and write cannot be underestimated as an integral part of socialization and life long learning in general. Indeed higher level of literacy will be expected/demanded as changing economic conditions further decrease the number of jobs for workers with low-level literacy skills while jobs will increase for better educated workers (Davidson & Koppenhaver, 1993).

Underdeveloped basic literacy skills often corresponds with low self confidence, a sense of guilt for not taking full advantage of educational opportunities, personal activities and work difficulties, and contemptuous attitudes from others. From a
national perspective, modern industrialized societies need a literate workforce to compete successfully in a global market.

Dryfoos (1990) identifies high-school dropout rates, poverty, early sexual activity, teen pregnancy, alcohol and drug abuse, and delinquency as social concerns associated with underdeveloped literacy skills. Bramley (1991) reports socioeconomic background and home environment, the equality and quality of education a young person receives (e.g., suitability of teaching methods, standards of teaching, physical environment conducive to learning), cognitive difficulties as measured by intelligence tests, and being members of an ethnic minority as possible causes and factors related to a child’s lack of attainment of literacy skills. De La Rosa and Maw (1990) confirm that despite significant gains in academic achievement during the 1980's, Afro-American students, and Hispanic students, still achieve in literacy development far below their white counterparts.

Literacy is an activity of great cultural, social, and economic importance; we think of literacy, yet, people first and often exclusively equate literacy with reading. When schools decide focus on literacy development, the curriculum usually stresses reading instruction, and maintains or de-emphasizes writing instruction. This is not to say that curriculum developers consider writing instruction unimportant. The importance of writing instruction has been recognized as essential for later success in life. Yet, in many of our schools today, the curriculum has been divided into fragmented parts, with too few students writing every day (Bridge & Herbert, 1985). Davidson & Koppenhaver (1993) confirm most students receive less than an hour a week of writing instruction. Further, it was found that students may spend as much as 30% of their writing time reading rather than writing (Calkins, 1983).

As children enter school, they must respond to the demands of the classroom - including both reading and writing communication. In recent years, a major shift in
effective literacy instruction has focused attention from reading as a separate act to a multifaceted approach integrating reading and writing. Use of writing skills to teach reading is advocated by Anderson (1985). She further asserts writing connections in the language arts are powerful connections which can make an all-important difference in the language arts program at all grade levels. Given the current interest in writing research, it is possible to identify several practices promoted in the teaching of writing.

In summary, Goodman (1986) describes and endorses a whole-language approach where teachers allocate time for daily writing, promote student choice in writing topics, focus on process, teach skills in context, and write for real purposes and real audiences. In contrast, other literacy educators argue that students learning increases when students are provided direct and systematic instruction. Based on available data, evidence can be found to support both views. Stahl and Miller (1987) suggest there is evidence to support that whole language experiences stimulate literate activities, promote a good attitude toward literacy, and help children connect reading and writing. On the other hand, they report whole language programs do not appear to have an effect on early reading achievement as measured by standardized tests. Furthermore, Adams (1990) maintains programs explicitly teaching phonics and letter-sound analysis have produced better performance on standardized tests and have proven superior to programs such as whole language.

Regardless of one's view, writing is one important literary skill and it is instructed throughout the elementary grades (McLoughlin & Lewis, 1994). Many students, however, have difficulty when trying to communicate with writing (Applebee, Langer, Jenkins, Mullis, & Foertsch, 1990). This is particularly true among students with learning problems (Graham & Harris, 1993). Silliman and Wilkinson (1991) argue that students with learning disabilities experience problems in actively participating in many classroom activities because of their lack of literacy skills. When it comes to
writing skills, Scott (1989) elaborates that students with learning disabilities often are neither flexible nor efficient in their understanding and production of written expository. Other research suggests that students with learning disabilities typically have difficulty in making transitions from novel to familiar information (Wallach & Butler, 1994). Further, Merrit and Liles (1987) reveal students with learning disabilities typically produce narratives that are more oral in style than their counterparts.

There are few who would deny the tremendous importance of writing skills, both as a product and a skill. The teaching of formal grammar, of which many students have severe difficulties demonstrating knowledge of in their writing, however, has unfortunately become almost non-existent in this country. Teaching basic rules and proofreading skills has been overshadowed by other aspects of the writing curriculum. Most teachers consider proofreading a necessary skill that should be taught, but rarely teach this skill to their students (Madraso, 1993). Mehlmann and Waters (1985) emphasize how important it is to teach proofreading skills, asserting that students do not automatically acquire these skills, but rather, must be taught. While the mechanical aspects of writing are not perhaps the focus for much of the writing instruction that occurs in our schools today, it nevertheless deserves attention, because fairly or not, it is often the basis on which the world outside of school judges a writer's competence (Andrasick, 1993). Bentley (1991) expresses a similar view in that the written products of students are judged as much for spelling and punctuation accuracy as for content.

Writings of students with learning disabilities often have frequent mechanical and grammatical errors (MacArthur & Graham, 1987), and many teachers invest time and effort commenting on and correcting these errors. While there is no one universal acceptance of or adherence to a particular instructional approach, a variety of activities have traditionally been suggested for instructing the mechanics of writing and for revising text to correct errors. The final written product, however, often remains
relatively poor (Shannon & Polloway, 1993). Brown and Campione (1990) suggest that many students with learning disabilities do not acquire strategies to effectively improve their writing skills unless detailed and explicit instruction is provided. Furthermore, self-management strategies have been advocated as an approach to promote the acquisition of academic skills for individuals with disabilities (Glomb & West, 1990). Martin and Manno (1995) acknowledge the effectiveness of a self-management procedure used to improve adolescent students' story compositions. Self-management procedures have also accounted for improved writing skills for students with learning and behavior problems in terms of completeness, accuracy, and neatness of creative writing homework assignments (Glomb & West, 1990). Other writing research indicative of self-management as an effective tool in helping students improve writing skills is Shannon and Polloway's study (1990) in which an error monitoring strategy proved to be beneficial to sixth grade students participating in the study that helped them focus on the mechanics of writing. Thus, using self-management to help students with learning disabilities become successful and acquire the necessary skills to become competent writers is of great interest.

The advancement of monitoring teacher effectiveness has been enhanced by Precision Teaching. Precision Teaching is a precise and systematic method of evaluating the effects of instruction. One of the basic elements of precision teaching is the use of number of responses per unit of time to demonstrate the development of fluency (i.e., speed plus accuracy and quality) of a learner's work to a performance standard (e.g., 20 to 25 words per minute for free writing) (Binder & Watkins, 1990). Fluency indicates how well a student can do a task. In addition, fluency facilitates generalization and maintenance of skills, and often has functional implications as well.

Precision Teaching uses frequent assessments of learner performances and display those assessment data on standard celeration charts (Pennypacker, Koenig, &

Although gains have been made on the effectiveness of instructional methods for other writing aspects (e.g., composing, style) for students with a learning disability, there is limited knowledge of the strategies needed to assist students improve their proofreading skills. Self-management presented with specific precision teaching qualities (i.e., 1-minute assessments, standard celeration chart) should offer great potential for helping students with a learning disability acquire proofreading skills.

**Purpose of the Study**

The purpose of this study was to determine the effects of self-managed proofreading on the detection of capitalization errors, punctuation errors, and spelling errors. Specifically, this study investigated whether using self-managed proofreading involving a visual prompt and written cues effected the number of mechanical errors detected and the number of errors corrected by students identified as learning disabled.

The primary dependent variables were (a) the count of capitalization, punctuation, and spelling errors detected per minute by the student, (b) the count of capitalization, punctuation, and spelling errors corrected per minute by the student, (c) the count of failures to correct a detected capitalization, punctuation, and spelling error per minute by the student, and (d) the count of misidentified capitalization, punctuation, and spelling errors per minute by the student on experimenter-prepared materials. Each instructional phase consisted of the experimenter (a) providing instruction and practice using experimenter-prepared practice sheets, (b) administering 1-minute assessments using experimenter-prepared writing samples, and (c) giving students time to correct their detected errors. Students' and the teacher's opinions regarding the usefulness and effectiveness of self-managed proofreading in helping students become better writers.
mechanically was reported by conducting an exit interview in the form of a written questionnaire upon completion of the study.

**Research Questions**

The following questions were the focus of this study:

1. What effect will practice sheets have on students detecting mechanical errors on experimenter prepared writing samples?
2. What effect will practice sheets have on students' error correction on experimenter-prepared writing samples?
3. What effect will self-managed proofreading have on students detecting mechanical errors on experimenter-prepared writing samples?
4. What effect will self-managed proofreading have on students' error correction on experimenter-prepared writing samples?
5. What effect will self-managed proofreading have on students maintaining proofreading skills on experimenter-prepared writing samples after instruction has been terminated?
6. Will the type of mechanical errors detected by students with learning disabilities on experimenter-prepared writing samples change over the course of the study?
7. What will students and the teacher regard as useful and effective in terms of self-managed proofreading helping students become better writers mechanically?

**Glossary of Terms**

Definitions for terms and concepts used in this study are provided below:

**Capitalization Errors.** Capitalization errors are the errors in which students do not capitalize at the beginning of a sentence, the names of people, the pronoun “I”, days of the week, months of the year, special days, names of streets, names of cities, names of states, and titles of people.
Content. Content is the information for a reader to follow storylines, original ideas, and good organization.

Conventions. Conventions are the mechanical aspects of writing such as spelling, punctuation, capitalization and handwriting.

COPS. COPS, the acronym of capitalization, overall appearance, punctuation, and spelling, is an error-monitoring procedure in which students are encouraged to look for mechanical errors in order to make the necessary revisions in their written products (Schumaker, Nolan & Deshler, 1985).

Error Corrections. Error correction is defined as the total count of mechanical errors the student accurately corrects after proofreading for capitalization, punctuation, and spelling errors. Error corrections are marked with a purple pen above the circled errors detected. For words not correctly capitalized or for words misspelled, the entire word must be written correctly above the detected error to be counted as a correct error correction. Likewise, for punctuation errors to be considered accurately corrected, the correct punctuation symbol must be placed above the detected error. An answer key with the errors detected and their corrections is used to determine the accuracy of each student response. To be considered correct, student marks for a given error will match exactly with the experimenter’s answer key.

Fluency. Fluency considers accuracy with respect to the speed and quality (complexity) of words written.

Grammar Cueing System. Grammar cueing system is a technique in which a simple checklist of story grammar elements is used to instruct narrative writing.

Literacy. Literacy, often viewed as reading and writing, implies that learning to read and write is comprised of a set of subskills to master.

Mechanical Errors. Mechanical errors include punctuation, spelling and capitalization errors.
**Prewriting.** Prewriting is the strategy for instructing students how to generate ideas for their topics, organize these ideas, and develop the framework for composition.

**Process-based Approach.** Process-based approach emphasizes the processes or steps (i.e., prewriting, writing, and re-writing) the writer uses to create a written product.

**Product-based Instruction.** Product-based instruction focuses on the final form of the product and is often viewed in terms of correctness, form, neatness, and spelling rather than in terms of communication and substance (Boljanis & Hinchman, 1988).

**Proofreading.** Proofreading requires students to read their written work to identify and correct errors.

**Punctuation Errors.** Punctuation errors are the errors of not including a period at the end of a sentence, after an abbreviation, and after an initial, a question mark after a question, and a comma between the date and the year and between a city and state.

**Re-writing.** Re-writing allows students to make changes in content, spelling, and grammar to put the product into its final form.

**Self-consequation.** Self-consequation involves the administration of selected rewards or penalties to oneself (Cole & Gardner, 1983).

**Self-evaluation.** Self-evaluation is defined as the comparison of one's own behavior with a pre-determined criterion to determine whether various aspects of the behavior comply with the criterion (Cole & Gardner, 1983).

**Self-instruction.** Self-instruction refers to verbal prompts for directing or maintaining personal behavior (Friedling & O'Leary, 1979).

**Self-managed Goal Setting.** An individual sets a performance goal, allowing a comparison of present performance to the goal.

**Self-management.** Self-management is defined as an individualized, systematic application of behavior change strategies that produces desired changes in one's own behavior (Heward, 1987).
**Self-monitoring.** Self-monitoring is described as an act whereby an individual observes or assesses his own behavior and then records its occurrence and nonoccurrence (Snider, 1987).

**Self-recording.** Self-recording refers to data collection on one's own behavior.

**Skill-based Approach.** Skill-based approach is the approach in which a series of basic skills are taught and systematically developed for advanced exercises and applications.

**Spelling Errors.** Spelling errors include omission of letters, reversal of letters and insertion of letters.

**Syntax.** Syntax refers to the way phrases or sentences are put together (Mercer, 1991).

**Translating.** Translating allows students to focus on intended messages, that is, the writer converts information into text or written language.

**Vocabulary Development.** Vocabulary development is a writing component in which students produce a variety of mature words and avoid repetition of words.
CHAPTER II
LITERATURE REVIEW

The intent of this chapter is to review the research and professional literature as it relates to this study. The chapter begins with a brief introduction to learning disabilities, a description of literacy and writing, followed by an overview of the components of writing and approaches to writing instruction. Next, the rationale for writing instruction with specific learning disabilities is reviewed and the literature related to effective writing instruction for students with learning disabilities is presented. At this juncture in the chapter, the rationale and definition of self-management is considered. In addition, self-management strategies are discussed. Finally, the chapter ends with research that explicitly focuses upon COPS error monitoring strategy.

Dimensions of Learning Disabilities

The field of learning disabilities is often characterized by the diversity of views concerning definitions, nature of learning disabilities, placement inconsistencies, assessment procedures, theoretical foundations, and effective teaching strategies (Keogh, 1987). It is beyond the scope of this discussion to identify and clarify the problem areas associated with the field of learning disabilities. Yet, the need to describe the basic characteristics of students with learning disabilities and to identify the general approaches that have helped these students achieve academic success is warranted.

Although an unanimously agreed upon definition is not yet a reality, most professionals in the field recognize a learning disability as a heterogeneous disorder with a wide variety of characteristics that can impact many different aspects (e.g., academic
success, motor or perceptual functioning, social adaptation) of an individual’s life (Strawser, 1993). Most formal definitions of learning disabilities include three components: a discrepancy clause (i.e., a disparity between specific functioning and general ability), an exclusion clause (i.e., the disparity is not the primary result of intellectual, physical, emotional, or environmental problems), and an etiology clause (i.e., describes origins of the learning disability as genetic, biochemical, or neurological in nature) (Kavale & Forness, 1995). The following definition of learning disabilities by The National Joint Committee on Learning Disabilities (1991) is widely accepted:

Learning disability is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the lifespan. Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other handicapping conditions ... or with extrinsic influences ..., they are not the result of those conditions or influences. (p. 19).

The characteristics associated with students with learning disabilities are diverse: motor and coordination problems (e.g., hyperactivity), attention disorders (e.g., short attention span, inattentiveness), perception difficulties (e.g., interpretational difficulties), symbol difficulties (e.g., language problems), memory deficits (e.g., short-term storage, retrieval problems), and emotional disorders (e.g., aggressive, impulsive, unpredictable, withdrawn, and impatient behaviors). Owens (1995) asserts that these characteristics are not the cause of the disorder, but rather are the results of it.

One of the areas often affected in children with learning disabilities is language (i.e., listening, speaking, reading, and writing). The one aspect of language many students with learning disabilities have difficulty with is writing. Although they may become skillful in speaking, reading, and listening (Crealock & Kronick, 1993), they often continue to experience difficulty with writing, particularly as they get older and the
writing demands increase (Isaacson, 1987). Students with learning disabilities usually require attention in both the technical and narrative aspects of writing. The technical aspects of writing include punctuation, handwriting, grammar, and spelling. Students with learning disabilities need to understand these elements are important not just in making their writing look well, but also to aid in the comprehension of the composed text. While many students are not taught how to write well, most pick up skills spontaneously (Crealog & Kronick, 1993), whereas some students with learning disabilities need to be taught these skills directly. The narrative aspect of writing is considered a part of the language program for students as well. In developing compositions, students are frequently required to use their own experiences from which to write their stories. In general, the student with learning disabilities have fewer experiences with written and oral language than their peers.

Bender (1993) reports that most of the instructional tactics typically used with students with learning disabilities (e.g., behavioral contracts, token economies, level reward systems, response cost) are founded in the field of applied behavior analysis. Vail & Huntington (1993) further assert that a number of these instructional techniques based on behavioral technology have been quite successful in helping the student with learning disabilities make progress in academic areas. The authors indicate the focus on systematic behavioral interventions has resulted in the increased use of instructional strategies that result in frequent measures of student performances. These measures of performance are then charted and used to make sound educational decisions that reflect the needs of the learners. Some methods that result in daily measures of performance include precision teaching, direct instruction, and time delay instructional strategies.

More recent developments in the field of learning disabilities in regards to language and literacy learning is metacognitive instructional practices (Bender, 1993). Specific strategies are taught to assist in particular types of tasks. Once the student with
a disability learns a particular strategy, the student is then encouraged to use that strategy on similar tasks, both at school and at home. Examples of some common metacognitive strategies include visual imagery, story mapping, and self-questioning. Bender (1993) advocates that both models of instruction (i.e., behavioral instructional approaches and metacognitive instruction) be used in most of the behavioral and academic areas of concerns for students with a learning disability.

**Literacy and Writing**

Literacy is increasingly becoming a significant concern facing American society today as a result of the attention given to the issue by the popular press and media. Requiring students to demonstrate certain skills, including basic reading and writing, has become a widespread movement across many school districts throughout the United States as a preferred educational goal (Catterall, 1989). Literacy, often viewed as reading and writing, implies that learning to read and write is comprised of a set of subskills to master (Beach, 1995). The ability to read and write is regarded as essential for future success and contributes to the overall opportunities available to the literate adult (Leu & Kinzer, 1991). Connections between writing and other language arts skills are important because writing enhances learning in language arts, and is conceptualized as a valuable tool for all thinking (Langer & Applebee, 1987). Reading, spelling, syntax, semantics, handwriting, and thinking are the preskills for the mastery of written language. As such, writing skills are among the most difficult academic skills to obtain since numerous prerequisite skills are needed (Mastropieri & Scruggs, 1994).

**Components of Writing**

Isaacson (1987) describes five major components of the written product. First is the component of fluency. The definition of fluency (Binder, 1990) usually considers the accuracy of the words written with respect to the speed and quality (complexity) at
which those words are written. The skilled writer's product is characterized by complete sentences and many words written in a designated time (Isaacson, 1988).

Second is the component of syntax. Syntax refers to the way phrases or sentences are put together (Mercer, 1991). That is, the advanced writer writes in longer, more complex sentences (Isaacson, 1988). As the chronological ages of students increase, the use of simple and incomplete sentences becomes less problematic (Cartwright, 1968).

Another component included in Isaacson's analysis of writing products is vocabulary development. Variety and maturity in the student's written product generally increases with age and experience (Morris & Crump, 1982). Skilled writers use mature words and avoid repetition.

Fourth is the component of content. The skilled writer produces products that contain sufficient amounts of information for a reader to follow storylines as well as original ideas and good organization.

The final component presented by Isaacson (1987) is conventions. The mechanical aspects of writing such as spelling, punctuation, capitalization, and handwriting are considered important features of skilled writing (Madraso, 1993). In contrast to the skilled writer, the unskilled writer experiences difficulties in each of the five areas. Students in this category generally produce writing products characterized by simple sentences, high frequency words, incomplete sentences, poor organization, and frequent mechanical errors.

**Approaches to Writing Instruction**

Historically, two approaches to teaching writing have prevailed in the classroom, often discussed in terms of product versus process (Hillerich, 1985). Product-based instruction tends to focus on the mechanical aspects of writing and emphasizes final products, not on the processes that produce them (Newcomer, Nodine, & Barenbaum,
The product method of teaching writing is often viewed in terms of correctness, form, neatness, and spelling rather than in terms of communication and substance (Boljanis & Hinchman, 1988). With the product approach, writing may not be taught, but rather, only assigned and then corrected (Newcomer, Nodine, & Barenbaum, 1988). In addition, the product method may place teacher constraints on students’ writings, such as specification of topic, length, and purpose (Harlin & Lipa, 1993). Furthermore, some writing assignments may seem contrived (e.g., write about what you did on your summer vacation), rather than representing authentic needs for writing (Bridge & Herbert, 1985). A popular alternative to product instruction is the process-based approach (Hume, 1983). As might be inferred from its name, the process-based approach emphasizes the processes students might use for effective writing (Graves, 1983). Hayes and Flowers (1980) identified three interactive, basic activities for the process approach: prewriting (planning), writing (translating), and re-writing (revising). Each aspect of the writing process stresses the general steps the writer uses to create the written product. During prewriting, the teacher models strategies to show students how to generate ideas for their topics, organize these ideas, and basically develop the framework for the composition. During translating, students focus on intended messages, that is, the writer converts information into text. During re-writing, students capitalize on feedback from teachers and peers, and their own reading and rereading of their compositions, to make changes in content, spelling and grammar for producing a final form. As Hayes and Flowers (1980) observed, writing is a form of problem solving. They suggest the students who use the familiar tools of writing and thinking to solve problems will find more alternatives to solving each problem and will develop stronger writing and thinking skills. Gerber (1993) believes process approaches to writing can be both flexible and structured to help augment skill development for most learners.
Rationale for Writing Instruction for Students with Specific Learning Disabilities

Graham and Harris (1992) indicate that students with learning disabilities usually have deficiencies in writing skills. Englert, Raphael, Fear, and Anderson (1988) note that students with learning disabilities are quite often less skilled in how to develop and organize ideas than their typically developing classmates. Englert, Raphael, Anderson, Gregg, and Anthony (1989) write that students with learning disabilities produce shorter, less cohesive, and more confusing compositions than those written by their peers. Critical elements of how a story ends or the basic premise underlying an opinion essay is often left out of their compositions (Englert & Thomas, 1987). In addition, Thomas, Englert, and Gregg (1987) report syntactical errors of older students with learning disabilities are characterized by short phrases instead of complete sentences. Wong, Wong, and Blenkinsop (1989) report that older students with learning disabilities produce vastly inferior essays when compared to their peers in interestingness, clarity of writing goals, and selection of vocabulary. Furthermore, many students with learning disabilities particularly experience difficulty in spelling, punctuation, and word usage (Poplin, Gray, Larsen, Banikowski, & Mehring, 1980). Hine, Goldman, and Cosden (1990) affirm students with learning disabilities are known for their frequent production of mechanical errors (e.g., punctuation, spelling, and capitalization). Houck and Billingsley (1989) note their findings that students with learning disabilities have a higher percentage of capitalization and punctuation errors when compared to typically achieving counterparts.

Englert and Mariage (1991) identify several problems with most writing curricula. First, there are problems associated with the infrequent opportunities students commonly have to engage in text-level writing (Isaacson, 1987). Graham and Harris (1988) recommend sufficient blocks of writing time be allotted for writing. Zaragoza
and Vaughn (1992) indicate a minimum of 30 minutes of time to write each day is required in order for students to develop as proficient writers. As indicated by Christenson, Thurlow, Ysseldyke, and McVicar (1989), students with learning disabilities are typically not allotted sufficient amounts of writing time to benefit from writing instruction. Leinhardt, Zigmond, and Cooley (1980) suggest that less than 10 minutes per day on composing is allocated to students with learning disabilities in self-contained classrooms. That is, students in most need of writing instruction often fail to receive it. Likewise, Bridge and Hiebert (1985) observed that students in six elementary classrooms spent very little time writing and seldom wrote more than a sentence or two in length.

Second, there are problems of incorporating more active student participation in writing activities with those more authentic, that is, students should have the opportunity to engage in purposeful writing activities intended for real audiences, rather than those contrived and arbitrarily assigned by the teacher (Goodman, 1986). As Graham and Harris (1988) suggest, writing should be integrated with other curriculum activities to develop skills and provide students with on-going opportunities to apply their writing in meaningful ways. Fitzgerald and Stamm (1990) write that even young elementary school students can learn to revise their writing in meaningful ways when teachers provide writing opportunities that are purposeful and shared with real audiences.

Third, in typical programs, teachers often fail to guide students in the performance of the writing process, leading Langer (1986) to suggest that the instructional phase of writing has largely disappeared. Rather, in some cases, teachers act as managers who simply assign tasks, with little modeling or explanation of the process involved in writing (Ulichny & Watson-Gegeo, 1989). In other cases, the teacher presents information about writing and then tests students' knowledge by asking them to provide short answers on demand, which does not ensure that they can apply
these in authentic writing tasks (Nodine, Barenbaum, & Newcomer, 1985). This instructional void arises in part from teachers’ lack of preparation at the pre-service level and lack of information at the in-service level on how to best teach writing (Shanahan, 1980). Furthermore, writing instruction places great demands on teachers’ time and requires large amounts of effort on the part of teachers. Graham (1992) not only expresses concern about the quantity of writing instruction provided to students with learning disabilities but the quality as well.

Effective Writing Instruction for Students with Learning Disabilities

Typical approaches to writing instruction might not be particularly effective for students with learning disabilities, and their needs may be better met using other instructional approaches (Graham & Harris, 1988). Swanson (1993) confirms strategies that are effective with non-learning disabled students are not necessarily good strategies for students with learning disabilities. As Brown and Campione (1990) note, students with learning disabilities do not acquire any strategies, including those to effectively increase writing skills, unless detailed and explicit instruction is provided. Smith (1981) emphasizes that students with learning disabilities require direct, concentrated instruction to become proficient in writing. Kameenui and Simmons (1990) argue for a skill-based approach to writing for students with learning disabilities, one in which a series of basic skills are taught and systematically developed for advanced exercises and applications. Engelmann and Silbert (1985) also support the skill-based approach (i.e., direct and systematic instruction in prewriting, writing, and re-writing in order to produce a final product) to beginning expressive writing instruction rather than the product-based alternative. Howe and Kameenui (1983) give considerable attention to Hayes and Flower’s (1980) three phases of writing—the planning stage, the writing phase, and the editing phase. However, the sequence in
which these phases are taught differ. Their instructional focus begins with the writing and editing phases and then the process of planning is introduced and developed.

Self-management-Rationale and Definition

The self-management of social and academic behaviors appears effective for most students, including students with learning disabilities, mental retardation, visual impairments, emotional disturbances, severe-profound handicaps, and giftedness (Heward, 1987). Furthermore, effective implementation of self-management techniques have been conducted in a variety of settings including general education classrooms, resource rooms, and self-contained classrooms. In addition, researchers have demonstrated the effectiveness of self-management techniques with preschool children, elementary-aged students, and adolescents. Behavior changes in reduced disruptive or inappropriate student behavior or in increased appropriate student behavior such as attention to task or academic productivity are evident as a result of self-management techniques as well (Gardner & Cole, 1988). Thus, self-management, or self-control, has become increasingly welcomed as a viable behavior management technique in the public schools.

Hughes and Lloyd (1993) note that the term self-management has many different meanings. Clees (1994) refers to self-management as instances in which an individual serves as one's own treatment agent. McFall (1977) describes self-management as a system in which individuals note their own behavior, ranging from casual observation to complex methods of recording a specifically defined response. Heward (1987) specifically defines self-management, or self-control, as an individualized, systematic application of behavior change strategies that produces desired changes in one's own behavior.

Several advantages for the use of self-management are offered. First, self-management may control specific behaviors that do not generally result in immediate
benefit for the individual, that is, it controls behaviors that otherwise might not be controlled because the outcomes are too small or only of cumulative importance (Malott, 1984). Second, self-management may increase the likelihood that targeted behaviors generalize and maintain in novel or untrained situations (Hughes, Ruhl, & Misra, 1989), although Wilson (1984) cautions that clear conclusions cannot be made regarding the effectiveness of self-management techniques on maintenance and generalization. Third, self-management allows the teacher to devote more time to teaching and less time to managing behavior when students are taught to manage their own social and academic behaviors (Rosenbaum & Drabman, 1979). As Blick & Test (1987) aptly point out, self-management procedures may benefit classroom teachers more than other approaches because they are easy to implement, require minimal use of teacher time, and can be applied in such a way as to not interfere with school work. Fourth, teachers, or other external change agents, are not always available to prompt or punish behavior (Wolery, Bailey, & Sugai, 1988), whereas the learner is present in every setting where the target behavior needs to be emitted (Heward, 1987). Fifth, as Lovitt (1976) observes, students who employ self-management procedures practice other various skills (e.g., math and science skills) in a relevant way. Finally, but just as important, self-management simply feels good (Heward, 1987).

**Self-management Strategies**

Heward (1987) organizes self-management strategies into three general categories based on the elements of the three-term contingency (i.e., the antecedent conditions, the target behavior itself, and consequences). First, there are the stimulus control techniques for self-management that alters some critical feature of the antecedent condition. Examples of these techniques include: (1) providing extra prompts for the targeted behavior (e.g., attach a note on mirror before going to bed to remind self to take out trash in the morning), (2) arranging contact with stimuli that successfully control the
behavior (e.g., before leaving work, place the book you plan to read next to your car keys), (3) limiting the stimulus conditions for an undesired behavior (e.g., if dieting, eliminate all sweets from the house), and (4) changing the environment to reduce the likelihood of the occurrence of an undesired response (e.g., establish a designated study area conducive to studying).

Second, there are the self-monitoring techniques that focus on behavior. Snider (1987) describes self-monitoring as an act whereby an individual observes or assesses his own behavior, then records its occurrence or nonoccurrence. It is generally recognized that one or more combinations of the following strategies make up self-monitoring: (1) self-recording, (2) self-evaluation, (3) self-consequation, (4) self-instruction, and (5) goal setting (Fowler, 1984). Self-recording is collecting data on one's own behavior. Individual tally sheets and graphs are frequently used to display the self-recordings. Visual records often motivate student performance (Reid & Harris, 1989). Self-evaluation is defined as the comparison of one's own behavior with a predetermined criterion to determine whether various aspects of the behavior comply with the criterion (Cole, Gardner, & Karar, 1983). Self-instruction refers to the verbal prompts that direct or maintain personal behavior (Friedling & O'Leary, 1979). Talking to oneself while performing a new or complex task is an example of practicing self-instruction. This self-directing dialogue may be overt or covert (Graham, Harris, & Reid, 1992). Self-instructions may improve task orientation, increase and maintain on-task behaviors, and provide ways for handling situations involving success or failure (Harris, 1982). Self-managed goal setting is often effective across a wide range of tasks from increasing productivity to losing weight (Johnson & Graham, 1990). Self-managed goal setting may be effective because it focuses attention on what has to be accomplished, facilitates the development of a plan of action, and allows a comparison of the present performance to the goal (Bandura & Schunk, 1981). Furthermore,
Schunk (1989) asserts that self-managed goal setting can lead to increased on-task behavior, faster learning, and a heightened sense of personal accomplishment.

Third, there are behavior management techniques involving self-consequation. Self-consequation involves the administration of selected rewards or penalties to oneself (Cole & Gardner, 1983). It can be used alone and may be as effective as teacher-administered consequences (Rosenbaum & Drabman, 1979), but more often than not, self-consequation is employed in conjunction with other procedures. The parent who rewards herself at the end of the day with a glass of wine for not loosing her temper with the children is applying self-consequation.

**Research on Effective Writing Instruction for Students with Learning Disabilities**

Research in the areas of skill training, including applied behavior analysis, Direct Instruction, and precision teaching, and metacognitive strategies (i.e., organizers that guide the learner through specific tasks) has shown to be effective in improving academic performance of students with a learning disability. Yet, for the past decade (1986-1996), minimal research has specifically focused on writing skills of students with learning disabilities. Given that this area is fairly recent and the importance of teaching writing to students with learning disabilities is evident, an entire special issue of *Learning Disabilities Research and Practice* (Vol. 6, No.4), edited by Graham and MacArthur (1991), was devoted specifically to this topic.

In this special issue, Montague, Graves, and Leavell (1991) examine the effectiveness of planning time for students and the use of a check-off procedure on the narrative compositions of junior high school students with learning disabilities. The authors wanted to investigate further the findings of Graves and Levin (1989) in which students with learning disabilities benefited from procedural facilitation to increase reading comprehension. Specifically, the study under review compared compositions dictated or written by students with learning disabilities and their normally achieving
peers with no planning time, planning time only, or planning time plus procedural facilitation (in the form of a story grammar cue card). Three questions guided the research conducted by Montague et al. (1991). First, would planning time and procedural facilitation improve the quality of adolescent learning disabled students' narrative composition? Second, would planning time and procedural facilitation decrease expected quantitative and qualitative differences between compositions written by students with learning disabilities and normally achieving peers? Third, would dictated narratives to reduce the mechanical and motor aspects of production by students with a learning disability result in fewer differences between groups?

The participants in this study were 20 normally achieving students and 40 students with learning disabilities in the seventh and eighth grades in a Southeastern metropolitan school district (Montague et al., 1991). The authors criteria for inclusion in the study for normally achieving students were a minimum of 50 words in response to a picture stimulus for the written story, a standard score between 9 and 15 on the Test of Written Language (Hammill & Larsen, 1983) thematic maturity subtest, and placement in a regular language arts classroom. Criteria considered for inclusion of the students with a learning disability were a minimum of 50 words on the story and a standard score between 3 and 7 on the Test of Written Language thematic maturity subtest.

Story enders were used as the stimuli for the generation of stories. Each participant composed stories under three conditions: no planning, planning time, and planning time plus story cues. For each condition, the experimenter gave the students in each group a pencil, one sheet of blank paper, one sheet of lined paper, and the story ender card. Students were told the blank paper was for notes they may wish to make and the lined paper was for writing the story. Students in the dictation group were not given lined paper and were told to inform the experimenter when they were ready to
audiotape their story. During the no planning condition, students were instructed to write a story using the story ender card. For the planning condition, students were instructed to plan their story before writing. A procedural cue card was added for the last condition. The experimenter explained the card and instructed students to use it to plan their stories. In all conditions, the amount of writing time was noted.

Stories were evaluated using the Story Element Scale (Graham & Harris, 1989) and the Story Quality Scale developed by Montague. The Story Element Scale rates the presence of and quality of eight story elements (e.g., main character, locale, time). The Story Quality Scale provides separate ratings for coherence, organization, and episodic structure. Quantity measures included number of words, propositions, and the time required to write per story. Results of the study indicate that giving students with learning disabilities planning time and using the check-off procedure correlate with an increase in the number of story grammar elements students used in their writings, but found no significant differences in coherence and organization. Further, the authors conclude significant qualitative differences between normally achieving students and students with a learning disability, for the most part, were no longer evident when time and structure for planning were provided. Finally, there was no difference found in quality or length of stories produced by students with learning disabilities when the mechanical writing demands were removed.

Graham, MacArthur, Schwartz, and Page-Voth (1992) discuss the use of a planning and writing strategy involving product and process goal setting as a technique to improve the writing compositions of students with learning disabilities. In this study, the experimenters taught the students to set product goals for what the paper would accomplish and process goals for how to accomplish the product goal.

Four fifth-grade students with learning disabilities receiving resource room services in an inner-city elementary school in the Northeast of the United States served
as participants in the study (Graham et al., 1992). Criteria for selection included the following: the student was identified by the school district as learning disabled, IQ score on an individually administered intelligence test was between 85 and 115, achievement at least two years below age or grade level in one or more academic areas, absence of any other disability, and teacher interviews indicating significant composition problems.

Three conditions were in effect during the experiment. The preteaching condition included instruction in using a word processor and on the components of a good essay and story. During baseline, response rates on writing essays were established. The third condition involved the experimenter describing the composition strategy and modeling it. The three steps involved in the composition strategy were: (a) Do PLANS (Pick goals, List ways to meet goals, And, make Notes, Sequence notes); (b) Write and say more (a self-administered prompt to remind the student to continue planning once writing had actually started); and (c) Test goals.

All compositions written before and after instruction were scored in terms of number of words, story elements, coherence and quality. A scale that assessed the inclusion and quality of eight basic story grammar elements used in a study conducted by Graham and Harris (1989) was applied in this study. Quality scores were based on a holistic rating scale with scores ranging from 1 (low) to 8 (high). Results show strategy instruction for the students with learning disabilities increased the number of structural elements included in compositions, improved the length of papers, and improved the quality of the papers (i.e., the papers were more convincing).

The effects of strategy instruction for students with learning disabilities were further investigated in a study conducted by Danoff, Harris, and Graham (1993). Specifically, both students with and without a learning disability were taught a writing strategy and procedures regulating the strategy and the writing process. Two fifth-grade
and one fourth-grade students with learning disabilities participated in the study as did two fifth-grade and one fourth-grade students without disabilities.

Writing and self-regulation strategies were taught in the regular classroom during writer's workshop to all six students in the study through a series of mini-lessons based on Graham and Harris' (1989) Self-Regulated Strategy Development model. The student's role as an active collaborator is emphasized with the Self-Regulated Strategy Development model. Responsibility for recruiting and applying strategies are gradually placed upon the student, composition and self-regulation strategies are explicitly modeled in context, and the goals and significance of the strategy are established in discussion with the students. Pictures were used as the writing stimuli for the baseline, instruction, postinstruction, generalization, and maintenance story probes. All probes were administered during writer's workshop by the resource teacher, except the generalization story probe, which was given by the classroom teacher. Students were told to look at the given picture, write a story to go with it, and were reminded that the teacher would not be available to help write the story.

Stories were assessed using a scale developed by Graham and Harris (1989). The scale was designed to assess the presence of and quality of eight story elements (e.g., main character, locale, time). Stories written during baseline, postinstruction, generalization, and maintenance were also scored in terms of number of words written. A traditional holistic rating scale was used to evaluate each story written as well. Results indicate strategy instruction integrated into classes that follow a writing workshop approach to composition instruction had a positive impact on the writing of students with and without a learning disability. The number and quality of story grammar elements that these students included in their writings improved significantly immediately following strategy instruction. Papers became longer as the components included in stories became broader and richer.
The effects of a self-management procedure designed to improve adolescent students' completeness (inclusion of identified story elements) and quality (organization and coherence) of story compositions were investigated by Martin and Manno (1995). A procedure teaching the students to plan stories and to monitor the elements from the plan with a check-off system was implemented. Three students with a learning disability attending a public middle school in a central Virginia city were selected to participate in the study. The resource room teacher identified these students as being in need of writing instruction and likely to participate in an extended writing project.

Three dependent variables were measured to assess the completeness and quality of the stories: (a) production-independent and production-dependent measures based on the work of Tindal and Parker (1989), (b) organization and coherence ratings based on the Story Quality Scale developed by Graves & Montague (1991), and (c) number of story elements included. Production-dependent scores obtained from students writing samples include total number of words written, number of legible words, and number of correct word sequence. Production-independent scores for each of the measures were then expressed in terms of the percentage or words written per minute. A self-management strategy (i.e., a story planner form used to plan stories and monitor production) was the independent variable. A multiple baseline across-subjects design was used to determine the effects of the self-management training procedures on the completeness and quality of the students' written stories.

The results from the Martin and Manno (1995) study regarding the overall story quality are inconclusive. An examination of the baseline data for the students suggests that they had prior knowledge of the essential story elements but did not apply the knowledge consistently. The lack of a stable baseline make it difficult to assess the effects of the self-management intervention. The organization and coherence measures had a near-perfect correlation with the number of story elements included in a
composition, which is not surprising because the Story Quality Scale has story elements as its foundation. The study was not able to demonstrate that words correctly sequenced, or the mean length of correctly sequenced words, were strongly related to holistic ratings.

Glomb and West (1990) investigated the effects of a self-management procedure known as WATCH that was designed to teach adolescents how to plan assignments and monitor their academic work. The purpose of the study was to explore the effects of WATCH on the completeness, accuracy, and neatness of creative writing homework assignments of two students with behavioral problems. Both students attended a high school resource program for half of the school day, and were enrolled in regular education classrooms for the remainder of the day. They were referred by their resource teacher for participation in the study because they did not complete homework or independent seatwork.

The independent variable in the study was a procedure called WATCH. WATCH is an acronym that stands for the steps in the procedure: (a) Write down the assignment when it is given and write the due date; (b) Ask for help or clarification if needed; (c) Task-analyze the assignment and develop a schedule to complete it; and (d) Check all work for completeness, accuracy, and neatness. The dependent variables for the study were the completeness, accuracy, and neatness of students’ creative writing assignments. A complete assignment was defined as one in which the student had written at least 190 words. Accuracy was defined as the number of sentences having a subject and a predicate, a capital letter at the beginning of a sentence, and punctuation at the end. Neatness was considered in terms of handwriting errors, which were defined as illegible words, and messy errors, which were defined as cross-outs, write-overs, tears, and smudges. The creative writing assignment was selected because students
demonstrated proficiency in the academic skills as validated by the students’ special education teacher.

A multiple baseline design across participants was used to determine the effect of the self-management training procedures on the completeness, accuracy, and neatness of assignments. Data from the study reveal that the student’s use of the WATCH procedure was effective in increasing the levels of completeness. Further, results suggest that the use of this procedure had an effect on the levels of the accuracy and neatness of each student’s writing assignment.

Spaulding, Haertel, Seevers, & Cooper (1995) examined the effects of structure words and visual imagery on the creative writing of students with a learning disability. Three questions guided the study. First, what effect would structure words have on the total number of words produced in ten minutes of free writing? Second, what effects would structure words and visual imagery have on the descriptive words in the students’ written compositions? Third, what effects would structure words and visual imagery have on the proper use of transitions of thoughts?

Four students in fourth or fifth grade receiving instruction in a resource room for students with specific learning disabilities participated in the study. The criteria for selection included the ability to demonstrate basic sound association in spelling, the ability to construct a complete sentence, and the application of more than one character in a given writing sample. An alternating treatment design was used to evaluate the effects of same story starters and same story starter with structure words and visual imagery. During the same story starter condition, the students were presented with a story starter, given time to think about what they wanted to write, and then instructed to write. During the same story starter with structure words and visual imagery condition, the teacher introduced four structure words each day (e.g., who, size, shape, mood), told students to close their eyes and visualize the events and characters as they applied to the
day's structure words, and gave students the opportunity to describe their thoughts that resulted from visual imagery. Results suggest a functional relationship between the number of descriptive words written in a 10-minute time trial and structure words plus visual imagery instruction for three of the four participants. A correlation between written transition statements and the use of structure words and visual imagery instruction was not verified. The total number of words written during structure words and visual imagery instruction varied across participants. Two students showed increases in the total number of words written, while two others stayed the same.

Wong, Wong, Darlington, and Jones (1991) report the effects of an interactive teaching approach in teaching adolescents with learning disabilities revision skills. Study one involved five adolescents with learning disabilities. Study two involved six students with learning disabilities.

The training procedures comprised several phases. During the first phase, keyboard training was provided. Planning and writing were part of the second phase, including modeling a three-step strategy for planning. For the third phase, after students demonstrated sufficient mastery of the planning process, they were allowed to write the reportive essays on which they generated all their writing plans. During training, the experimenter demonstrated the interactive teaching process in revision by using student writing samples. The experimenter read the essay to the student, spotted sentences that needed clarification or elaboration, and asked the student to clarify. Students had several opportunities to revise after interaction teaching. The instructional focus were clarity and thematic highlighting.

The results from the first study suggest that through the experimenter's instructional dialogues, the students learned to identify ambiguities in their essays and to make their writing themes clear. The results of the second study validated those in the first.
MacArthur, Schwartz, and Graham (1991) conducted a study investigating the effects of a reciprocal peer revision strategy on students' knowledge about writing and revising, their actual revising activity, and the quality of their writing. The study included 29 elementary grade students from four self-contained classes for students with learning disabilities in a large suburban school district. The four classes were randomly assigned to strategy instruction or control conditions. The strategy group received instruction in the student editor strategy for six to eight weeks within the context of the writing workshop. The control group continued regular writing workshop and received strategy instruction following completion of the study.

The student editor strategy included two meetings between students: the first meeting focused on substantive revision; the second meeting focused on correction of mechanical errors. The procedure was reciprocal: Steps one and two were completed for both students; then each student worked independently on the other student's paper; then they discussed the two papers in turn. Immediately following the discussion, students worked independently at the computer to revise their papers. Then they met a second time to discuss the revisions they had made and to edit each other's papers for mechanical errors. Students used a checklist that addressed four types of errors: complete sentences, capitalization, punctuation, and spelling.

The findings of this study are significant in that students in the strategy group made more revisions and produced papers of higher quality when revising with peer support than students in a process approach control group. When revising alone, the strategy students made more revisions than controls, but did not produce papers of higher quality. On an interview, strategy students demonstrated greater awareness of substantive criteria for evaluating writing in response to general questions about writing, but not in response to questions about evaluating and revising particular papers.
Graham (1990) examined the effects of production factors in the compositions of students with learning disabilities. The primary purpose of the study was to examine the effects of rate and mechanical interference on the quantity and quality of students’ composition. A second purpose of the study was to examine the effects of contentless production signals (i.e., directing or prompting students to write more after they have stopped writing) on the quantity and quality of the students’ compositions.

Students participating in the study were 12 fourth-grade and 12 sixth-grade learning disabled students receiving resource room services in three elementary schools. Each one produced three compositions, each on a different opinion essay topic. Each of the compositions was produced using one of three composing modes. In the writing condition, students were told to write as much as they could on the assigned topic. In the normal dictation condition, directions were identical except that students were asked to speak their composition into a tape recorder. In the slow dictation condition, students were told the examiner would record what they said (like a scribe) at the same speed that they produced their composition during the writing condition. All the composing sessions were conducted with subjects individually, and each composition was completed in separate sessions spaced one week apart. Procedures for production signaling were initiated at the point at which the subject had apparently finished her composition. Three levels of prompts were used across all three treatment conditions.

The author concludes three findings from the study. First, a more rapid rate of production did not have a positive impact on the quantity or quality of what students with a learning disability produced. Second, the mechanics of writing interfered with both the quantity and quality of compositions. Third, the introduction of contentless production signals led to substantial increases in the amount of text produced as well as small improvements in quality. In summary, the results indicated that students with
learning disabilities' writing problems are due, in part, to difficulties with mechanics and problems in sustaining production during writing.

**Definition, Rationale and General Approach for Teaching Proofreading Skills**

Proofreading is the act of focusing on "grammar, punctuation, and ... spelling in order to detect deviations from the standard" (Bean & Bouffer, 1987, 66). In proofreading, students read their written work to identify and correct errors (Mercer, 1991). To proofread their own work, students might be provided guidance and given opportunities to look for elements in their writing such as capitalization, punctuation, and misspelled words.

Many teachers acknowledge proofreading is a skill students need to master (Black, 1982). Indeed, many of these teachers teach students to proofread in ways without distracting attention from issues of fluency, development, logic, and clarity. But in the professional literature in recent years, more attention has been given to the earlier stages of composing (i.e., prewriting, drafting, responding, revising), creating an imbalance in regards to the necessity and importance of teaching proofreading skills (Andrasick, 1993).

It is misleading to say mechanical conventions do not count (Madraso, 1993). Basic errors in writing can distract and turn off even the most determined reader. Errors in punctuation may affect meaning (Plumb, Butterfield, Hacker, & Dunlosky, 1994). Often these errors impede communication and cause misunderstandings (Bentley, 1991).

Students may be unclear about the need to proofread what they write, that is, they need to understand it can help them communicate more effectively. Bereiter and Scardamlia (1987) suggest that a writer internalize the mechanics and syntax to the point they become automatic and no longer place demands on other aspects of the writer's thinking. More opportunities for proofreading and more direct, explicit instruction on
the mechanics of writing may be needed for many students (McIntyre, 1993). Clearly, some children need explicit instruction on skills others learn more easily, particularly students with learning disabilities.

Reyes (1991) expresses that the whole language approach may be too casual of an approach to teaching. Further, Rosenshine (1983) suggests students left on their own will learn incorrect skills. Gaston and Peretti (1993) affirm students with learning disabilities may not learn writing skills in whole language contexts without some direct, explicit instruction. Thus, there are those researchers who advocate that proofreading skills be taught directly to students with learning disabilities.

Research on COPS Error Monitoring Strategy

Review of the literature suggests that little research has been conducted using a procedure referred to as COPS, developed in the learning disability institute at the University of Kansas (Schumaker, Deshler, Alley, & Warner, 1983). The mnemonic, COPS, help students with learning disabilities remember and thus be responsible for the essential aspects of editing and proofreading. $C$ represents Capitalization; $Q$ represents the Organization and Orderliness of the story; $P$ represents Punctuation; and $S$ represents Spelling. The teacher may have to remind the student to use this strategy initially, but eventually it should become internalized.

Schumaker, Deshler, Nolan, Clark, Alley, & Warner (1981) conducted the original study using COPS to determine its effectiveness with students with learning disabilities. Nine secondary students with learning disabilities served as the participants. Criteria for selection included IQ scores above 80; deficits in one or more achievement areas; and no other identifiable disabilities present.

Each type of errors within the four COPS categories was defined objectively. Scorers became familiar with these definitions and received two hours of scoring practice. For teacher-generated passages, scorers had to categorize and tally the errors.
the students detected and the errors which they accurately corrected. For the student-generated passages, the scorers first had to categorize and tally all the errors the student made in the rough draft. Then, the errors the student detected and corrected were also scored.

A multiple-baseline across three subjects was used and replicated twice with two sets of three students each. Three replications of a multiple-baseline design across students demonstrated that improved performance did not occur until after each student received instruction in the strategy. Before training, none of the students was correcting more than 25% of the errors. Detection of errors was slightly higher than correction. Posttest results showed the students readily and immediately generalized their monitoring skills to the more difficult grade-level passages.

Shannon and Polloway (1993) report on procedures successfully used to teach the COPS error monitoring strategy to adolescent students with learning disabilities. The program was introduced to a sixth-grade self-contained learning disabilities class with an enrollment of six students. COPS was first introduced as a tool to help them in passing their Passport to Literacy Test. The basic steps were described for using the strategy, and a demonstration was given of how to apply the technique in a sample of written material. After each component had been described, modeled, and practiced, the program was used as a whole. Teacher-generated passages with specific COPS errors were used to provide practice activities. The steps were discussed and reviewed daily. Students were asked to correct these passages using the COPS strategy. After all the steps were covered, students were also provided practice with COPS on paragraphs or short stories that they created on a broad range of subjects.

The COPS error monitoring strategy proved to be a beneficial and efficient approach to writing instruction for the students who participated in the study. The
ability to generalize was demonstrated early in the program, and the use of the COPS strategy continued after the completion of instruction.

Reynolds, Hill, Swassing, and Ward (1988) confirm the effectiveness of the COPS strategy for instructing the mechanical aspects of writing in a study with students with learning disabilities. The purpose of the study was to determine the effects of instruction in Evaluative and Directive Phrases, a strategy to help improve story content developed by Bereiter and Scardamalia (1982), and COPS. The study also investigated the effect of the order of strategy instruction on the content and mechanics of students' paragraph writing.

Fifty-four middle-school students with learning disabilities participated in the study. Classes were assigned to one of three groups. The two experimental groups both received instruction in one strategy for revision of mechanics and one for content, but the order of instruction varied. The control group received no instruction in either of the revision strategies.

Results of the study indicate that mechanical scores for students in the experimental groups were higher than the mechanic scores for the control group. This suggests instruction improves mechanics more than simply telling students to revise their work. Another finding was the order of instruction did not appear to affect the students' scores. Mechanic scores increased regardless of order of presentation. Finally, it appears that instruction in these revision strategies improves mechanics but not content.

**Conclusion**

As this literature review suggests, the need for instruction in writing for students with learning disabilities is apparent. Self-management techniques and metacognitive strategies have been shown to be effective in improving a diverse range of academic performance, including writing skills of students with learning disabilities. Further
study is needed, however, to confirm existing findings and to extend the current knowledge base, particularly in regards to improving proofreading skills.
CHAPTER III

METHOD

This chapter describes the participants, setting, experimenter, procedures, and the experimental design used in the study. The dependent variables are defined, and their measurements are discussed. Also included is a list and description of materials used in conducting the study.

Participants

The experimenter selected seven students with specific learning disabilities to serve as participants. The specific learning disabilities were documented by school records and assessments in accordance with the Ohio State Department of Education guidelines for student eligibility for special education services. Criteria for participant selection included: (a) teacher identification of students who had experienced difficulty in the mechanics of writing, (b) teacher recommendation that these students would benefit from error monitoring instruction and self-managed proofreading, and (c) students willingness with parental permission to participate in the study for approximately 30 minutes per session in each school day for 8 to 10 weeks. The students, parents, teachers, and principal received a verbal description of the purpose and procedures before the study (Appendix A). Each parent or guardian received a cover letter explaining the purpose of the study as well (Appendix B) and gave written consent for their child to participate in the study (Appendix C). Table 3.1 provides a summary of demographic information for each student (age, sex, grade, and ethnicity).

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Table 3.1

**Student Demographic Information**

<table>
<thead>
<tr>
<th>Student</th>
<th>Sex</th>
<th>Age(^a)</th>
<th>Grade</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>M</td>
<td>11</td>
<td>4</td>
<td>African-American</td>
</tr>
<tr>
<td>Mark</td>
<td>M</td>
<td>11</td>
<td>5</td>
<td>African-American</td>
</tr>
<tr>
<td>James</td>
<td>M</td>
<td>11</td>
<td>5</td>
<td>Caucasian</td>
</tr>
<tr>
<td>Jesse</td>
<td>M</td>
<td>11</td>
<td>5</td>
<td>Caucasian</td>
</tr>
<tr>
<td>Tray</td>
<td>M</td>
<td>11</td>
<td>5</td>
<td>Caucasian</td>
</tr>
<tr>
<td>Winston</td>
<td>M</td>
<td>11</td>
<td>4</td>
<td>Caucasian</td>
</tr>
<tr>
<td>Kent</td>
<td>M</td>
<td>11</td>
<td>5</td>
<td>Caucasian</td>
</tr>
</tbody>
</table>

*Note.* \(^a\) age in years at start of the study.
In addition, the experimenter individually administered the oral reading subtest of the 
**Brigance Inventory of Basic Skills** to determine each student's current oral reading level before the study. The experimenter also administered the capitalization and punctuation subtests and spelling dictation grade placement test of the **Brigance Inventory of Basic Skills** to establish each student’s current level of performance on each of these skills (Appendix D). Table 3.2 provides the results of specific assessment information for each individual.

**Setting**

The study was conducted in an urban elementary school with an approximate enrollment of 400 students in grades K-5 located in Columbus, Ohio. The individualized assessment and instructional sessions were held in either of two separate, quiet, well-lit rooms equipped with a table and three chairs. The rooms were large enough to comfortably accommodate the participant, the experimenter, and one observer. The experimenter and student were seated next to one another at the table.

Room 1 was an equipment storage room located in the library. This room was primarily used for storing audio-visual equipment, teaching materials, and school supplies. This room also served as a teacher work area. Room 2 was a conventional classroom typically used for small group tutoring and counseling. All sessions were conducted during the regular school day in one of the two rooms, depending upon room availability.

**Experimenter**

The experimenter was a doctoral candidate in the Department of Educational Services and Research at The Ohio State University in the third year of his Ph.D. program in special education and applied behavior analysis. Before returning to the University for graduate study, he accumulated ten years of teaching experience in special
### Table 3.2

**Student Assessment Information**

<table>
<thead>
<tr>
<th>Student</th>
<th>Oral Reading Grade Level</th>
<th>Spelling Dictation Grade Placement</th>
<th>Capitalization Skills</th>
<th>Punctuation Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>3rd grade</td>
<td>Grade 1</td>
<td>1 out of 9</td>
<td>2 out of 6</td>
</tr>
<tr>
<td>Mark</td>
<td>3rd grade</td>
<td>Grade 1</td>
<td>1 out of 9</td>
<td>2 out of 6</td>
</tr>
<tr>
<td>James</td>
<td>6th grade</td>
<td>Grade 6</td>
<td>1 out of 9</td>
<td>2 out of 6</td>
</tr>
<tr>
<td>Jesse</td>
<td>4th grade</td>
<td>Grade 2</td>
<td>1 out of 9</td>
<td>0 out of 6</td>
</tr>
<tr>
<td>Tray</td>
<td>4th grade</td>
<td>Grade 2</td>
<td>1 out of 9</td>
<td>1 out of 6</td>
</tr>
<tr>
<td>Winston</td>
<td>3rd grade</td>
<td>Grade 1</td>
<td>1 out of 9</td>
<td>1 out of 6</td>
</tr>
<tr>
<td>Kent</td>
<td>4th grade</td>
<td>Grade 1</td>
<td>3 out of 9</td>
<td>2 out of 6</td>
</tr>
</tbody>
</table>

**Notes.**  
a = all results from the Brigance Inventory of Basic Skills administered individually March 1, March 4, or March 5, 1996.  
b = can read comfortably at grade level indicated.  
c = grade level student can spell dictated sentences.  
d = total number of capitalization rules the student can apply correctly.  
e = total number of punctuation rules the student can apply correctly.
education. Three of those years he served as a consultant for students with visual impairments. He has had the opportunity to work with students of all ages and a variety of needs, from toddlers to young adults, from severe and profound retardation to gifted. During his tenure at Longfellow Elementary in Alvin, Texas he was chosen by his peers to represent the school as Teacher of the Year. During the same year, he received the Young Educator’s Award from The Ohio State University Alumni Association honoring those educators who have made a significant impact on the lives and education of children. In the second year of his doctoral program, the experimenter conducted a study investigating the effects of visual imagery instruction on creative writing of fourth grade students.

Definitions of the Dependent Variables

The dependent variables in this study were (a) the count of capitalization errors detected and misidentified per minute by the student, (b) the count of punctuation errors detected and misidentified per minute by the student, (c) the count of spelling errors detected and misidentified per minute by the student, and (d) the count of errors corrected and failures to accurately correct per minute by the student on experimenter-prepared materials.

Detected mechanical errors (capitalization, punctuation and spelling). Detected mechanical errors were defined as the frequency (i.e., count per minute) of capitalization, punctuation, and spelling errors identified correctly by the student. An answer key was used to determine the frequency of mechanical errors detected correctly by the students. To be considered correct, student marks for a given error matched exactly with the experimenter’s answer key.

Types of capitalization errors students were able to detect include: (a) capital letters not used in the first word of a sentence (e.g., “she showed the letter from her
grandmother to the teacher.” for “She showed the letter from her grandmother to the
teacher.”), (b) capital letter not used for the pronoun “I” (e.g., “Father and I worried
about the lost mitten.” for “Father and I worried about the lost mitten.”), (c) capital
letters not used for names of people (e.g., “Tomorrow I will visit Theodore at work.”
for “Tomorrow I will visit Theodore at work.”), (d) capital letters not used for titles of
people (e.g., miss, mr., mrs., ms., dr.), (e) capital letters not used for the days of the
week (e.g., “The last day to see the Northern Lights will be Friday afternoon.” for “The
last day to see Northern Lights will be Friday afternoon.”), (f) capital letters not used for
holidays, (e.g., “Last April, on Friday afternoon, I appeared in an Easter program.” for
“Last April, on Friday afternoon, I appeared in an Easter program.”), (g) capital letters
not used for months of the years (e.g., “The mid-summer afternoons in July are ones to
remember.” for “The mid-summer afternoons in July are ones to remember.”), (h)
capital letters not used for the names of streets (e.g., “After you pass the intersection,
take a left on Wilson.” for “After you pass the intersection, take a left on Wilson.”), (i)
capital letters not used for the names of cities (e.g., “See you in Chicago in a couple of
weeks.” for “See you in Chicago in a couple of weeks.”), and (j) capital letters not used
for the names of states (e.g., “The people along the Florida coast battled the storm with
courage.” for “The people along the Florida coast battled the storm with courage.”). All
other types of capitalization errors (i.e., names of countries, oceans, rivers, mountains,
landmarks, titles of books, etc.) were excluded from this study.

Types of punctuation errors students were able to detect include: (a) period not
used after a statement (e.g., “The last day of school was near.” for “The last day of
school was near.” or “The last day of school was near?” for “The last day of school
was near.”), (b) period not used after an initial (e.g., “The author’s name was Santiago
W. Utez.” for “The author’s name was Santiago W. Utez.”), (c) period not used after
an abbreviation (e.g. Mr., Sept.), (d) question mark not used after a question (e.g.,
"Was Abdul’s book missing_" for "Was Abdul’s book missing?" or "Was Abdul’s book missing_" for "Was Abdul’s book missing?"), (e) exclamation point not used after an exclamation or a command that exclaims (e.g., “Please hurry_” for “Please hurry!” or “Please hurry_” for “Please hurry!”), (f) comma not used to separate names of city and state (e.g., “My grandfather lived in Friendswood, Texas many years ago.” for “My grandfather lived in Friendswood, Texas many years ago.” or “My grandfather lived in Friendswood Texas, many years ago.” for “My grandfather lived in Friendswood, Texas many years ago.”), and (g) comma not used to separate date and year (e.g., “My birthday is on January 2, 1944.” for “My birthday is on January 2, 1944.” or “My birthday is on January 2, 1944.” for “My birthday is on January 2, 1944.”). All other types of punctuation errors (i.e., commas in a series, commas to set off words in dialogue, apostrophes in all forms, etc.) were excluded from this study.

Types of spelling errors students were able to detect include (a) omission of letters (e.g., “mes_age” for “message”), (b) reversal of letters (e.g., “recieve” for “receive”), and (c) insertion of letters (e.g., “tommorrow” for “tom_orrow”).

Misidentified mechanical errors (capitalization, punctuation, and spelling). Misidentified mechanical errors were defined as the frequency of capitalization, punctuation, and spelling errors misidentified by the student. A misidentified error was considered as such when the student identified an error when in fact there was not one (e.g., “How cold do you expect it to get tonight?” - the student identified the question mark as an error). The same answer key used to determine detected mechanical errors was used to determine the frequency of errors misidentified by the students.

Errors corrected and not corrected. Student error corrections were defined as the total count of mechanical errors per minute the student accurately corrected after proofreading for capitalization, punctuation, and spelling errors. An answer key was used to determine the accuracy of corrected mechanical errors by the students. To be
considered correct, student corrections for a given error matched exactly with the experimenter's answer key.

Student errors not corrected were defined as the count of mechanical errors per minute the student failed to correct accurately after proofreading for capitalization, punctuation, and spelling errors. If the student correction for a given error did not match exactly with the experimenter's answer key, the student's response was considered as a failure to correct a detected error.

**Measurement of the Dependent Variables**

**Experimenter-prepared writing samples.** A new experimenter-prepared writing sample for students to proofread for capitalization, punctuation, and spelling errors was distributed to students for each day of the study. The same new passage was used by all the students in attendance for any given day. Each writing sample (Appendix E) was developed from stories below or equal to the student’s current reading level. Each writing sample consisted of 200 to 220 words and contained 10 experimenter selected capitalization errors, 10 experimenter selected punctuation errors, and 10 experimenter selected spelling errors. Each passage contained more errors than the student could possibly detect in a 1-minute timing period as determined by expert adult proofreaders. The expert adult proofreaders used in this study (two graduate students) detected a count of 19 and 21 errors per minute.

Students were given a new writing sample each day to proofread for each type of mechanical error. In a one-minute timing period, the students were required to proofread for errors in the writing sample and indicate (by circling) all the errors detected. The students then had the opportunity to correct the errors detected. Data were collected based on the frequency of each mechanical error detected, the frequency of each mechanical error misidentified, the frequency of errors corrected accurately, and the frequency of errors not corrected accurately (Appendix F).
Interobserver Agreement and Accuracy of Measurement

Before the start of the study, the experimenter trained an independent observer to obtain interobserver agreement. The training sessions consisted of the experimenter (a) describing the purpose of the study, (b) explaining and giving examples of the definition for detected and misidentified mechanical errors and detected errors corrected and not corrected, (c) practicing with the independent observer the marking and scoring procedures, and (d) conducting several pilot sessions using samples from two students not participating in the study. The experimenter provided the trained observer with the definitions and examples of the dependent variables, copies of the recording form (Appendix F), and a copy of the answer sheet for the experimenter-prepared writing samples. The experimenter and observer independently checked each student's permanent product on the dependent variables. The trained observer independently scored and recorded the dependent variables a minimum of 20% of all sessions. Student products were randomly selected by the trained observer for scoring and recording. The experimenter was not informed of which days the trained observer selected for interobserver agreement.

An answer-by-answer comparison of the scored products with discrepancies by the experimenter and observer to the true value answer keys was conducted for the assessment of accuracy measurement of the dependent variables (Johnston & Pennypacker, 1993). All inaccurate measurements were corrected and the correct counts reported in the results.

Procedural Integrity

To assess the consistent application of the procedures for each phase of the study, procedural checklists (Appendix G) containing the scope and sequence of the experimental design were developed and used to verify the implementation of the procedures. An observer completed the checklist for 20% of all sessions. If
discrepancies arose between the checklist and the observed procedures, the observer discussed the discrepancies with the experimenter. Before beginning the study, the experimenter conducted two pilot sessions so the observer would have an opportunity to practice using the form. Procedural integrity was reported as the percentage of adherence to each of the procedural checklists.

**Instructional Materials**

**Writing samples.** Each writing sample (Appendix E) consisted of 200 to 220 words and contained 10 experimenter selected capitalization errors, 10 experimenter selected punctuation errors, and 10 experimenter selected spelling errors. The number of errors per sentence ranged from a high of two errors to a low of zero errors. Specific errors were inserted in the materials based on the experimenter's judgement as to their likely occurrence. Each writing sample was adapted from a set of reading materials at a third grade reading level. Each text was typewritten and double-spaced on 8.5" x 11" paper using 12-point New York font.

**Practice sheets.** Each practice sheet (Appendix H) consisted of 90 to 100 words and contained 5 experimenter selected capitalization errors, 5 experimenter selected punctuation errors, and 5 experimenter selected spelling errors. The number of errors per sentence ranged from a high of two errors to a low of zero errors. Specific errors were inserted in the materials based on the experimenter's judgement as to their likely occurrence. Each text was typewritten and double-spaced on 8.5" x 11" paper using 12-point New York font.

**Timer.** A Radio Shack LCD dual timer with clock (cat. No. 63-894) was used by the experimenter to set the time for the 1-minute counting period.

**Purple pens.** Students were required to use a purple pen to complete experimenter-prepared writing samples/practice sheets.
Student folders. Each student was provided a manila folder with his name on it to file completed experimenter-prepared writing samples/practice sheets.

Experimental Design

A multiple baseline design across students (Appendix I) (Cooper, Heron & Heward, 1987) was employed to analyze the effects of self-managed proofreading on the count per minute of mechanical errors detected and misidentified by the student, and the count per minute of errors corrected and not corrected by the student. Implementation of each experimental change was based upon charted data and its relation to an established decision rule. A statistical analysis of the data charted on the Standard Celeration Chart (Pennypacker, Koenig, & Lindsley, 1972) was used to determine when a phase change would be made. In this study, the statistical criterion used was 4 consecutive days of data where the minimum celeration line multiplied by less than x1.25 (i.e., read as times 1.25).

Procedures

Pre-Baseline Instruction

During the pre-baseline instruction phase, the experimenter provided individual instruction in the mechanics of writing (i.e., capitalization, punctuation, and spelling) for each student participating in the study (Appendix J). The objectives of the instruction were for each student to orally recall ten rules for using capital letters, to orally recall seven rules for correct punctuation (including when to use a period, a question mark, an exclamation point, and commas), and to orally recall three types of common spelling errors (Appendix K). Each instructional session was conducted within a 15-minute period, and began with a 2 to 3 minute warm-up/rapport building discussion (e.g., What did you think of the football game last night?). The experimenter then stated the objective for the day's lesson (e.g., Today we will work on orally recalling five rules for using capital letters.). For each rule to be learned, the
experimenter first said the rule and then repeated the rule immediately after by asking himself “when do we use capital letters?” (e.g., The first rule we are going to learn today is that you always use capital letters for the first word of a sentence. When do we use capital letters? For the first word of a sentence.). Immediately following the experimenter’s statement of the rule, he asked the student to repeat the rule when prompted with the question, “when do we use capital letters?” (e.g., Rosita, your turn, when do we use capital letters?) If the student responded correctly, nonspecific praise was given for effort and participation (e.g., good, yes, I like the way you’re trying, wonderful effort, keep up the good work, nice going). If the student responded incorrectly, the experimenter provided the correct answer, repeated the question and immediately asked the student to respond again to the question (e.g., For the first word of a sentence. When do we use capital letters?). This procedure was continued until the student was successful in recalling each rule. Each time a new rule was introduced, the experimenter repeated the previously stated rule(s) along with the new one and asked the student to respond in the same way as described above. When the student could recall all ten rules for capitalization (i.e., the student meets the day’s objective) by the end of any given session, instruction was terminated for that skill and the experimenter began instruction on the next set of rules to be learned, following the same procedures as described above. One week before baseline instruction, the experimenter requested that the classroom teacher begin collecting writing samples in the students’ class to be used during assessment for generality of effect.

General Procedures

A standard set of procedures were adhered to throughout the study with a structured routine followed daily by the experimenter. The experimenter prepared in advance all materials necessary to conduct the study including experimenter-prepared practice sheets, experimenter-prepared and randomly selected writing samples, answer
keys, and recording forms complete with the student's name, day, date, condition, and session number. In addition, all the necessary materials were gathered and placed in the experimental setting before the student's arrival. The experimenter met the student in his classroom and walked together to the site in which the study was conducted. Each 30-minute session commenced with a warm-up discussion (1 to 2 minutes).

**No Practice Sheets**

Sitting next to the student at the table, the experimenter prepared the student for a 1-minute counting period. The experimenter prepared in advance the day's writing sample, complete with the name of the student and the date it was distributed. During the 1-minute counting period, the student proofread the experimenter-prepared writing sample for mechanical errors. At the beginning of each 1-minute counting period, the experimenter set the timer and gave the following directions to the student:

Let's get ready for the 1-minute counting period. I have the timer set for one minute. When you are ready, I want you to pick up your pen and begin proofreading the writing sample for capitalization, punctuation, and spelling errors. Circle all the errors you find. When the 1 minute is up, I will say pen down. You will be given time at the end of the minute to correct the errors you find. Here is today's writing sample (the experimenter distributed the writing sample face down to the student at this time). You have 1 minute to proofread it. Find as many capitalization, punctuation, and spelling errors as you can during the 1-minute counting period. I'll
start the timer when you turn the writing sample over
(The experimenter started the timer when the student
turned the sample over. At the end of the minute
counting period, the experimenter asked the student
to mark the place in the passage where he stopped
proofreading and the experimenter then terminated
the proofreading session by providing the appropriate
cue). Mark your passage with a slash mark to indicate
where you stopped proofreading. Pen down (When
the student put the pen down, the experimenter then
asked the student to correct any errors found). Now
that you are finished proofreading for the
capitalization, punctuation, and spelling errors, go
back and correct as many of those errors that you
found as you can. When you finish, please put your
paper in the folder and give the folder to me. (The
students were permitted to detect and correct new
errors after the assessment was completed, although
this data was not reported. When the student finished,
the experimenter provided the student nonspecific
praise as well as commented on the number of correct
errors detected and the number of errors corrected
accurately). Good job. You found 9 spelling errors
and accurately corrected 3. (The experimenter ended
the session for the day by thanking the student and
returning him to the class). Thanks for your cooperation today. Let's get you back to class (the experimenter and student walked back together to the student's class).

**Practice Sheets**

Sitting next to the student at the table, the experimenter instructed the student in exactly the same way as described in the no practice sheet condition, except that practice sheet instruction was added. The experimenter followed the script and sequence of events described below:

Today we will be working on our proofreading skills—finding and correcting capitalization, punctuation, and spelling errors. Here is today's practice sheet. (The experimenter distributed the practice sheet to the student at this time. The experimenter asked the student to write his name and the date at the top of the practice sheet and then began instruction). Please write your name and today's date at the top of your paper. Today's date is ____. When proofreading writing, I first read the sentence and circle any capitalization errors I find in the sentence. Next, I re-read the sentence and circle any punctuation errors I find in the sentence. Finally, I read the sentence one more time and circle any words that appear to be misspelled. Watch as I do the first one. (The student watched as the experimenter proofread the first
sentence. The experimenter verbalized the steps of the proofreading process as indicated above. The experimenter continued this same procedure for two more sentences.

Then, the experimenter instructed the student to complete the assignment independently (e.g., Now it is your turn. Proofread the remainder of the practice sheet by circling capitalization, punctuation, and spelling errors just as I showed you. When you finish, please tell me “I'm done”). When the student signaled that he had completed the practice sheet, the experimenter instructed the student to correct all the errors detected in the practice sheet (e.g., Now that you are finished proofreading for the capitalization, punctuation, and spelling errors, go back and correct as many of those errors as you can. Write your corrections above the error you found. For example, if you find the word *texas* is incorrect because the first letter is not capitalized or because it is spelled wrong, write the entire word as it should be written above the circled mistake. If a punctuation mark is missing or not correct, once again simply write the correct mark above the circled mistake. When you finish, please put the paper in the folder). The experimenter then provided nonspecific feedback to the student upon completion (e.g., good job, well done, thanks). In addition to nonspecific feedback, the experimenter commented on the number of correct errors the student detected and the number of errors corrected accurately (e.g., you found 6 capitalization errors and corrected 4 of them accurately).

Next, the experimenter prepared the student for a 1-minute counting period. The experimenter prepared in advance the day's writing sample, complete with the name of the student and the date it was distributed. During the 1-minute counting period, the student was instructed to proofread the experimenter-prepared writing
sample for mechanical errors. At the beginning of each 1-minute counting period, the experimenter set the timer and gave the following directions to the student:

Let’s get ready for the 1-minute counting period. I have the timer set for one minute. When you are ready, I want you to pick up your pen and begin proofreading the writing sample for capitalization, punctuation, and spelling errors just like I did on the practice sheet. Circle all the errors you find. When the 1 minute is up, I will say pen down. You will be given time at the end of the minute to correct the errors you find. Here is today’s writing sample (the experimenter distributed the writing sample face down to the student at this time). You have 1 minute to proofread it. Find as many capitalization, punctuation, and spelling errors as you can during the 1-minute counting period. I’ll start the timer when you turn the writing sample over (The experimenter started the timer when the student turned the sample over. At the end of the minute counting period, the experimenter asked the student to mark the place in the passage where he stopped proofreading and the experimenter then terminated the proofreading session by providing the appropriate cue). Mark you passage with a slash mark to indicate where you stopped proofreading.
Pen down (When the student put the pen down, the experimenter then asked the student to correct any errors found). Now that you are finished proofreading for the capitalization, punctuation, and spelling errors, go back and correct as many of those errors that you found as you can, just like you did on the practice sheet. When you finish, please put your paper in the folder and return the folder to me. (When the student finished, the experimenter provided the student nonspecific praise as well as commented on the number of correct errors detected and the number of errors corrected accurately). Good job. You found 9 spelling errors and accurately corrected 3. (The experimenter ended the session for the day by thanking the student and returning him to the class).

Thanks for your cooperation today. Let's get you back to class (the experimenter and student walked back together to the student's class).

**Self-Managed Proofreading**

After 4 consecutive days of data where the minimum celeration line multiplied by less than x1.25, a self management strategy was introduced. The experimenter instructed the student in exactly the same manner and sequence as described in the practice sheet condition with the self-management strategy added. The experimenter reminded the student to use the self-management strategy each time he was asked to proofread the experimenter-prepared practice sheets and the experimenter-prepared writing samples (e.g., When you are ready, I want you to pick up your pen and begin
proofreading the writing sample for capitalization, punctuation, and spelling errors just like we did on the practice sheet using the self-management procedure).

The self management strategy included two steps. First, the student was instructed to write the letters CPS (for capitalization, punctuation, spelling) at the top of each practice sheet/writing sample once the practice sheet/writing sample had been distributed. The student was then told that each letter was to help remind him of the types of errors to look for when proofreading each sentence (e.g., Please remember to write the letters CPS at the top of your paper. The C is to remind you to check each sentence for capitalization errors, the P is to remind you to check each sentence for punctuation errors, and the S is to remind you to check each sentence for spelling errors).

Second, during instruction, the experimenter instructed the student to write, at the end of each sentence, the corresponding letters for the types of error (C for capitalization, P for punctuation, and S for spelling) he was proofreading (e.g., When proofreading writing, first read the sentence and then write CPS immediately after the sentence to remind yourself that you have to proofread the sentence for capitalization, punctuation, and spelling errors). The experimenter provided corrective feedback to the student on his use of the self-management strategy only if he failed to implement the self-management strategy correctly (i.e., the student failed to write CPS at the top of each practice sheet/writing sample or failed to write the corresponding letters for each error type after each sentence).

Generality Probe

In order to assess the impact of the intervention procedure to students' own writing assignments, the classroom teacher attempted to collect writing samples from each student two times a week. As part of their seatwork, students had as much time as they wanted in class to proofread their own completed stories for mechanical errors.
Maintenance

Following intervention, maintenance measurements were collected on the count of mechanical errors detected, the count of misidentified mechanical errors, the count of mechanical errors corrected accurately, and the count of failures to correct detected mechanical errors by asking students to proofread experimenter-prepared writing samples. Definitions and procedures for the maintenance probes were identical to those used during the no practice sheet condition.

Consumer Satisfaction

A questionnaire was administered following the last day of instruction to each participant and the teacher (Appendix L). The classroom teacher read the questionnaire to the students individually at the conclusion of the study, and recorded student responses on individual forms. The results of the questionnaire were then compiled and reported by the experimenter. The questionnaire Likert-type ratings and open-ended questions focused on students’ and the teacher’s opinions regarding the usefulness and effectiveness of the experimenter-prepared practice sheets and self-management procedure in acquiring proofreading skills.
CHAPTER IV
RESULTS

This chapter presents the findings of the study by individual students and a summary of findings with grouped data. The first section depicts the interobserver agreement and accuracy of the measurement of the dependent variables. The second section describes the procedural integrity data. Student error detections, error corrections, failure to correct detected errors, and misidentified errors across all conditions are reported in the third section. The fourth section examines the types of mechanical errors the students detected across all conditions. Finally, a transcription of the students’ and teacher’s comments on the exit interview is presented.

Interobserver Agreement and Accuracy of Measurement

The experimenter obtained interobserver agreement for at least 20% of all sessions. Sessions were randomly selected by the independent observer to obtain the interobserver agreement data. The interobserver agreement was established by conducting an answer-by-answer comparison of the students’ scored permanent products. Table 4.1 provides a group summary of the interobserver agreement for each of the dependent variables. Percentage of agreement for each dependent variable measurement was 100 for all students except Ali. For Ali, the interobserver agreement on the count of errors detected was 97%, the count of errors corrected was 97%, the count of failure to correct detected errors was 100%, and the count of misidentified errors was 100%.
Table 4.1

Percentage of Interobserver Agreement for Each Dependent Variable

<table>
<thead>
<tr>
<th>Student</th>
<th>Errors Detected</th>
<th>Errors Corrected</th>
<th>Failures to Correct</th>
<th>Misidentified Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>97&lt;sup&gt;b&lt;/sup&gt;</td>
<td>97</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Mark</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>James</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Jesse</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Tray</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Winston</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Kent</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Range 97 to 100 97 to 100 ---- ----

Notes.  a = the percentage of sessions with interobserver agreement data is at least 20 for each student.  b = the percentage of interobserver agreement on the dependent variable.
The experimenter also obtained an assessment of the accuracy of measurement for each discrepancy on the scored products as marked by the experimenter and observer. The degree of accuracy of measurement was assessed by conducting an answer-by-answer comparison of the students’ scored permanent products to the true value answer keys. Students’ dependent measurement scores were re-calibrated to reflect the true counts for each of the dependent measurements.

**Procedural Integrity**

Checklists for each condition of the experiment (i.e., no practice sheet, practice sheet, and self-managed proofreading) were developed to assess the extent to which the experimenter followed established procedures as observed by an independent observer. The independent observer completed the appropriate checklist for each student in the study weekly. Twenty percent of all sessions were assessed for procedural integrity. Tables 4.2 presents a group summary of the mean percentage and the range of adherence to each of the procedural checklists for each experimental condition as viewed by the independent observer.

During the no practice sheet condition, the experimenter adhered to the procedural checklist for all students 100% of the time. During the practice sheet condition, the experimenter adhered to the procedural checklist for Ali, Mark, James, and Jesse 100% of the time; Tray and Winston 97% of the time; and Kent 98% of the time. During the self-managed proofreading condition, the experimenter followed established procedures 100% of the time for all students. Experimenter adherence to all the procedural checklists ranged from 94% to 100%.

**Characteristics of Student Data**

Presentation of students data appear on standard celeration charts providing a standard display of frequency as count per minute (Pennypacker, Koening, & Lindsley,
Table 4.2

Percentage of Adherence to Each of the Procedural Checklists for Each Student

<table>
<thead>
<tr>
<th>Student</th>
<th>No Practice Sheet</th>
<th>Practice Sheet</th>
<th>Self-Managed Proofreading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>100(^b)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Mark</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>James</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Jesse</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Tray</td>
<td>100</td>
<td>97 (94 to 100)</td>
<td>100</td>
</tr>
<tr>
<td>Winston</td>
<td>100</td>
<td>97 (94 to 100)</td>
<td>100</td>
</tr>
<tr>
<td>Kent</td>
<td>100</td>
<td>98 (94 to 100)</td>
<td>100</td>
</tr>
</tbody>
</table>

Notes. \(a\) = the percentage of all sessions with procedural integrity is 20 or greater for each student. \(b\) = the mean percentage of procedural integrity for each given condition. \(c\) = the range in percent of procedural integrity for each given condition.
1972). Standard celeration depicts rate of change or progress in a standard way, regardless of the initial frequency of the behavior (White, 1986). Celeration is a derivative of frequency (i.e., frequency per unit of time or count/time). As such, celerations provide a measure of learning trends across time. A line drawn from the bottom left corner to the top right corner has a slope of 34 degrees. This slope (i.e., trend line) represents a celeration value of $x^2$ (read as times two), or a doubling in frequency every week on the chart (Potts, Eshleman, & Cooper, 1993). Celeration values are expressed as multiples or divisors. That is, celerations are multiplying (i.e., behaviors accelerating) when trend lines move from the lower-left portion of the chart to the upper-right; they are dividing (i.e., behaviors decelerating) when trend lines move the upper-left portion of the chart to the lower-right.

**Assessment of Errors Detected**

Charts 1 through 7 (Appendix M) depict the error detection data for each student in the study. The number of mechanical errors the student correctly detected in the 1-minute counting period during each condition of the study (i.e., no practice sheet, practice sheet, self-management proofreading, and maintenance) are represented by a dot (•). Celeration lines are included to represent the proportional change in the count of correct errors detected across time. The number in the tear-drops indicate the median count of correct errors detected. During the no practice sheet condition, the individual median scores for the number of errors detected in the 1-minute counting period by a student ranged from a high of 3 errors detected to a low of 0 errors detected. With the introduction of practice sheets, the individual median scores for the number of mechanical errors detected in a 1-minute counting period again ranged from a high of three errors detected to a low of 0 errors detected. For six of the seven students, the
practice sheet made little difference in the number of errors the students detected. For Tray, the practice sheet did appear to have some effect. His median score for the number of errors detected increased from 0 mechanical errors detected in a minute counting period to 3 errors detected in a minute. Following instruction in self-managed proofreading, all students showed improvement in the number of errors they were able to detect. Individual median scores for the number of errors detected by a student ranged from a high of 9 errors detected to a low of 6 errors detected. The individual median scores for the number of errors detected during maintenance differed little from the self-managed proofreading condition. The individual median scores for the number of detected errors during maintenance ranged from a high of 9 errors detected to a low of 5 errors detected. Table 4.3 provides a summary of the median and range of high/low counts of errors detected by individual students for each of the experimental conditions.

**Assessment of Misidentified Errors**

Charts 1 through 7 (Appendix M) also display the misidentified error data for each student in the study. The number of mechanical errors the student misidentified in the 1-minute counting period during each condition of the study are indicated by an (x). For five out of seven students, the individual median scores for the number of misidentified errors in the 1-minute counting period (i.e., 0) remained the same throughout all conditions of the study. The individual scores of these five students ranged from a high of 2 errors misidentified to a low of 0 misidentified errors. For Winston, the median score for the number of misidentified errors in the 1-minute counting period (i.e., 1) was slightly higher during the no practice sheet condition than during the other conditions of the study. Otherwise, Winston's median score for the number of
Table 4.3

**Median and High-Low Range Counts of the Errors Detected for Each Student in Each Condition**

<table>
<thead>
<tr>
<th>Student</th>
<th>No Practice Sheet</th>
<th>Practice Sheet</th>
<th>Self-Managed Proofreading</th>
<th>Main.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>H/L Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ali</td>
<td>0</td>
<td>1/0 &amp; 0</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>3/0</td>
<td>9/2</td>
<td>9/8</td>
</tr>
<tr>
<td>Mark</td>
<td>0</td>
<td>1/0</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>9/5</td>
<td>9/8</td>
<td></td>
</tr>
<tr>
<td>James</td>
<td>2</td>
<td>3/0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>9/3</td>
<td>8/7</td>
<td></td>
</tr>
<tr>
<td>Jesse</td>
<td>3</td>
<td>5/0</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10/6</td>
<td>9/8</td>
<td></td>
</tr>
<tr>
<td>Tray</td>
<td>0</td>
<td>1/0</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9/5</td>
<td>7/7</td>
<td></td>
</tr>
<tr>
<td>Winston</td>
<td>1</td>
<td>2/0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8/5</td>
<td>6/6</td>
<td></td>
</tr>
<tr>
<td>Kent</td>
<td>0</td>
<td>2/0</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>6/2</td>
<td>5/5</td>
<td></td>
</tr>
</tbody>
</table>

**Notes.** a = the median of the count of errors detected by the student. b = the highest count of errors detected by the student. c = the lowest count of errors detected by the student.
misidentified errors (i.e., 0) remained constant during the other conditions of the study. His highest count for misidentified errors was 3; his lowest count for misidentified errors was 0. For Kent, the median score for the number of misidentified errors increased from two misidentified errors during the no practice sheet condition to the median score count of 3 misidentified errors in the practice sheet condition. The introduction of self-managed proofreading resulted in the median count of misidentified errors to decrease to a median count of 0 misidentified errors. Similar findings are shown during maintenance. Kent’s highest count for misidentified errors was 5; his lowest count for misidentified errors was 0. Table 4.4 provides a summary of the median and range of high/low counts of errors misidentified errors by individual students for each of the experimental conditions.

Assessment of Errors Corrected

Table 4.5 shows the count of the errors corrected data for each student in the study. The count of errors corrected corresponded to the count of errors detected for each student. During the no practice sheet condition, the individual median scores for the number of errors corrected in the 1-minute counting period by a student ranged from a high of 3 errors corrected to a low of 0 errors corrected. With the introduction of practice sheets, the individual median scores for the number of mechanical errors corrected in a 1-minute counting period again ranged from a high of three errors corrected to a low of 0 errors corrected. Following instruction in self-managed proofreading, all students showed improvement in the number of errors they were able to correct. Individual median scores for the number of errors corrected by a student ranged from a high of 9 errors corrected to a low of 6 errors corrected. The individual median scores for the number of errors corrected during maintenance differed little from the self-managed proofreading condition. The individual median scores for the number
Table 4.4

Median and High-Low Range Counts of Misidentified Errors for Each Student in Each Condition

<table>
<thead>
<tr>
<th>Student</th>
<th>No Practice Sheet</th>
<th>Practice Sheet</th>
<th>Self-Managed Proofreading</th>
<th>Main.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>Median 0&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 1&lt;sup&gt;b&lt;/sup&gt;/0&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2/0</td>
<td>0/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Mark</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 1/0</td>
<td>0/0</td>
<td>2/0</td>
<td>1/0</td>
</tr>
<tr>
<td>James</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 0/0</td>
<td>0/0</td>
<td>1/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Jesse</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 2/0</td>
<td>1/0</td>
<td>1/0</td>
<td>1/0</td>
</tr>
<tr>
<td>Tray</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 2/0</td>
<td>1/0</td>
<td>0/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Winston</td>
<td>Median 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 3/0</td>
<td>2/0</td>
<td>2/0</td>
<td>1/0</td>
</tr>
<tr>
<td>Kent</td>
<td>Median 2</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 3/1</td>
<td>5/2</td>
<td>0/0</td>
<td>0/0</td>
</tr>
</tbody>
</table>

Notes.  
<sup>a</sup> = the median of the count of misidentified errors by the student.  
<sup>b</sup> = the highest count of misidentified errors by the student.  
<sup>c</sup> = the lowest count of misidentified errors by the student.
Table 4.5

**Median and High-Low Range Counts of Errors Corrected for Each Student in Each Condition**

<table>
<thead>
<tr>
<th>Student</th>
<th>No Practice Sheet</th>
<th>Practice Sheet</th>
<th>Self-Managed Proofreading</th>
<th>Main.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>H/L Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ali</td>
<td>0*</td>
<td>1<em>0</em></td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>3/0</td>
<td>9/2</td>
<td></td>
<td>9/8</td>
</tr>
<tr>
<td>Mark</td>
<td>0</td>
<td>1/0</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>9/4</td>
<td>9/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>James</td>
<td>2</td>
<td>3/0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>9/3</td>
<td>8/7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jesse</td>
<td>3</td>
<td>5/0</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>10/6</td>
<td>9/7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tray</td>
<td>0</td>
<td>1/0</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>9/4</td>
<td>7/7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winston</td>
<td>1</td>
<td>2/0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>8/5</td>
<td>6/6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kent</td>
<td>0</td>
<td>2/0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6/2</td>
<td>5/5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes.** a = the median of the count of errors corrected by the student. b = the highest count of errors corrected by the student. c = the lowest count of errors corrected by the student.
of corrected errors during maintenance ranged from a high of 9 errors corrected to a low of 5 errors corrected.

Assessment of Failure to Correct Detected Errors

Table 4.6 displays the count of failure to correct detected errors for each student in the study. During all conditions, the individual median score for the number of failures to correct errors was 0 for all students; a high count of 1 or 0 failures to correct detected errors and a low count of 0 failures to correct detected errors were reported for all students.

Celerations of the Errors Detected

Celeration courses are indicated on the students' charts (Appendix M) to describe how rapidly students improved (i.e., the amount of learning) in the number of errors detected in each condition. During the no practice sheet condition, the celeration multiplied by 1.0 (i.e., no change in behavior) for all students. During the practice sheet condition, the celeration multiplied by 1.0 for all students except Tray. The celeration for Tray multiplied by 2.3. During the self-managed proofreading condition, the celeration multiplied by 1.2 for Mark, 1.9 for Jesse, 2.3 for James, Tray, and Winston, 2.6 for Ali, and 15.0 for Kent. During maintenance, the celeration multiplied by 1.0 for all students. Table 4.7 presents the celeration of the errors detected for each student in each of the conditions.

Jumps and Turns with Errors Detected and Misidentified Errors

Jumps and turns are used to describe performance and learning changes during varied instructional or experimental conditions (Eshleman, 1994). The appearance of a performance change (i.e., frequency jump) describes a jump up, jump down or no jump. A jump up occurs when the final data cluster of an existing phase is lower in
Table 4.6

**Median and High-Low Range Counts of Failure to Correct Detected Errors for Each Student in Each Condition**

<table>
<thead>
<tr>
<th>Student</th>
<th>No Practice Sheet</th>
<th>Practice Sheet</th>
<th>Self-Managed Proofreading</th>
<th>Main.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>Median 0^a</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 1^b/0^c</td>
<td>1/0</td>
<td>1/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Mark</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 1/0</td>
<td>0/0</td>
<td>1/0</td>
<td>0/0</td>
</tr>
<tr>
<td>James</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 0/0</td>
<td>0/0</td>
<td>0/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Jesse</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 1/0</td>
<td>1/0</td>
<td>1/0</td>
<td>1/0</td>
</tr>
<tr>
<td>Tray</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 1/0</td>
<td>0/0</td>
<td>1/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Winston</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 0/0</td>
<td>1/0</td>
<td>0/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Kent</td>
<td>Median 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>H/L Range 0/0</td>
<td>0/0</td>
<td>0/0</td>
<td>0/0</td>
</tr>
</tbody>
</table>

**Notes.**  
^a^ = the median of the count of failure to correct detected errors by the student.  
^b^ = the highest count of failure to correct detected errors by the student.  
^c^ = the lowest count of failure to correct detected errors by the student.
Table 4.7

Celerations of the Errors Detected for Each Student Across All Conditions

<table>
<thead>
<tr>
<th>Student</th>
<th>No Practice Sheet</th>
<th>Practice Sheet</th>
<th>Self-Managed Proofreading</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>x1.0</td>
<td>x1.0</td>
<td>x2.6</td>
<td>x1.0</td>
</tr>
<tr>
<td>Mark</td>
<td>x1.0</td>
<td>x1.0</td>
<td>x1.2</td>
<td>x1.0</td>
</tr>
<tr>
<td>James</td>
<td>x1.0</td>
<td>x1.0</td>
<td>x2.3</td>
<td>x1.0</td>
</tr>
<tr>
<td>Jesse</td>
<td>x1.0</td>
<td>x1.0</td>
<td>x1.9</td>
<td>x1.0</td>
</tr>
<tr>
<td>Tray</td>
<td>x1.0</td>
<td>x2.3</td>
<td>x2.3</td>
<td>x1.0</td>
</tr>
<tr>
<td>Winston</td>
<td>x1.0</td>
<td>x1.0</td>
<td>x2.3</td>
<td>x1.0</td>
</tr>
<tr>
<td>Kent</td>
<td>x1.0</td>
<td>x1.0</td>
<td>x15.0</td>
<td>x1.0</td>
</tr>
</tbody>
</table>
frequency than the beginning data points in the following phase, a jump down is the reverse of a jump up, and a no jump is evident when the final data cluster of an existing phase is close to the same frequency as the beginning data points of the following phase. Turn up, turn down, and no turn describes changes of a celeration course. A frequency acceleration is a turn up, deceleration a turn down, and the continuation of the celeration a no turn in celeration as compared to a celeration course of an existing phase.

Charts 1 through 7 (Appendix M) show two students jumped up in count of errors detected when experimental conditions changed from no practice sheet to practice sheet. A no turn celeration pattern emerged for Winston's count of errors detected; a turn up celeration pattern developed for Tray's count of errors detected. The remaining five students produced a no jump and no turn celeration pattern in the count of errors detected as compared in the no practice sheet condition to the practice sheet condition.

All students jumped up in counts of errors detected when experimental conditions changed from practice sheet to self-managed proofreading. Six out of the seven students' celeration courses turned up; Tray's celeration course produced a no turn celeration.

In terms of the count of misidentified errors, five out of the seven students produced no jump and no turn patterns across all changes in experimental conditions. Two of the students, however, had changes in performance and learning in the count of misidentified errors. Winston produced a jump down and Kent produced a jump up pattern in count of misidentified errors when experimental conditions changed from the no practice sheet condition to practice sheet condition. During the change from practice sheet to self-managed proofreading, Winston's count of misidentified errors remained...
the same (showing a no jump pattern) while Kent's count of misidentified errors produced a jump down pattern.

**Maintenance**

Given identical instructions as those described under the no practice sheet condition, all seven students continued to use self-managed proofreading to detect and correct mechanical errors in the experimenter-prepared writing samples after all intervention procedures had been terminated.

**Type of Errors Detected by Students**

The types of mechanical errors students detected were recorded as capitalization, punctuation, and/or spelling errors for each condition of the study and the results are presented in Table 4.8 as the percentage of each error type detected.

**Ali.** During the no practice sheet condition, Ali detected 0% of the capitalization errors, 5% of the punctuation errors, and 0% of the spelling errors. During the practice sheet condition, Ali detected 3% of the capitalization errors, 3% of the punctuation errors, and 2% of the spelling errors. During the self-managed proofreading condition, Ali detected 30% of the capitalization errors, 34% of the punctuation errors, and 3% of the spelling errors. During maintenance, Ali detected 35% of the capitalization errors, 50% of the punctuation errors, and 0% of the spelling errors.

**Mark.** During the no practice sheet condition, Mark detected 0% of the capitalization errors, 1% of the punctuation errors, and 0% of the spelling errors. During the practice sheet condition, Mark detected 5% of the capitalization errors, 0% of the punctuation errors, and 0% of the spelling errors. During the self-managed proofreading condition, Mark detected 31% of the capitalization errors, 37% of the punctuation errors, and 1% of the spelling errors. During maintenance, Mark detected 37% of the capitalization errors, 43% of the punctuation errors, and 0% of the spelling errors.
Table 4.8

Percentage of Capitalization, Punctuation and Spelling Errors Detected for Each Student

<table>
<thead>
<tr>
<th>Mechanical Errors Detected</th>
<th>No Practice Sheet</th>
<th>Practice Sheet</th>
<th>Self-Managed Proofreading</th>
<th>Maint.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capitalization</td>
<td>0*</td>
<td>3</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Punctuation</td>
<td>5</td>
<td>3</td>
<td>34</td>
<td>50</td>
</tr>
<tr>
<td>Spelling</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Mark</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capitalization</td>
<td>0</td>
<td>5</td>
<td>31</td>
<td>37</td>
</tr>
<tr>
<td>Punctuation</td>
<td>1</td>
<td>0</td>
<td>37</td>
<td>43</td>
</tr>
<tr>
<td>Spelling</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>James</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capitalization</td>
<td>7</td>
<td>3</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Punctuation</td>
<td>7</td>
<td>1</td>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>Spelling</td>
<td>3</td>
<td>13</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Jesse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capitalization</td>
<td>20</td>
<td>17</td>
<td>41</td>
<td>30</td>
</tr>
<tr>
<td>Punctuation</td>
<td>4</td>
<td>5</td>
<td>38</td>
<td>43</td>
</tr>
<tr>
<td>Spelling</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Tray</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capitalization</td>
<td>3</td>
<td>20</td>
<td>31</td>
<td>23</td>
</tr>
<tr>
<td>Punctuation</td>
<td>0</td>
<td>5</td>
<td>42</td>
<td>43</td>
</tr>
<tr>
<td>Spelling</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
(Table 4.8 continued)

<table>
<thead>
<tr>
<th>Mechanical Errors Detected</th>
<th>No Practice Sheet</th>
<th>Practice Sheet</th>
<th>Self-Managed Proofreading</th>
<th>Maint.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Winston</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capitalization</td>
<td>2</td>
<td>9</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>Punctuation</td>
<td>4</td>
<td>9</td>
<td>39</td>
<td>37</td>
</tr>
<tr>
<td>Spelling</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Kent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capitalization</td>
<td>6</td>
<td>1</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Punctuation</td>
<td>0</td>
<td>1</td>
<td>31</td>
<td>30</td>
</tr>
<tr>
<td>Spelling</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes. \( a \) = the percentage of errors detected for the given type of error by the student in the given condition.
**James.** During the no practice sheet condition, James detected 7% of the capitalization errors, 7% of the punctuation errors, and 3% of the spelling errors. During the practice sheet condition, James detected 3% of the capitalization errors, 1% of the punctuation errors, and 13% of the spelling errors. During the self-managed proofreading condition, James detected 20% of the capitalization errors, 40% of the punctuation errors, and 9% of the spelling errors. During maintenance, James detected 20% of the capitalization errors, 37% of the punctuation errors, and 17% of the spelling errors.

**Jesse.** During the no practice sheet condition, Jesse detected 20% of the capitalization errors, 4% of the punctuation errors, and 1% of the spelling errors. During the practice sheet condition, Jesse detected 17% of the capitalization errors, 5% of the punctuation errors, and 5% of the spelling errors. During the self-managed proofreading condition, Jesse detected 41% of the capitalization errors, 38% of the punctuation errors, and 6% of the spelling errors. During maintenance, Jesse detected 30% of the capitalization errors, 43% of the punctuation errors, and 13% of the spelling errors.

**Tray.** During the no practice sheet condition, Tray detected 3% of the capitalization errors, 0% of the punctuation errors, and 1% of the spelling errors. During the practice sheet condition, Tray detected 20% of the capitalization errors, 5% of the punctuation errors, and 0% of the spelling errors. During the self-managed proofreading condition, Tray detected 31% of the capitalization errors, 42% of the punctuation errors, and 1% of the spelling errors. During maintenance, Tray detected 23% of the capitalization errors, 43% of the punctuation errors, and 3% of the spelling errors.

**Winston.** During the no practice sheet condition, Winston detected 2% of the capitalization errors, 4% of the punctuation errors, and 0% of the spelling errors.
During the practice sheet condition, Winston detected 9% of the capitalization errors, 9% of the punctuation errors, and 0% of the spelling errors. During the self-managed proofreading condition, Winston detected 26% of the capitalization errors, 39% of the punctuation errors, and 0% of the spelling errors. During maintenance, Winston detected 23% of the capitalization errors, 37% of the punctuation errors, and 0% of the spelling errors.

Kent. During the no practice sheet condition, Kent detected 6% of the capitalization errors, 0% of the punctuation errors, and 0% of the spelling errors. During the practice sheet condition, Kent detected 1% of the capitalization errors, 1% of the punctuation errors, and 0% of the spelling errors. During the self-managed proofreading condition, Kent detected 19% of the capitalization errors, 31% of the punctuation errors, and 0% of the spelling errors. During maintenance, Kent detected 20% of the capitalization errors, 30% of the punctuation errors, and 0% of the spelling errors.

Results of Student and Teacher Exit Interview

At the conclusion of the study, a questionnaire was administered to the teacher and all seven participants. The students and teacher responses to the five open-ended questions and two Likert-like questions on the questionnaire are presented in Table 4.9.
Table 4.9

Responses to Student and Teacher Questionnaire

Responses to the five open-ended questions

1. What did you like best about this study?

<table>
<thead>
<tr>
<th>Name</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>I liked the practice sheet.</td>
</tr>
<tr>
<td>Mark</td>
<td>I liked the CPS.</td>
</tr>
<tr>
<td>James</td>
<td>It was easy. I could find easy capitalizations or CPS. It didn’t take too much time from my classwork. I liked the one minute timing.</td>
</tr>
<tr>
<td>Jesse</td>
<td>I liked the practice sheets. I liked it because it taught me stuff I didn’t know.</td>
</tr>
<tr>
<td>Tray</td>
<td>It helped me with where periods go.</td>
</tr>
<tr>
<td>Winston</td>
<td>We get treats. I liked working with Mr. Seevers.</td>
</tr>
<tr>
<td>Kent</td>
<td>I liked doing CPS. I liked the worksheet.</td>
</tr>
<tr>
<td>Teacher</td>
<td>The students got personal attention. It didn’t interfere with classroom activities.</td>
</tr>
</tbody>
</table>

2. What did you like least about this study?

<table>
<thead>
<tr>
<th>Name</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>I did not like writing CPS - it took too long.</td>
</tr>
<tr>
<td>Mark</td>
<td>I liked everything.</td>
</tr>
<tr>
<td>James</td>
<td>Sometimes it was too short.</td>
</tr>
<tr>
<td>Jesse</td>
<td>I didn’t like to write CPS because it takes too long.</td>
</tr>
<tr>
<td>Tray</td>
<td>I didn’t like practice sheets or CPS.</td>
</tr>
</tbody>
</table>
Responses to the five open-ended questions

3. If you could change any part of this study, what would you change?

Ali    I would not do CPS.
Mark   I would like longer time every time.
James  There would be only one minute timings.
Jesse  I would change the CPS - I would like to have longer time each session.
Tray   Make tests two minutes.
Winston We would have more time on the paper - like two minutes.
Kent   Don’t do one minute timing - make it longer.
Teacher More feedback to the teacher on progress or lack of ...See practice sheets, etc.

4. How would you do this study differently?

Ali    ----
Mark   I can’t think of anything.
James  I would work harder.
Jesse  I would write C or P or S above each correction.
Tray   Use a different color pen.
Winston Not do the practice sheets.
Responses to the five open-ended questions

<table>
<thead>
<tr>
<th>Kent</th>
<th>Make it harder.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>----</td>
</tr>
</tbody>
</table>

5. Please describe any part of the study you found helpful.

<table>
<thead>
<tr>
<th>Ali</th>
<th>----</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark</td>
<td>The CPS was helpful. The practice sheet helped. I think I am better at punctuation and capitalization.</td>
</tr>
<tr>
<td>James</td>
<td>I am a great speller. I'm great at capitalization. It helped me a little because I sometimes make mistakes and now I make less mistakes.</td>
</tr>
<tr>
<td>Jesse</td>
<td>It helped me a lot. I did not know how to use punctuation marks. It helped with spelling.</td>
</tr>
<tr>
<td>Tray</td>
<td>It helped me to know when to use a period or a question mark.</td>
</tr>
<tr>
<td>Winston</td>
<td>I think I am better at using periods and capital letters.</td>
</tr>
<tr>
<td>Kent</td>
<td>CPS helped me because it helps me put a period where its supposed to be.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Making students more aware of punctuation.</td>
</tr>
</tbody>
</table>
Responses to the two Likert-like questions

1. I would participate in this study again.
   - Ali: Definitely not.
   - Mark: Very much.
   - James: Very much.
   - Jesse: Very much.
   - Tray: I’d think hard about it.
   - Wesley: I’d think hard about it.
   - Kenny: Very much.
   - Teacher: Very much.

2. I learned something useful from my participation in this study.
   - Mark: Very much.
   - James: Very much.
   - Jesse: Very much.
   - Tray: Very much.
   - Wesley: Yes, I did.
   - Kenny: Yes, I did.
   - Teacher: ---
CHAPTER V
DISCUSSION

This chapter presents a discussion of the results of a study that investigated the effects of self-managed proofreading as an instructional method to improve detection and correction of mechanical errors (i.e., capitalization, punctuation, and spelling errors) by students with learning disabilities. Specifically, the study focused on how to increase the number of mechanical errors students with learning disabilities detect and correct on experimenter prepared writing samples. Individual performances on errors detected and corrected during a no practice sheet condition, a practice sheet condition, and self-managed proofreading condition are analyzed relative to the seven research questions posed in Chapter I. Also addressed are limitations of the study, implications for practical application, and suggestions for additional research.

Research Question One

What effect will practice sheets have on students detecting mechanical errors on experimenter prepared writing samples? An examination of the no practice sheet and practice sheet data for the students indicates that providing students practice sheets did not appear to make a difference for six of the seven students in the number of mechanical errors they were able to detect in a minute. For these six students, the median count of errors detected showed little variability as compared between the two experimental conditions. Further evidence that the introduction of practice sheets did not improve students’ performances was indicated by the celeration lines for each of these six students. A x1.0 celeration was reported for each of these six student, indicating no
changes in learning. Although there was a slight jump up for Mark and Winston in the number of errors detected between the two conditions, it was not seen as an important difference, and there was no turn-up in celeration. For Tray, however, there was a change in learning. An examination of the data shows Tray exceeded his median score of the number of errors detected in one minute by 3. Further, a x2.3 celeration was produced, indicating Tray did indeed more than double his learning, before reaching a plateau. It is not clear, however, what produced this change since there was no opportunity for verification (i.e., practice sheets were introduced to all students except Ali at the same time, thus the practice sheet condition served as a baseline condition).

Although the preliminary findings from this study do not support the use of practice sheet as an effective way to teach students with learning disabilities how to detect mechanical errors, it identifies the need to improve current practices. These findings suggest it is simply not enough to provide students with practice sheets. Their performances clearly reflect a need for change. Thus, designing and implementing more appropriate and effective interventions for students with learning disabilities should become a focus for further investigations. That is, instruction for students with learning disabilities needs to explore and develop other interventions that will have a positive impact on their academic performances.

Research Question Two

What effect will practice sheets have on students' error correction on experimenter-prepared writing samples? In general, the number of errors students corrected during the practice sheet condition did not vary from the no practice sheet condition. That is, the median count of error corrections for six out of seven students during the no practice sheet condition was similar to their median count of error corrections during the practice sheet condition. In addition, six of the seven students showed celerations of x1.0 for both conditions of the study, indicating no improvement.
For Mark and Winston, the median count of errors corrected did jump up slightly between the two conditions, but it was not an important difference, and there was no turn-up in celeration. It was observed for Tray however, that there was a celeration of x2.3 indicating a positive change in learning. Furthermore, his median number of errors corrected increased from 0 during the no practice sheet condition to 3 during the practice sheet condition. Because there was no opportunity for verification, however, these data are merely suggestive and do not demonstrate a functional relationship.

**Research Question Three**

What effect will self-managed proofreading have on students detecting mechanical errors on experimenter-prepared writing samples? The results of this study suggest a functional relationship between self-managed proofreading and improvement in the count of errors students detect. For all seven students, the median count of errors detected were substantially higher during the self-managed proofreading condition. Initial celerations from a low of x1.2 to a high of x15.0 were obtained before student performances leveled out. These data clearly indicate that instruction in self-managed proofreading improved the count of error detections by students with a learning disability. The overall effectiveness of self-managed proofreading lends support to research suggesting that metacognitive strategies employing a self-management component (Danoff, Harris, & Graham, 1993; MacArthur, Schwartz, & Graham, 1991) are effective improving the academic behaviors of students with learning disabilities. The results support other studies demonstrating self-instruction and providing extra prompts may help students with learning disabilities focus attention on what has to be accomplished (Graham, Harris & Reid, 1992; Schunk, 1985), that is, writing CPS at the top of the paper and after each sentence serves as a reminder of what the student is to do. Furthermore, self-managed proofreading provides students guided practice and requires students to apply known rules, explaining in part, perhaps, the overall
effectiveness of the instruction. As Carnine, Kameenui, and Maggs (1982) point out, simply requiring students to repeat a rule does not guarantee that the students will actually apply it.

Results from the present study also reveal a low number of incorrect responses (i.e., opportunities for students to misidentify an error) for the majority of students. Indeed, the count of misidentified errors rarely exceeded 1 or 2 for all students except Winston and Kent across all conditions. For Winston, the count of misidentified errors exceeded three during the no practice sheet condition but decreased in subsequent conditions. For Kent, however, the count of misidentified errors (i.e., the highest count 5) was an influential variable during the no practice sheet and practice sheet conditions of the study. The number of misidentified errors significantly decreased (i.e., the highest count 0) with the introduction of self-managed proofreading.

**Research Question Four**

**What effect will self-managed proofreading have on students' error correction on experimenter-prepared writing samples?** The collection of data on student performances suggest a functional relationship between self-managed proofreading and the count of error corrections. Marked improvements in the median count of errors corrected by students with learning disabilities and improvements in celeration were shown for each of the seven students in the study. Such findings are consistent with earlier studies (Reynolds, Hill, Swassing, & Ward, 1988; Shannon & Polloway, 1993) that describe some monitoring procedures as effective strategies to revise and correct writing mistakes. An interesting outcome of this study was the low number of incorrect responses (i.e., opportunities for students to fail to correct detected errors). In fact, the highest count for failure to correct a detected error (i.e., incorrect response) was no more than 1 for all students across all conditions.
Research Question Five

What effect will self-managed proofreading have on students maintaining proofreading skills on experimenter-prepared writing samples after instruction has been terminated? The data from this study are inconclusive in regards to the effect of self-managed proofreading and students maintaining proofreading skills. There was not sufficient time in the study to collect more than three days of data during the maintenance condition, thus there was not enough data to make a projection on the effects of self-managed proofreading and students maintaining proofreading skills. All participants, however, continued to use self-managed proofreading to detect and correct mechanical errors in the experimenter-prepared writing samples after all intervention procedures had been terminated.

Research Question Six

Will the type of mechanical errors detected by students with learning disabilities on experimenter-prepared writing samples change over the course of the study? Actual changes in the type of errors detected over the course of the study were assessed by analyzing the percentage of each error type detected in each condition. The types of error with the highest percentage of detection for each condition were then compared to one another. Results reveal there were changes across conditions for four of the seven students in the type of errors detected, that is, no patterns emerged. Two students consistently detected a higher than or equal to percentage of punctuation errors across all three conditions, while one student detected a higher percentage of capitalization errors across all three conditions.

Research Question Seven

What will students and the teacher regard as useful and effective in terms of self-managed proofreading helping students become better writers mechanically?
Results of the student and teacher exit interview indicate students had mixed reactions in regards to self-managed proofreading. Four out of seven students and the teacher responded favorably to the study and said they would participate again, two of the students said they would have to think hard about it, and one student said he would definitely not do it again. One possible explanation why three of the students said they would think hard about doing the study again or definitely not do it again is that toward the end of the school year, they lost interest in doing academic work of any kind. Six out of the seven students claimed to learn something useful from their participation in the study, while one student indicated he wasn’t sure if he learned anything. The teacher indicated that students did become more aware of punctuation. Suggestions from the students and teacher on how to improve the study varied. Several students recommended longer time to proofread the experimenter-prepared writing sample. The teacher specifically requested more feedback on student performances (e.g., see practice sheets, student charts).

Limitations

Several limitations of this study need to be addressed: participant characteristics, the setting, length of study, instructional materials, generality procedures, maintenance probes, and accuracy of measurement collection.

Participant Characteristics

The participants in this study were seven male students with specific learning disabilities. Two of the students were African-American and the other five were Caucasian; two of the students were fourth graders and the other five were fifth graders. All of the students received part of their instruction in a resource room designed to meet their individual needs in a large urban elementary school. It is not known to what extent the generality of effects of the error detection and error correction results would be
across students of different ages and skill level, of different gender, of different races, and of different socioeconomic levels.

**Setting**

Students were taken out of their resource or regular classes to work individually with the experimenter in a separate area of the school in one of two rooms. To what extent the academic environment and the occasional special events (e.g., field trip, school assembly, classroom party) influenced the outcomes is unknown.

**Length of Study**

The study was conducted over a course of 9 weeks (40 sessions). Consequently, there was not enough time available to collect extended maintenance data. Further, a more stringent evaluation of self-managed proofreading may be strengthened by implementing the study at the beginning or middle of a school year, rather than toward the end of one.

**Instructional Materials**

The writing samples used were selected from supplemental materials and may have some grade level variability. It cannot be assumed that similar results would result if the students used different materials. Since error detection and error correction only required the students to identify three kinds of errors, what students were reacting to is not exactly certain. Moreover, all the writing samples were neatly typed. Further research is needed to determine whether the outcomes of this experiment has generality with other instructional materials and with student generated passages.

**Generality Procedures**

During the course of the study, the classroom teacher made every attempt to collect writing samples from each student two times a week. However, other classroom demands, special events, and time constraints did not always permit the teacher to follow through on collecting the weekly writing samples for each student. In addition,
the teacher did not follow a standard procedure when instructing students to proofread their papers. Sometimes students were given the assignment as part of their seatwork, other times it was done one-on-one with the teacher. For the most part, students were given as much time as they wanted in class to proofread their own completed stories for mechanical errors, therefore no record of frequency counts were obtainable.

**Maintenance Probes**

Only two days of maintenance data for Ali and Kent and three days of maintenance data for each of the other students were collected in the study. The limited number of days with maintenance data made it difficult to draw any meaningful conclusions in regards to maintenance of skills over any extended period of time.

**Accuracy of Measurement Collection**

Interobserver agreement measures and accuracy of measurement report different quality of data (Cooper, 1987). Although the interobserver agreement data obtained from this study were high (i.e., believability of the data), they do not ensure the accuracy of the data (i.e., the validity). Since accuracy of measurement data for this study were only collected for each discrepancy on the scored products as marked by the experimenter and observer, no further statements can be made regarding the accuracy of the data.

**Implications for Classroom Practice**

Graham, Harris, MacArthur, and Schwartz (1991) have taught students with learning disabilities how self-regulation procedures (i.e., self-instruction, goal setting, self-monitoring, self-consequation) can help them better focus on skills they are acquiring. Further research by Graham, Harris, and Reid (1992) demonstrate the effectiveness of using self-instruction when teaching writing strategies. Self-instruction coupled with other self-management and metacognitive procedures contribute to students' learning and guide them on how to apply other academic strategies. The
present results tentatively support the use of self-management strategies and extend the use of self-managed proofreading as effective instruction for detection and correction of mechanical writing errors. This user-friendly method of self-managed proofreading does not only appear to be effective and produce good results but is easy to implement. Moreover, it is easily explained and requires no training.

Further, students with learning disabilities benefit less than their peers when teachers use typical instructional approaches (Van Houten & Van Houten, 1991). Self-managed proofreading provides an alternative strategy for adapting to the needs of particular individuals. In addition, where typical approaches fail, the use of prompts and other aids may set the stage for students to achieve success and obtain new skills. Students using self-managed proofreading are then more likely to acquire control over their own academic responding once they have experienced success.

Suggestions for Future Research

At present, there exists two studies on the effectiveness of strategy training and self-management to teach students with learning disabilities how to proofread for the mechanical errors in written material. This section discusses some recommendations for future areas of research based on the results of the current study.

The results of this study indicate further research is needed in several areas. First, systematic replications using the dependent variables of this study are needed to establish how self-managed proofreading generalizes to other students. All the participants in the study were male and in either fourth or fifth grades. Replication of the study with a younger or an older student population, and perhaps mixed genders, could provide an interesting comparison with this study. In addition, future research needs to be conducted with students of different achievement ability (e.g., students who perform at grade level, students with mental retardation), socioeconomic status, and
different handicapping conditions (e.g., students with emotional disturbance, students with visual impairments).

Movement toward integrating students with special problems into regular education classrooms has created a major trend toward classroom-based intervention (Gerber, 1993). The effects of self-managed proofreading on error detection and error correction were evaluated in a setting that was not like the environment in which the students received their primary instruction. Particularly useful would be effective strategies that could generalize to other settings, thus, the need for this study to be replicated in other environments is warranted. The question of whether self-managed proofreading is indeed effective in general education or resource environments is an intriguing one and continued examination of how self-managed proofreading can be applied to varied settings will be needed. In addition, all the students in this study received individually administered instructions. Investigations of group administered instructions, typical of general education classrooms, may provide additional insight on the effectiveness of self-managed proofreading.

One major criticism of intervention studies is that the intervention package often involves multiple components or steps (Wong, 1985). Indeed, it is sometimes difficult to determine which component is necessary for a positive outcome. A third area of future research then, should explore which steps in the procedures are required to maintain the relative effectiveness of self-managed proofreading without jeopardizing the results of effective instruction. Although the main objective of this study was to construct an effective intervention plan to help students with learning disabilities acquire the necessary proofreading skills, more efficient ways may develop as a result of component analyses.

Fourth, the dependent variables primarily addressed may not be the only behaviors of concern. Future research should investigate the effectiveness of self-
managed proofreading with other aspects of capitalization and punctuation errors, such as capitalizing titles of books, using commas in a series, and using quotation marks in dialogue. Further, although the study showed that self-managed proofreading instruction improved the count of those mechanical errors identified, we do not know the kinds of results that would emerge if only one type of mechanical error was used as the dependent variable.

Fifth, research is needed to examine the effects of using experimenter-generated writing samples and student-generated passages. The students detected and corrected errors using only experimenter-prepared writing samples. Attention should be given to the question of whether self-managed proofreading is effective on student-generated assignments. Of considerable interest would be the effect of self-managed proofreading and the transfer to other types of writing assignments (e.g., journals, science logs, personal correspondence).

Sixth, one of the basic elements of precision teaching is selecting aims or performance goals. Numerous studies indicate setting performance goals on various skills may facilitate maintenance and promote higher performance frequencies (Koorland, Keel, & Ueberhorst, 1990). It is not known from this study what performance frequencies could be achieved if students were to set aims. Further investigations need to explore appropriate aims on detecting and correcting errors and extend the relationship of these performance rates to eventual generalization and subsequent skill development.

Finally, other areas of research that warrant further exploration because of the potential impact for improving error detection and error correction of students with specific learning disabilities include public posting of daily performance scores, self-charting, and various error correction procedures.
Summary

During the past decade (1986 to 1996), much discussion and debate have occurred concerning the need to improve literacy skills. Teaching students who can both read and write is now seen to be essential to an individual's ability to function with any degree of effectiveness in a technological society (Bramley, 1991). As our nation has become more conscious of the need for individuals who can compose, organize, and process information, many school districts are appropriately focusing attention on writing instruction. Yet, there is little research in the area of remediation of writing skills for students with learning disabilities. The use of self-management and metacognitive strategies have shown great promise in improving a wide array of student performances of many students with learning disabilities (Billingsley & Wildman, 1988; Graham, Harris, & Reid, 1992; Hallahan & Saponà, 1983). The present study investigated the effects of self-managed proofreading on the detection and correction of capitalization, punctuation, and spelling errors by students with learning disabilities.

Seven students with specific learning disabilities participated in the study. Data from experimenter-prepared writing samples on the count of errors detected, the count of errors corrected, the count of failure to correct detected errors, and the count of misidentified errors were collected for each student during a no practice sheet condition, a practice sheet condition, a self-managed proofreading condition, and maintenance. A standard set of procedures was used in each of the conditions. During the no practice sheet condition, the experimenter set a timer for 1 minute, instructed the students to proofread the experimenter-prepared writing sample for mechanical errors, requested the students to correct those errors detected in the 1-minute counting period, and commented on the number of correct errors detected and corrected. Similar procedures were used during the practice sheet condition with one additional step. During this condition, students were provided instruction on how to proofread for mechanical errors using a
practice sheet. The experimenter modeled how to proofread a passage, gave students the opportunity to practice, and provided feedback to the students on their counts of errors detected and corrected on the practice sheet. Likewise, during the self-managed proofreading condition, the experimenter modeled how to proofread a passage, but wrote CPS at the top of the paper and after each sentence. All other steps were identical as described in the no practice sheet and practice sheet conditions.

The results of the study indicate that these seven students with specific learning disabilities were able to increase the count of errors detected and the count of errors corrected on experimenter-prepared writing samples through self-managed proofreading. The medians, celerations, and performance changes suggest that a functional relationship among the count of errors detected and the count of errors corrected and self-managed proofreading instruction occurred for all students. These findings support two similar studies that found the use of self-management and metacognitive strategies as a beneficial approach for students with learning disabilities to edit for mechanical errors in written products (Polloway & Shannon, 1993; Reynolds, Hill, Swassing, & Ward, 1988). The information derived from the study provides a foundation for addressing future research in proofreading skills for students with specific learning disabilities.
LIST OF REFERENCES


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APPENDIX A

ORAL SCRIPTS TO PRINCIPAL, TEACHER, PARENTS, AND STUDENTS
SCRIPT TO PRINCIPAL

My name is Randy Seevers. I'm a third year doctoral student at Ohio State. I would like to do a study at your school investigating how we might help students enhance their writing skills. I understand that you may have some children that might benefit from some additional instruction in the mechanics of writing, that is, in capitalization, punctuation, and spelling. I'm wondering if you think one of your teachers and some of the students in her class would be interested in participating in such a study. If so I would instruct students on the mechanical aspects of writing every morning for about 30 minutes beginning at the end of this month and continuing to the end of the school year. I will provide instruction and daily practice on proofreading for capitalization, punctuation, and spelling errors and provide time for the student to work on correcting errors found in writing samples. I will be communicating closely with the teacher and sharing the student's accomplishments throughout the entire study. The student's participation in this study is completely voluntary and his consent can be withdrawn at anytime without penalty. Please be assured that all information will be kept confidential if the student chooses to participate. His name will not appear in any oral or written reports. If you think this is something that some of your students would be interested in, I'll go ahead and make arrangements to talk to the teacher, parents and students. I'll also get permission slips ready to send home too. Thanks for taking time out of your busy day to talk with me this afternoon. I look forward to seeing you soon.
SCRIPT TO TEACHER

My name is Randy Seevers. I'm a third year doctoral student at Ohio State. I will be doing a study at your school looking at how we might help students enhance their writing skills. I understand that you may have some children that might benefit from some additional instruction in the mechanics of writing, that is, in capitalization, punctuation, and spelling. I'm wondering if you think you have any students in your class that would be interested in participating in such a study. If so I would instruct students on the mechanical aspects of writing every morning for about 30 minutes beginning at the end of this month and continuing to the end of the school year. I will provide instruction and daily practice on proofreading for capitalization, punctuation, and spelling errors and provide time for the student to work on correcting errors found in writing samples. I will be communicating closely with you and sharing his accomplishments throughout the entire study. Your student's participation in this study is completely voluntary and his consent can be withdrawn at anytime without penalty. Please be assured that all information will be kept confidential if the student chooses to participate. His name will not appear in any oral or written reports. If you think this is something that some of your students would be interested in, I'll go ahead and make arrangements to talk to the students and their parents. I'll also get permission slips ready to send home. Thanks for taking time out of your busy day to talk with me this afternoon. I look forward to seeing you and your students again.
SCRIPT TO PARENT

My name is Randy Seevers. I'm a third year doctoral student at Ohio State. I will be doing a study at your child's school looking at how we might help students enhance their writing skills. Your child's classroom teacher indicated that your child might benefit from some additional instruction in the mechanics of writing, that is, in capitalization, punctuation, and spelling. I'm calling to find out if you think your child would be interested in participating in such a study. If so I would begin instructing your child on the mechanical aspects of writing every morning for about 30 minutes beginning at the end of this month and continuing to the end of the school year. I will provide instruction and daily practice on proofreading for capitalization, punctuation, and spelling errors and provide time for your child to work on correcting errors found in writing samples. I will be communicating closely with your child's classroom teacher and sharing your child's accomplishments throughout the entire study. Your child's participation in this study is completely voluntary and your consent can be withdrawn at anytime without penalty. Please be assured that all information will be kept confidential if you choose to allow your child to participate. Your child's name will not appear in any oral or written reports. If you think this is something that you and your child would be interested in, I'll go ahead and send the permission slip home with your child today. Please read it carefully, and if you are in agreement, sign the form and return it back to your child's teacher at your earliest convenience. Thanks for taking time out of your busy day to talk with me this afternoon. I look forward to working with you and your child.

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SCRIPT TO STUDENT

My name is Randy Seevers. I’m a student at Ohio State. I will be doing a study at your school looking at how I might help students learn writing skills. Your teacher indicated that you might like some extra help in capitalization, punctuation, and spelling. I’m interested in finding out from you if this is something you might like to do. If so I would teach you every morning for about 30 minutes beginning at the end of this month and continuing to the end of the school year. I will provide instruction and daily practice on proofreading for capitalization, punctuation, and spelling errors and provide time for you to work on correcting errors that you find in writing samples. I will be talking with your teacher and sharing your accomplishments throughout the entire study. Your participation in this study is completely voluntary and you can withdraw from the study at anytime without penalty. Please be assured that all information will be kept confidential if you choose to participate. If you think this is something that you would be interested in, talk to your parent about it and I’ll go ahead and send the permission slip home with you today. Please read it carefully, and if you are in agreement, sign the form. You’ll also need to have your parent sign it and then return it at your earliest convenience. Thanks for talking with me today. I look forward to working with you.
APPENDIX B

LETTER TO PARENT
February 15, 1995

Dear Parent:

Learning to write is important to all students. Many students, however, experience difficulty with the mechanical aspects of writing, such as capitalization, punctuation, and spelling. One of our goals as educators is to extend our knowledge base and remain abreast of new methods and technologies. As such, we will be conducting a study that will look at how we might help students enhance their writing skills at your child's school. Your child's teacher feels that your child could benefit from our study.

Before we begin the study, Randy Seevers, a third year doctoral student at The Ohio State University in the Department of Educational Services and Research, will conduct an informal assessment to ensure that your child does need additional assistance.

During the study, Mr. Seevers will instruct your child on the mechanical aspects of writing every morning for about 30 minutes, starting in February, 1996 and tentatively completing the study by the end of May, 1996. Mr. Seevers will provide instruction and practice daily on proofreading for capitalization, punctuation, and spelling errors and provide time for your child to work on correcting errors found in writing samples.

We will communicate closely with your child's classroom teacher, and share your child's accomplishment throughout the entire study.
We are requesting your permission to include your child in this study. Your child’s participation in this study is completely voluntary and your consent can be withdrawn at anytime without penalty. Please be assured that all information will be kept confidential if you choose to allow your child to participate. Your child’s name will not appear in any oral or written reports.

If you give permission for your child to be participate in this study, please sign the parental consent form attached to this letter and return it to your child’s teacher. If you have any questions regarding this study, please feel free to call me at (614) 292-3270 or Mr. Seevers at (614) 487-8149. Thank you for your prompt attention to this request.

We appreciate the opportunity to work with you and your child.

Sincerely,

John O. Cooper  Randy L. Seevers
Faculty Advisor  Researcher
Department of Educational  ED S&R
Services and Research (ED S&R)  ED S&R
APPENDIX C

PARENT/GUARDIAN CONSENT FORM
I consent to participating in (or my child’s participation in) research entitled:

**Effects of Self-managed Proofreading for Detecting Mechanical Errors and Correcting Errors by Students with a Learning Disability**

---

Dr. John O. Cooper or his/her authorized representative has explained the purpose of the study, the procedures to be followed, and the expected duration of my (my child’s) participation. Possible benefits of the study have been described as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me (my child).

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: ___________________________ Signed: ___________________________

Signed: ___________________________ Signed: ___________________________

(Principal Investigator or His/Her Authorized Representative) (Person Authorized to Consent for Participant - if required)

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APPENDIX D

ASSESSMENT RECORDING FORM
### ASSESSMENT RECORDING FORM

Student's Name: _________________________  Date:_____/_____/_____

### I. ORAL READING (COMFORTABLE READING LEVEL)

<table>
<thead>
<tr>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
</tr>
</thead>
</table>

### II. CAPITALIZATION

- **Capitilizes Beginning of Sentences**  
- **Names of People**  
- **Days of the Week**  
- **Months of the Year**  
- **Special Days**  
- **Names of Streets**  
- **Names of Cities**  
- **Names of States**  
- **Titles of People**

### III. PUNCTUATION

- **Periods at the end of a sentence**  
- **A period after abbreviations**  
- **A period after an initial**  
- **Question marks after a question**  
- **Commas between date and year**  
- **Commas between city and state**

### IV. SPELLING LEVEL

<table>
<thead>
<tr>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
</tr>
</thead>
</table>
APPENDIX E

EXAMPLE OF EXPERIMENTER-PREPARED WRITING SAMPLE
Dale and Kathy were in Florida. They felt happy. They were going swimming with their friends Jane and Don. They sang as they walked along the road they stopped by the lake where the sand was soft and clean.

Dr and Mrs Perez sat on a rock watching the children play on this nice sunny Aug day. Jane took a rubber tube into the water. She rode around on it. When she jumped off the tube, it shot up into the air.

The children then got on a glass-bottomed boat. Dale looked down through the glass, there Dale saw tall grass along the sea floor. Along the bottom of the bay was a large school of orange-coloured fish. It surprised Jane when she saw two women divers under the boat. Each wore diving fins and a machine to help her breathe. Swarms of colorfull fish followed them.

The divers climbed out of the water. The children went up on the deck to see them. The women talked about their job. In a large bucket was an eel they had caught. One lifted the eel, it looked like a dangerous snake. It wiggled as it tried to protect itself. The time went by very fast soon they had to go home.
APPENDIX F

RECORDING FORMS (GROUP AND INDIVIDUAL)
### Group Recording Form (Error Detection/Error Correction)

<table>
<thead>
<tr>
<th>Session #:</th>
<th>Date:</th>
<th>Condition:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student/Names</th>
<th>Capitalization</th>
<th>Punctuation</th>
<th>Spelling</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>Adams</td>
<td>/ / / / / / / / / /</td>
<td>/ / / / / / / / / /</td>
<td>/ / / /</td>
<td></td>
</tr>
<tr>
<td>Kris</td>
<td>/ / / / / / / / / /</td>
<td>/ / / / / / / / / /</td>
<td>/ / / /</td>
<td></td>
</tr>
<tr>
<td>Martin</td>
<td>/ / / / / / / / / /</td>
<td>/ / / / / / / / / /</td>
<td>/ / / /</td>
<td></td>
</tr>
<tr>
<td>Tomson</td>
<td>/ / / / / / / / / /</td>
<td>/ / / / / / / / / /</td>
<td>/ / / /</td>
<td></td>
</tr>
<tr>
<td>Winston</td>
<td>/ / / / / / / / / /</td>
<td>/ / / / / / / / / /</td>
<td>/ / / /</td>
<td></td>
</tr>
</tbody>
</table>

**Keys**

- **Capitalization Rules**
  1. Capitalize at the beginning of a sentence
  2. Capitalize names of people
  3. Capitalize the pronoun "I"
  4. Capitalize days of the week
  5. Capitalize months of the year
  6. Capitalize special days
  7. Capitalize names of streets
  8. Capitalize names of cities
  9. Capitalize names of states
  10. Capitalize titles of people

- **Punctuation Rules**
  1. A period at the end of a sentence
  2. A period after an abbreviation
  3. A period after an initial
  4. A question mark after a question
  5. A comma between the date and the year
  6. A comma between a city and state
  7. An exclamation point after a command or exclamation

- **Types of Spelling Errors**
  1. Omission of letters
  2. Reversal of letters
  3. Inversion of letters
## Individual Recording Form (Error Detection/Error Correction)

**Student’s Name:**

**Session #**

**Observer:**

**Date:**

**Condition:**

### Capitalization Rules

<table>
<thead>
<tr>
<th>Rule</th>
<th>ED</th>
<th>EC</th>
<th>FTCDE/ME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Capitalize at the beginning of a sentence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Capitalize names of people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Capitalize the pronoun “I”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Capitalize days of the week</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Capitalize months of the year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Capitalize special days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Capitalize names of streets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Capitalize names of cities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Capitalize names of states</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Capitalize titles of people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sub-total**

### Punctuation Rules

<table>
<thead>
<tr>
<th>Rule</th>
<th>ED</th>
<th>EC</th>
<th>FTCDE/ME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A period at the end of a sentence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. A period after an abbreviation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. A period after an initial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. A question mark after a question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. A comma between the date and the year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. A comma between a city and state</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. An exclamation point after a command or exclamation</td>
<td></td>
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<tr>
<td>8. Other</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Sub-total**

### Types of Spelling Errors

<table>
<thead>
<tr>
<th>Rule</th>
<th>ED</th>
<th>EC</th>
<th>FTCDE/ME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Omission of letters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Reversal of letters</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. Insertion of letters</td>
<td></td>
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<tr>
<td>4. Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sub-total**

**Total**

### Key

- **EC** - Error Correction
- **FTCDE** - Failure to Correct Detected Error
- **ED** - Error Detection
- **ME** - Misidentified Error

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APPENDIX G

PROCEDURAL CHECKLISTS
Procedural Integrity Checklist
No Practice Sheet

Student's Name: ____________________ Session #: ____________
Date: _____/____/_____ Observer: _______________________

1-Minute Timing
Experimenter instructs student to proofread for errors   Yes  No
Experimenter distributes writing sample                  Yes  No
Experimenter begins 1-minute timing when the student is ready Yes  No
Experimenter terminates timing at the end of 1 minute Yes  No
Experimenter instructs student to correct all errors detected Yes  No
Experimenter instructs student to turn in writing sample when s/he is finished correcting detected errors Yes  No
Experimenter comments on the number of correct errors detected by the student Yes  No
Experimenter comments on the number of errors corrected accurately by the student Yes  No
### Student's Name: ____________________  Session #: __________

### Date: ______/____/_____  Observer: ____________________

#### Practice Sheet Instruction

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimenter distributes practice sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter instructs student to write name and date at the top</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter demonstrates proofreading procedure for capitalization error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter demonstrates proofreading procedure for punctuation error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter demonstrates proofreading procedure for spelling error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter assigns student to independently proofread remainder of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>practice sheet for capitalization, punctuation, and spelling errors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter instructs student to correct all errors detected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter instructs student to turn in practice sheet when s/he is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finished correcting detected errors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter comments on the number of correct errors detected by the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter comments on the number of errors corrected accurately by the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>student</td>
<td></td>
<td></td>
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</tbody>
</table>

#### 1-Minute Timing

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimenter instructs student to proofread for errors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter distributes writing sample</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter begins 1-minute timing when the student is ready</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter terminates timing at the end of 1 minute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter instructs student to correct all errors detected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter instructs student to turn in writing sample when s/he is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finished correcting detected errors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter comments on the number of correct errors detected by the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimenter comments on the number of errors corrected accurately by the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>student</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Practicing Accuracy Checklist
Self-Managed Proofreading

Student's Name: ____________________  Session #: __________

Date: ___/___/____  Observer: ____________________

Practice Sheet With Self-Managed Proofreading Instruction

Experimenter distributes practice sheet  ____________________  Yes  No
Experimenter instructs student to write name and date at the top  ____________________  Yes  No
Experimenter instructs student to write the letters CPS at top  ____________________  Yes  No
Experimenter reminds student what each letter represents  ____________________  Yes  No
Experimenter prompts student to write corresponding letter at the end of each sentence for the type of error s/he has proofread for  ____________________  Yes  No
Experimenter demonstrates self-managed proofreading procedure for capitalization error  ____________________  Yes  No
Experimenter demonstrates self-managed proofreading procedure for punctuation error  ____________________  Yes  No
Experimenter demonstrates self-managed proofreading procedure for spelling error  ____________________  Yes  No
Experimenter assigns student to independently proofread remainder of practice sheet for capitalization, punctuation, and spelling errors using self-managed proofreading  ____________________  Yes  No
Experimenter instructs student to correct all errors detected  ____________________  Yes  No
Experimenter instructs student to turn in practice sheet when s/he is finished correcting detected errors  ____________________  Yes  No
Experimenter comments on the number of correct errors detected by the student  ____________________  Yes  No
Experimenter comments on the number of errors corrected accurately by the student  ____________________  Yes  No

1-Minute Timing

Experimenter instructs student to proofread for errors using self-managed proofreading  ____________________  Yes  No
Experimenter distributes writing sample  ____________________  Yes  No
Experimenter begins 1-minute timing when the student is ready

Experimenter terminates timing at the end of 1 minute

Experimenter instructs student to correct all errors detected

Experimenter instructs student to turn in writing sample when s/he is finished correcting detected errors

Experimenter comments on the number of correct errors detected by the student

Experimenter comments on the number of errors corrected accurately by the student

Yes  No

Yes  No

Yes  No

Yes  No

Yes  No

Yes  No
APPENDIX H

EXPERIMENTER-PREPARED PRACTICE SHEET
How good our dog Buffy feels after a bath! When he gets dirty we must wash him. The whole family likes to watch him sitting in the tub.

Buffy doesn’t seem to understand why we are so slow. He shakes himself and throws water all over the kitchen. We pin a big towel around him we try to make him lie still to dry. Buffy has learned that sooner or later, he can get loose anyway. We all laugh as he runs through the house rubbing his ears on the carpet.

Father paid forty dollars for Buffy? We buy a pound of meat for him each day. We can’t help loving him. He is our dog!
APPENDIX I

PROTOTYPE OF MULTIPLE BASELINE DESIGN
Pre-baseline Instruction Plan

Student ______________________ Date __________________________

I. Warm-up/rapport building discussion: (2-3 minutes)

II. Teacher states objectives for the day: (Today we will work on orally recalling rules for using capital letters and punctuation as well as recalling types of spelling errors).

III. Teacher verbalizes each capitalization rule individually, asks question of when capital letters are used, models correct answers, and asks student to respond to each question as previously modeled by the teacher.

IV. Teacher verbalizes each punctuation rule individually, asks question of when punctuation marks are used, models correct answers, and asks student to respond to each question as previously modeled by the teacher.

V. Teacher verbalizes each type of spelling error, asks question of the types of spelling errors that can occur, models correct answers, and asks student to respond to each question as previously modeled by the teacher.
APPENDIX K
PRE-BASELINE INSTRUCTION RECORDING FORM
Pre-Baseline Instruction Recording Form

Student's Name: ___________________________

Date: ______/_____/_____

**CAPITALIZATION RULES**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</tbody>
</table>

**PUNCTUATION RULES**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</tbody>
</table>

**TYPES OF SPELLING ERRORS**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
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</tr>
</tbody>
</table>

**CAPITALIZATION RULES**

1. Capitalize at the beginning of a sentence
2. Capitalize names of people
3. Capitalize the pronoun "I"
4. Capitalize days of the week
5. Capitalize months of the year
6. Capitalize special days
7. Capitalize names of streets
8. Capitalize names of cities
9. Capitalize names of states
10. Capitalize cities of people

**PUNCTUATION RULES**

1. A period at the end of a sentence
2. A period after an abbreviation
3. A period after an initial
4. A question mark after a question
5. A comma between date and year
6. A comma between a city and state
7. An exclamation point after a command or exclamation

**TYPES OF SPELLING ERRORS**

1. Omission of letters
2. Reversal of letters
3. Insertion of letters

**Key**

C = Student correctly states rule type of error
X = Student incorrectly states rule type of error
O = Student omits rule type of error

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APPENDIX L

TEACHER/STUDENT EXIT INTERVIEW
TEACHER/STUDENT EXIT INTERVIEW

1. Please describe what you liked best about this study.

2. Please describe what you liked least about this study.

3. If you could change any part of this study, what would you change?

4. How would you do this study differently?

5. Please describe any part of the study you found helpful.

******************************************************************************

Please respond to the following statements by circling the response that best describes how you feel about your participation in the study.

1. I would participate in this study again.
   a.) Very much  b.) Yes, I would  c.) I'd think hard about it  d.) Definitely not

2. I learned something useful from my participation in this study.
   a.) Very much  b.) Yes, I did  c.) I'd think hard about it  d.) Definitely not
APPENDIX M

STUDENTS' STANDARD CELERATION CHARTS
The image contains a chart titled "SUCCESSIVE CALENDAR DAYS" with various data points plotted. The chart appears to be used for tracking and analyzing certain metrics over time, possibly related to productivity or performance. The chart includes a grid with numerical values indicating "COUNT PER MINUTE" on the y-axis and "SUCCESSIVE CALENDAR DAYS" on the x-axis. Notable entries include "COOPER, SEVERS" and a "COUNTED" label."