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EXAMINING FIRST-GRADERS' CONSTRUCTION OF KNOWLEDGE
OF GRAPHOPHONEMIC AND ORTHOGRAPHIC
RELATIONSHIPS: READING AND WRITING
STUDENT-SELECTED CONTINUOUS TEXT

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of
DOCTOR OF PHILOSOPHY

By

Linda C. Frerichs, B.S., M. Ed.

Denton, Texas

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The purpose of this study was to examine first-graders' construction of knowledge of graphophonemic and orthographic relationships. Three levels of treatment were assigned randomly to three groups of first-graders in their first semester of first grade. Treatment varied in student engagement with reading and writing texts based on student interests and in the amount of interaction students had with one another and the researcher as they read, wrote, and examined words, word patterns, and graphophonemic relationships.

The study was based on a quasi-experimental nonequivalent control group design (Campbell & Stanley, 1963) with an added within-subjects factor of 12 weekly test occasions. These weekly tests involved students writing a researcher-dictated continuous text selected by students in the full-treatment group from the larger portion of text read each week. Additional elements of qualitative research were included in the design and analyses.

Quantitative analyses revealed statistically significant results. Qualitative data analyses confirmed that students who interacted daily with each other and the researcher in reading and writing activities constructed more knowledge about graphophonemic and

orthographic relationships than peers from the partial-treatment group and the control group.

Results led to conclusions and implications involving a reexamination of current and traditional methods of spelling instruction and assessment for young children.

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CHAPTER 1

PRESENTATION OF THE PROBLEM

Introduction to the Study

In the last decade process writing, where students are given the opportunity to write frequently, has come under scrutiny. Although advocates of process writing stress the importance of focusing on content during the early stages of the process, authors are expected to use socially-accepted conventions of writing at the editing stage (Graves, 1983). Such conventions include format, punctuation, and standard spelling; and mature persons in a literate society are expected to use print conventions in their communication with others.

Standard spelling is a courtesy and provides an avenue for effective written communication (Peters, 1985). "Spelling is for writing" (Graves, 1983, p. 193). Being able to express one's ideas in writing is a form of power, and, according to Glasser (1993), all normal humans have a need for power to some degree. Writing is powerful because writers are able to use language as a tool to influence others and to capture thoughts for subsequent reflection. Writing is powerful because it provides a way of synthesizing knowledge, often leading to discovery as one tests new ideas. According to Wells (1987), "...it is in writing, *par excellence*, that we are most easily able to engage in

sustained and creative mental activity” (p. 112). Using correct spelling helps create the avenue for excellence in content.

“Learning to spell is a matter of acquiring knowledge rather than habits” (Gentry & Henderson, 1980). One way young children may learn about writing is through reading. Research suggests that reading and writing complement one another (Allen, 1989; Sulzby & Teale, 1985). As children read, they learn about expectations for story structure, language, and conventions. As children write, they reread what they have written. “This rereading not only improves the child’s writing but also serves to teach the child to read” (Healy, 1991, p. 50). According to Read (1986), “reading experience does influence spelling performance (and vice versa)” (p. 117).

Certain standards of spelling are expected by readers of texts. Generally writers and readers share texts that conform to structure of a specific genre such as poetry or narrative. Rarely do writers and readers share a list of single words. Therefore, continuous text could inform students who read as writers. According to Adams (1990), “...meaningful experiences with words are important to the acquisition of their spelling... The best way to build children’s visual vocabulary is to have them read meaningful words in meaningful contexts” (p. 156).

Other research suggests that some children begin to write before they receive formal instruction in reading. Read (1971) found such writing by young children who used sounds heard in words to help them spell in an inventive manner. Associating letters of the alphabet with particular sounds in creative spelling indicates some degree of phonemic awareness. Healy (1991) suggested that phonics practice through invented

spelling in writing may enhance reading development and automaticity in word recognition (p. 16). Other researchers such as Adams (1990), Clarke (1988), Ehri (1989), Graves (1983), and Hoffman and Norris (1989) have sought to understand the relationship between phonemic awareness and reading.

Young children produce many examples of nonstandard spelling. "Children's tentative understandings about how spelling works enables them to produce functional spellings that make sense" (Hoffman & Knipping, 1988, p. 285). Examination of young children's writing samples led to the identification of various stages of writing development by persons such as Gentry (1982), Graves (1983), and others. However, other researchers reported that writing/spelling development was unique to the individual with no single discernible stage in evidence at a given time (Allen, 1989; Sulzby, Barnhart, & Hieshima, 1989; Read, 1986).

Whether definite stages of development exist or not, research into young children's writing since the 1970's has led to an understanding that children construct their own hypotheses about written language (Beers, 1980; Ferreiro & Teberosky, 1982). These hypotheses change as children are confronted with conflicting information and assimilate that information with previous knowledge. This process is congruent with a constructivist theory of learning, often associated with Jean Piaget. Piaget would have classified information on writing conventions as social knowledge--standards constructed and dispersed by a particular culture (Forman & Kushner, 1977).

Just as Piaget studied children's cognitive development by examining evidence that could be termed "errors", other researchers such as Clay (1982), Chomsky (1980),

and Goodman (1973) have examined children's nonstandard language behaviors.

Nonconforming usages may be indications of strategies being used or neglected and/or possible hypotheses children may have constructed.

Traditionally, language behaviors that do not conform to socially-accepted and expected norms have been unacceptable in classrooms. In the case of spelling, traditional assessment has had two levels--correct and incorrect. Researchers such as Gable, Hendrickson, and Meeks (1988), Gentry and Henderson (1980), and Wilde (1992) have suggested that teachers could learn from examining incorrect spelling responses. "Within the constructivist perspective, reading and writing skills are not collected to be used at a later date but are cultivated within real literacy events and celebrated at each child's level of development" (Healy, 1991, p. 25).

According to Henderson (1990), "a substantial number of educators have become disillusioned with [a] spelling program altogether" (p. 87). Such programs categorize words into weekly lists based on similar features, spelling rules and generalizations, high frequency of occurrence in print, or words selected from basal readers (Smith, 1986). Some teachers may feel that traditional weekly spelling list tests, whose responses are considered either correct or incorrect, are incongruous with current learning theory (Wilde, 1992). Furthermore, "...it has been argued that conventional (normative) spelling tests tell us too little about a child's spelling" (Peters, 1985).

As an alternative to using basal spelling programs, some teachers have taught spelling during individual conferences in process writing. In this method, teachers encourage individual students to increase their repertoire of known words while using

invented spelling for other words, allowing students to be more involved in the process of expressing their ideas. However, Peters (1985) claimed that not all children learn spelling successfully in this manner.

While process writing generally involves texts that are continuous, such products are unique to individual or group authors. With multiple texts evolving within one community of learners, it may be difficult to find common confusions a teacher could address through small group or whole class facilitation, guided practice, or direct instruction.

The method reported in this study differed from weekly tests based on lists found in basal spelling programs and from teaching spelling to individual children during conferencing in process writing. Students in this study were encouraged to use invented spelling and to increase their repertoire of known words while writing continuous text; however, the continuous text was uniform for all students in the joint process of teaching, learning, and assessing spelling. Allen (1989) averred, "Uniform tasks provide valuable information about what children can do..." (p. 144).

This study suggests that spelling can be taught and assessed using uniform tasks while valuing individual representations. Spelling tests using lists of words may be uniform for whole class or small groups with similar level of ability. Products of process writing lack uniformity but are authentic tasks when guided by student interest.

In the study reported here the same continuous text was used for aesthetic and efferent purposes (Rosenblatt, 1992). Students nominated topics of interest from which texts could be selected. After enjoying reading and responding to the text, students

selected a specific portion of that text to write by using their individual hypotheses about how print works. This process allowed students to maintain ownership of the task, important for students' intrinsic motivation (Oldfather & Dahl, 1994). In turn, each individual response was assessed in a manner which valued what each child knew rather than by a dichotomy of right/wrong.

Statement of the Problem

The problem investigated in this study dealt with the construction of early literacy knowledge and the possible relationship of spelling development with reading opportunities.

Purpose of the Study

The specific purpose of this study was to determine whether interactions of first graders with peers and an adult regarding continuous text on topics they chose and whether reading and writing that continuous text would facilitate their construction of knowledge of graphophonemic and orthographic relationships more than that of first grade students who only wrote the same continuous text.

Research Questions

This study was designed to answer the following questions about the teaching/learning/assessing of spelling using continuous text in a manner congruous with constructivist theory of learning, varying treatment in three first grade classes:

- 1) Are there treatment-based differences in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?

- 2) Are there treatment-based differences in quantity of standard spelling of words by students on student-selected dictated text?
- 3) Are there differences over time in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
- 4) Are there differences over time in quantity of standard spelling of words by students on student-selected dictated text?
- 5) Is there an interaction of time and treatment in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
- 6) Is there an interaction of time and treatment in quantity of standard spelling of words by students on student-selected dictated text?
- 7) What is the nature of differences across time and among groups?

Significance of the Study

This study was designed to provide a method for teaching/learning of spelling while utilizing the same continuous text. Other studies have utilized continuous text for initial reading instruction and/or assessment of reading ability (Allen, 1989; Mason, Peterman, Powell, & Kerr, 1989). Still others have used students' own texts as the instrument for teaching/learning spelling (East, 1993). This research utilized continuous text selected by the researcher but based on student interests as the instructional material for the teaching and learning of spelling and as a supplementary text for instruction in reading. Furthermore, students selected a portion of the same text to reproduce in writing, using their own hypotheses about how print works.

The amount of interaction with the text and the researcher (facilitator of teaching/learning) varied by treatment group. Finally, all student written representations of the selected text were assessed through a process which valued what each individual student knew at that time, rather than by stages of spelling development or by the dichotomy of right/wrong. Responses were assessed further by comparison over time and among treatment groups.

This study contributes to the knowledge base of the relationship between reading and writing because it used a common text for both processes. Writing products revealed effects of rereadings and focused attention while reading. Furthermore, this study contributes to the knowledge base of constructivist methods of instruction by demonstrating that students constructed and reconstructed their own hypotheses about spelling; and findings illustrate how social activities may have influenced such constructions of knowledge. Lastly, this study contributes to the knowledge base of assessment in spelling by valuing what individual students knew about grapho-phonemic relationships rather than placing products into stages of writing/spelling development or assessing responses using the traditional dichotomy of right/wrong.

Definitions of Terms

Aesthetic stance: Reading (or writing) “mainly [for] what we are experiencing, thinking, and feeling *during* the reading” (Rosenblatt, 1991).

Appropriate graphemic representation of phonemes: For the purposes of this study this term refers to representation of a sound (phoneme) with a letter or group of letters (grapheme/s) that are useful if not conventional or standard. Examples of useful

graphemic representations of phonemes include 'skool' for 'school', 'tace' for 'take', and 'todae' for 'today' (Clay, 1979, p. 38).

Constructivism: "Constructivism is the theory according to which each child builds his own knowledge from the inside, through his own mental activity, in interaction with the environment" (Kamii, 1985, p. 6). Schattgen (1993) further defines it to include building "their own knowledge and values as a result of interactions with the physical and social world" (p. 2).

Efferent stance: Reading (or writing) when "our predominant interest is in acquiring information that we wish to retain" (Rosenblatt, 1991).

Grapheme: "The letters that represent phonemes are known as graphemes" (Cooper, 1993, p. 282).

Graphophonemic: a combination of 'grapho-', "a combining form meaning writing" (Webster's New World Dictionary of the American Language, College Edition, 1960, p. 631) and 'phonemic', "of or based on phonemes" (Webster's New World Dictionary of the American Language, College Edition, 1960, p. 1100). Simplified, this means letter-sound correspondence.

Invented spelling: Nonconventional spelling attempts in which a child might use one of the following strategies: spelling as it sounds; spelling as it sounds out; spelling as it articulates; spelling as it looks, and spelling by analogy (Bean & Bouffler, 1991, p. 15). "A better term for this type of spelling might be *temporary* because it says to everyone concerned . . . that this type of spelling is going to give way to correctness" (Cooper, 1993, p. 310).

Orthographic: “1. Of orthography. 2. Characterized by correct spelling” (Webster’s New World Dictionary of the American Language, College Edition, 1960, p. 1035).

Phoneme: “The speech sounds of a language [which] carry no meaning” (Cooper, 1993, p. 282). A “small set of speech sounds . . . [which] in English is generally regarded as having approximately 44 items” (Holdaway, 1979, p. 82).

Phonemic awareness: “. . . being able to hear the sounds and to know when a word is different because it is composed of different sounds” (Juel, 1991, as cited by Cooper, 1993, p. 282).

Scaffolding: “Temporary . . . support systems which help the child to function effectively and can lead to the child taking over independent action before long” (Clay & Cazden, in print, as cited in Clay, 1991, p. 62).

Standard spelling: In general, this term will be used to refer to spelling which is accepted by society as correct. In reviewing literature, it is also referred to as conventional, correct, and traditional spelling; and, therefore, those terms were used interchangeably in this study.

Zone of proximal development: “The zone of proximal development (ZPD) is probably the most widely known aspect of Vygotsky’s theory” (Moll, 1991, p. 5). Vygotsky describes it as “the distance between the actual level of development as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86).

Limitations

This study had several limitations. First, students in the three classrooms were not assigned randomly, and there was no control for student ability or prior literacy experience. Second, classroom teachers whose classes were involved varied in amount of education, years of teaching experience at this grade level and in general, and method of instruction. Finally, although instructional and assessment procedures could be utilized in other settings, findings from this study may not be generalized to other specific classrooms.

Assumptions

Assumptions upon which this research was based include the following:

- 1) Without benefit of a formal spelling program students will form increasingly sophisticated hypotheses about writing/spelling as they have additional experience reading continuous text.
- 2) Students who receive support and guidance in their learning from peers and adults will assimilate more information about spelling and revise their hypotheses at a faster rate than students who receive no support and guidance.
- 3) Students who determine topics on which reading is based and who select the excerpts to be written will show a greater increase in achievement than students who have no voice in those decisions.

CHAPTER 2

LITERATURE REVIEW

This study investigated first-grade students' construction of orthographic and graphophonemic knowledge under three conditions. This chapter provides background information relevant to the problem studied. It begins with a discussion of current learning theory, which undergirds the researcher's perspective taken in this study. A summary of the historical background and methods of spelling instruction is second, followed by a discussion of assessment of spelling. These are included because this study involves alternative methods of instruction and assessment.

This is followed by a review of the development of writing in young children, which leads into a section on invented spelling. This literature is important for understanding young children's construction of knowledge of written language and for its effect on the instruction and assessment practices used in this study. Studies involving spelling and spelling's possible relevance to reading are reviewed. These were included because spelling is a central issue to this study. Additionally, spelling's possible relationship to reading was relevant to variations of treatment in the study. This literature review ends with a discussion of text because of its role in the study. Research questions are restated at the end of this chapter.

Current Learning Theory

This section will provide an overview of the constructivist theory of learning, currently accepted by many early childhood educators and early childhood teacher educators (Baker, 1993; Kamii, 1985, 1991; Kamii, Long, Manning, & Manning, 1990; Schattgen, 1993). Before expanding that theme, three other theories will be discussed briefly. Those theories are maturationist (also called nativist), behaviorist (also called empiricist), and interactionist.

Influential during the first half of the twentieth century and led by such theorists as G. Stanley Hall and Arnold Gesell (Adams, 1988, p. 13), proponents of the maturationist theory believe that each person is born with most knowledge, which emerges as a person reaches an appropriate stage of maturation. Behaviorists believe that children can be trained to learn at an earlier age through reinforcement and that heredity delimits the potential of an individual. Influenced by B. F. Skinner and R. Gagne, this theory continues to influence education (Adams, 1988, pp. 13-14).

Interactionists believe that children construct schemes about the physical and social world through experiences of active manipulation and participation while progressing through stages of development cognitively. They believe that the child “learns as a function of the combined forces of maturation, social experience, and experience in the physical world” (Adams, 1988, p. 16). Adams (1988) cited Piaget, Chomsky, and Bruner as influential in this view (p. 16).

Constructivist Theory

Piaget also is credited for the development of the constructivist theory of learning by such people as DeVries and Kohlberg (1987b), Forman and Kushner (1977); and

Kamii (1985, 1991). Instruction seems to be a key issue that differentiates the two theories. However, as McGill-Franzen (1992) stated, “The interaction between *instruction* and *development* is complex, and an uncontested definition of the relationship does not exist” (p. 58). A review of the literature may illuminate distinctions.

“Learning and teaching should not stand on opposite banks and just watch the river flow by; instead, they should embark together on a journey down the water. Through an active, reciprocal exchange, teaching can strengthen learning how to learn” (Malaguzzi, 1993, p. 70).

Perhaps no one has addressed this learning/teaching interaction more theoretically than Lev Vygotsky, a Russian psychologist, who died in 1934 but whose works have been available only in the last two decades. Vygotsky, the parent of cultural construction in developmental psychology (Moll, 1991, p. 1), agreed with Piaget’s contention that individuals construct their own knowledge (Forman & Kushner, 1977; Kamii, 1985, 1991; Moll, 1991; Vygotsky, 1978). However, Vygotsky credited social interactions for facilitating such construction (Davydov, 1995; Moll, 1991; Vygotsky, 1978).

Important to Vygotsky’s theory of how learning/teaching interactions work is his zone of proximal development (Clay, 1991; Davydov, 1995; Moll, 1991; Vygotsky, 1978). Davydov (1995) called this a collaboration involving adults and children or among children without adults (p. 16). Vygotsky (1978) defined the zone as “the distance between the actual level of development as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86).

Interpersonal relationships allow activity beyond the child's independent level of functioning (Smith & Wham, 1995, p. 222). Baker, Sonnenschein, and Serpell (1994) cited Rogoff (1990) for describing this as a form of apprenticeship through which competence develops (p. 4). Because of such activities, the child internalizes necessary information to promote transformations within the child which lead to independent functioning (DeFord, 1994, p. 35). Vygotsky's theory encourages leading students' learning through the zone of proximal development. Piaget's theory does not (Kamii, 1985a).

This study follows the belief that classroom practice should reflect the acceptance that children construct their own knowledge and that growth in such construction can be facilitated through the zone of proximal development. Activities were designed to allow the researcher to foster students' active engagement with print, as described by Forman (1987, p. 71). The instructional setting allowed learners to grow into increasingly more complex actions (DeFord, 1994, p. 35). This has been called "guiding from beside'...[where] the teacher assumes multiples roles: to sometimes lead and sometimes escort students in their learning" (Smith & Wham, 1995, p. 221). Further implications for classroom practice will be noted throughout this study.

History and Methods of Spelling Instruction

This section is divided into two parts. First is the overview of the history of spelling instruction in the United States. Following that is a description of methods of spelling instruction.

History of Spelling Instruction in the United States

Smith (1986) noted that during the Colonial Period in the United States spelling ability was highly prized (p. 12) . However, words on children's lists were difficult (Smith, 1986, p. 13) and not functional. Henderson (1990) stated that the teaching of spelling as a separate subject from reading did not occur in the United States until the late 1800's (p. 80).

In her review of literature, Smith (1986) cited Hodges as crediting the scientific movement in education (c. 1920) with leading to research studies to determine which words should be taught at each grade level, how the words should be taught, and how to measure student progress (p. 9). Spelling lists were compiled, ranging from simple to complex as determined by the number of syllables in the words. Eventually words were separated into grade level categories.

The 1920's and 1930's witnessed a number of published lists of words for spelling. This trend in publishing word lists continued for decades. Some publishers considered which words were used in adults' writing and reading. Others considered which words they thought children should or could be taught (Peters, 1985). Although publishers deliberated over which words to put on their lists, little was said about how to learn until recently, according to Peters (1985, p. 71).

Instruction emphasized visual memory. An analytic word-study approach dominated with some sound-to-letter regularities and some spelling rules which were reliable, according to Henderson (1990, p. 81). Word lists continue to be used in many classrooms (Henderson, 1990; Wilde, 1992).

A new era in language studies began in the 1950's (Smith, 1986). Linguists introduced the idea that spelling could be taught by using an analysis of letter-sound correspondence rather than memorization (Smith, 1986, p. 15). Templeton (1980) seemed to concur. He held that the belief of American linguists was to pay close attention to speech because it could be observed (p. 18). Read (1986) claimed it a major development when linguists recognized that spelling represents speech sounds and that those speech sounds could be viewed as discrete entities (p. 120). While some linguists remained interested in studying phonemes, others became interested in going beyond the sound to include meaning.

Wilde (1992) contended that interest in children's spelling developed at the same time as interest in process writing (p. 9). Although much of that interest began in the 1980's with work by persons such as Graves (1983), an earlier interest in children's spelling was shown by Read (1971) and Chomsky (1971). Smith (1986) noted how the focus of research switched from content to learner, with special focus on young learners (p. 23).

Methods of Spelling Instruction

According to Templeton (1992), spelling and its instruction continues to be of interest to both academic and lay people (p. 454). The debate about how to teach spelling has involved several factors. These factors, which include linguistic information at the levels of sound, meaning, and syntax, seem to vie for dominance in methodology.

Smith (1986) listed three dominant English orthographic theories. One is that the English spelling system is highly irregular. A second is that English orthography is

consistent and that much is based on sound-to-symbol relationships. The final theory claims that English spelling consistency is based on semantics (p. 130).

A common belief is that children should learn a system of rules and generalizations about the patterns underlying words (Anderson, 1985). Adams (1990) claimed that articulation of spelling-sound rules should be helpful in noticing commonalities among words once students have been exposed to some pertinent sampling (p. 211). However, Wilde (1992) warned that spelling in English is complicated and that rules governing English spelling appear arbitrary (pp. 14-16). Peters (1985) opposed teaching rules, claiming that spelling rules frequently do not apply and that rules are often at a level of mental operation beyond the child's stage of thinking (p. 77).

Advocates of a whole-word approach to teaching reading believed spelling to be quite irregular. They believed their reading strategy of linking the word to meaning in context had no application in spelling. Others who advocated phonics as the preferred method of teaching reading also found little regularity between sounds and letters in spelling. Thus, they also believed their reading methodology had no application in spelling. Both groups believed that being able to spell requires memorization (Henderson, 1990, pp. 80-81; Smith, 1986, p. 11).

Although advocates of the reading methods mentioned above found little to link their method with spelling, there are similar approaches to teaching spelling. One is a visual approach. According to Wilde (1992), a teacher could suggest that a child try

writing a word to see if it looks right (p. 34). She recommended reading widely for developing visual knowledge of words (p. 34).

Although, according to Gentry (1987), spelling may be learned through reading and writing, he called for direct, systematic teaching of word study, including phonics, as a supplement. Such formal instruction should not occur prior to second grade, however, according to Gentry's recommendation. Overall, he claimed that spelling instruction in which teachers use unsubstantiated teaching formulas has remained constant (p. 7). Graham (1983) asserted that evidence indicates most classroom practices in spelling are traditional and not based on research (p. 561).

Gentry (1987) cited myths about spelling he believed had been perpetuated. One myth he mentioned is that spelling errors should not be tolerated. Instead, Gentry encouraged acceptance of errors as young children invent their own spellings, testing and modifying hypotheses (p. 9). Students could be assisted at their point of need.

Henderson (1990) also felt that informal spelling instruction should occur at the point of need (p. 88). However, he stipulated that most pupils need additional formal instruction (p. 88). He stated that formal spelling instruction should be administered by the teacher (p. 82). He justified this dual approach by saying that "formal instruction provides the basic knowledge; informal instruction teaches the skills, habits, and understandings necessary for an independent mastery of the full vocabulary" (p. 168). He went on to explain that students need to study spelling and doing so requires correctly spelled words. Although readers should examine words as lightly as is necessary,

spellers should examine words systematically to make complete recall possible and efficient (p. 90). It is for this reason that Henderson favored spelling lists.

According to Wilde (1992), many teachers use lists of words found in spelling books and in their related activities. Such texts frequently group words by patterns or a common feature such as sound, structure, or use (Smith, 1986, p. 132). In addition to requiring memorization of individual words, Wilde (1992) found other drawbacks of spelling texts (p. 72). She claimed that “they are decontextualized, treat learning as accumulative rather than evolving, and don’t draw on learner’s prior knowledge” (p. 72). J. W. Beers (1980) also appeared to question use of spelling lists, claiming students may not recognize the orthographic principles underlying words they memorize (p. 44).

Bartch (1992) found an integrative approach helpful with her second graders. Rather than stressing spelling through spelling tests, her students learned spelling strategies (pp. 404-408). O’Flahavan and Blassberg (1992) suggested ways to embed spelling into an overall language arts program (pp. 412-416) rather than using graded spelling series. Relying on commercial spelling programs was believed undesirable by Cox (1988, p. 266).

Nevertheless, some teachers continue to use basal spelling texts. Others have developed alternative lists appropriate to current topics or individual student’s writing needs. Some teachers do not stipulate spelling as a subject at all, believing children will learn spelling on their own while reading and writing (Wilde, 1992, p. 56). Graves (1983) claimed that proficiency in reading, practice in writing, and becoming concerned about convention help the child to move toward standard spelling (p. 188).

Wilde (1992) did not favor eliminating spelling altogether. Instead, she preferred spellings lists that are individualized, as did Graham (1983). Furthermore, Wilde (1992) recommended limiting quantity to no more than five per week and limiting the amount of time spent on spelling. She suggested using a study method she claimed had been researched extensively. "It involves looking at the word, thinking about its spelling and/or saying the letters out loud, covering the word and writing it, checking the results, and repeating if necessary" (p. 93).

A visual approach to learning spelling also was deemed important by Adams (1990). She advocated that children should focus on likely sequences of letters that comprise syllables, words, blends, and digraphs (p. 134). It was her contention that, children may not develop orthographic knowledge unless they are encouraged to attend to such spelling patterns (p. 153).

While in the process of reading, readers learn conventions, including spelling (Butler & Turbill, 1984, p. 20). Adams (1990) continued her argument regarding the value of students' reading meaningful words in meaningful contexts. She claimed such reading would increase students' visual vocabulary and their sensitivity to orthographic structure (p. 156). Butler and Turbill (1984) suggested that teacher-directed reading was a good time for teachers to call students' attention to letter-sound relationships, among other things (pp. 63-64).

Because of the close relationship between reading and spelling abilities, according to C. S. Beers (1980) and others, attention to both should be integrated in the classroom (p. 83). Adams (1990) claimed that oral reading was better than silent reading for

enabling students to notice differences between irregularly spelled words and their phonological translations (p. 184).

Adams (1990) did not discount the importance of phonology in spelling or reading. She observed that orthography initially is guided by phonological input through speech (p. 215). Similarly, Stever (1980) claimed that initially all children seem to spell words according to phonetic information (p. 50).

In reviewing spelling methods, Allred (1984) found a test-study-test approach and a self-corrected test approach to be most relevant (pp. 19-20). Also, list approaches generally appeared superior to spelling in context (p. 20), and individualized spelling lists were recommended over whole-class lists. Whatever the specific procedures, Allred believed that functional writing required students' knowing a sufficient number of useful words which could be learned through a spelling program (p. 15). However, he did not define how many words are sufficient or which ones are useful. Allred encouraged students to apply rules properly, to apply phonics appropriately, and to develop visual memory to enhance spelling ability (p. 15).

An informal method of teaching spelling is language experience (Smith, 1986). In this process, students generate text with the assistance of the teacher who scribes within their view. This technique became popular in the 1950's. A similar but more recent form is modeled writing where the teacher writes in front of the children and thinks aloud. In this way children learn to construct the English alphabetical writing system (Manning & Manning, 1991, p. 118). Powell and Hornsby (1993) also

recommended modeled writing as a way for students to hear ways to compose, revise, and make decisions about conventions of writing such as spelling (p. 69).

Computer-assisted spelling also has become available more recently, as have other multi-media tools and games (Smith, 1986). As opposed to language-centered methods of instruction, Smith (1992) identified individualized lists, writing activities, and computer programs as instructional methods which are pupil-centered (p. 131).

Another pupil-centered method is free dictation spelling in which a paragraph containing spelling words and corresponding to students' independent reading level is read aloud (Starlin, 1982, as cited by Gable, Hendrickson, & Meeks, 1988, p. 133). Students are encouraged to write as many words as they can. This method allows students to perform at their optimum level and is especially effective for special needs students (p. 133).

In an effort to determine whether a formal method of spelling instruction was superior to an informal method, Bunt (1993-1994) conducted an experimental comparison of two such methods of spelling instruction in first grade classrooms. One class, who scored higher on initial spelling pretests administered in January, used a traditional spelling list approach. The other class used purposeful writing activities, which included talking about how to spell words in the process of writing. Results of posttests administered in mid-May indicated no significant differences between groups on spelling. However, when the pretest scores were subtracted from the posttest scores on corresponding tests, the purposeful writing group showed significantly higher gains with $p < .05$. An attitudinal test which measured students' feelings about spelling and writing

resulted in no significant differences between groups. Bunt concluded that spelling can be learned through purposeful writing activities at least as well as traditional spelling approaches.

Teachers have used a variety of methods for spelling instruction. Gentry and Henderson (1980) claimed that “learning to spell is a matter of acquiring knowledge rather than habits--in this case, knowledge of how the alphabet reflects meaningful language” (p. 112). They encouraged creative writing, in which children test their theories about how the alphabet works by comparing their productions to standard orthography (p. 112). They did not mention where students might find that standard orthography. They also called for a deemphasis of standard spelling for beginning readers (p. 114), saying that children need opportunities to manipulate words to clarify relationships among spelling, meaning, and phonology (p. 117). One example of manipulating words is contrasting and categorizing words with similar onsets (beginnings) or rimes (endings). This may be done through word sorts (Schlagal & Schlagal, 1992, pp. 418-424). Cunningham and Cunningham (1992) explained a different approach which uses manipulation of letters in “Making Words” lessons (pp. 106-115).

There is more to consider than simply having children learn to spell words conventionally. Graham (1983), Peters (1985), and Read (1986) emphasized the importance of positive attitudes in spelling and writing. Read said that attitudes are more important than techniques and materials. According to him, if positive attitudes exist, a teacher and/or parent can foster development in writing by reading to children and by

being seen as readers and writers. Additionally, Read recommended that the adult familiarize themselves with developmental landmarks involved in young children's writing/spelling, answer questions children pose, and facilitate rather than direct their writing (pp. 124-125).

According to Graham (1983), assessment information allows teachers to plan, monitor, and modify effective spelling instruction (p. 562). He claimed that contemporary classroom instruction often does not provide for the wide range of spelling abilities and achievement found at every grade level, thereby impeding spelling skills (p. 561). (For a discussion of various types of spellers who might be found in a given classroom, see Graves, 1983, pp. 190-193.) Clay (1991) added that differing needs of high progress children and of low progress children should be addressed.

Files (1992) issued cautions to be remembered by the teacher/parent, stating that the pace and content of what is learned is determined by the learner (p. 59). Files credited Smith (1991) for the comment, "We learn from demonstrations, . . . but it is the personal need for such a demonstration that determined whether the learner is sensitive to the demonstration and becomes engaged in it enough to make it his own" (p. 59). Likewise, Newkirk (1982) claimed that children must see some use for an aspect of language in order for it to be learned (p. 19).

"Instead of asking about the method employed, it is more useful to look at the *practices* used to introduce the child to written language, and how this object is presented in the classroom" (Ferreiro, 1991, p. 46). She contended that it is the conceptualization that children have regarding the writing system that is important and not whether the

method is analytic or synthetic, phonics or global (p. 45). She added that it is not the method but the learner who ultimately determines what is easy or what is difficult to learn (p. 45).

Ferreiro (1991) referred to work done in Barcelona by Teberosky (1982, as cited in Ferreiro) for pedagogical ideas based on three fundamental ideas as follows: 1) The teacher should take advantage of all environmental information as part of literacy activities in the classroom; 2) everyone in the classroom is considered a reader and writer at their own level; and 3) children help each other in production and in interpretation activities (p. 52). Teberosky contrasted the traditional view of individualization of knowledge to the social construction of knowledge through interaction among children and with the teacher (DeVries & Kohlberg, 1987, p. 256). Environmental information is important for its presentation of written language in its social context, rather than the typical educational presentation of information out of context (Ferreiro, 1991, p. 51).

In calling for a change in perspective in looking at the alphabetic writing system and in looking at the learner, Ferreiro (1991) said,

Children are much more than a pair of eyes and ears, a hand that uses an instrument to make marks, and a phonatory machine that utters sounds. Beyond all this, there is a cognitive subject, someone who thinks, who constructs interpretative schemes, who acts upon reality in order to make it his/her own (p. 52).

Summary. Spelling lists have been in use for decades and continue to be used, typically in classrooms with a traditional approach. Variations of whole-class lists

include individualized lists from student writing, lists of words used in basal stories, and lists selected according to content or theme under study. Less traditional approaches include teaching at the point of need in process writing, free dictation, and computer-assisted spelling.

Many theorists believe that students do learn about spelling through reading and writing activities. Young children tend to use a more phonological approach; however, they should be encouraged to develop strategies for examining words visually. Powell & Hornsby (1993) reviewed graphophonic knowledge, visual memory, and morphemic knowledge as the major spelling strategies (p. 27).

When selecting an approach to teaching/learning spelling, the range of abilities and personalities of students in the classroom must be addressed. Instruction should be guided by assessment and should acknowledge the influences of graphophonic knowledge, visual memory, and morphemic knowledge to spelling. Recent research on social construction of knowledge and the relationship between reading and spelling should be considered. Finally, positive attitudes of students and teachers are important.

Spelling Assessment

In general, evaluation is the process of selecting, gathering, and interpreting information in order to form a judgment about the worthwhileness of a program or the value of an approach to solving a specific problem or accomplishing a prescribed set of objectives (Johnson, 1987, p. 15).

The objective of spelling instruction is that students will learn to spell words correctly. The purpose of this section is to examine different methods of assessment in light of how information is selected, gathered, and interpreted.

Johnson's definition of evaluation quoted above differs from that of Perrone (1991). Perrone referred to a difference between assessment and evaluation he found in "the Encyclopedia" (p. 26). "In its derivation, the word assess means 'to sit beside,' to 'assist the judge.' It refers to a process of collecting and organizing information or data in ways that make it possible for people . . . to 'judge' or evaluate" (p. 26). In this study, the terms assessment and evaluation are used interchangeably.

Assessment generally falls into one of two categories or a combination of both. The first type of assessment is summative, which is judging the effectiveness of instruction after the program or instruction has been implemented (Johnson, 1987, p. 16). The other major category is formative, or process, evaluation. Johnson (1987) cited Bloom, Hastings, and Madaus (1971) when saying that this type of evaluation occurs while the instruction is in progress to assess effectiveness of the instruction to allow improvement or alternation of the method if needed (p. 16).

An examination of assessment is complicated even further by realizing that assessment may be applied to each individual within a group or to a group as a whole. Johnson (1987) cautioned that children respond differently to any given program, thereby making it difficult to know whether a particular program is effective (pp. 26-27). Another consideration is the assessor. Textbook publishers, school districts, states, countries, and private companies are sources of summative assessment instruments.

Although teachers generally conduct formative assessments, students also may be involved in teacher-sanctioned self-evaluation and/or self-induced self-evaluation.

According to Tchudi (1991), young children generally have a good idea of what they can and cannot accomplish with language (p. 93). However, in a conversation with Teale (1991), Adams called children merciless critics of themselves. She said they have their own standards and expectations (p. 210). Children are aware of how fellow students are doing and want to perform well. Learning loses its satisfaction for a child when that child is not progressing to her or his own satisfaction (p. 211).

Still another consideration is the audience, or recipient of the results. Although spelling is a small part of all that can be assessed in education, various audiences have interest in student achievement. These include the general public, governmental agencies such as state boards of education, local school district administrative personnel and boards of education, parents and administrators of individual schools, and specific classroom teachers, students, and their parents (Edelsky & Harman, 1991; Engel, 1991; Farr & Greene, 1993). (See Edelsky and Harman, 1991, pp. 150-152, for specific suggestions on dealing with accountability to the various audiences.)

Farr and Greene (1993) proclaimed that interest in student achievement by all these groups is legitimate. They stressed the importance of understanding and addressing audience needs in order to improve assessments and to use assessment results effectively (p. 21). They cited three types of problems: "1) the demand for valid measures . . . ; 2) the need for a broader range of assessments; and 3) the impact and value of assessment for various audiences" (p. 24). They called attention to students as being the first people

who need to know about their own progress. Farr and Greene stated that present assessment programs do little to inform that audience (p. 26). Schattgen (1993) agreed that assessment should benefit students but also should have utility for teachers (p. 3), a view shared by Suhor (1982) and others.

In referring to present assessment programs, Farr and Greene (1993) meant standardized tests (p. 26). To move away from the negative effects resulting from scores of a single end-of-the-year test, they recommended assessment programs that use a variety of assessments (p. 27). Assessment should be integrated with teaching and learning (Hughes, 1993, p. 2; Schattgen, 1993, p. 2).

One must begin by determining what students already know (Hughes, 1993, p. 2). Additionally, Henderson (1990) added that, for literacy, it is necessary to assess what children know about written language and then to make sure that such knowledge is maintained (p. 47).

Because teachers normally monitor students' learning throughout a given day, Perrone (1991) suggested looking for present practices and possible opportunities for assessment in the classroom (p. 27). Weaver (1992) contended that most assessment data are gathered while learners are involved in authentic experiences rather than in isolated test situations (p. 13). Many such evaluative techniques occur in a classroom setting with authentic tasks. These often are referred to as alternative assessments, or performance assessments. (For additional information on performance assessment, see: Hughes, 1993b, pp. 28-35; Shepard, 1995, pp. 38-43.)

Correct spelling is not difficult to measure (Henderson, 1990, p. 189). Two methods of assessing spelling within a natural setting include observation with anecdotal record keeping and examining samples of students' writings (Gentry & Henderson, 1980; Perrone, 1991; Tchudi, 1991). Examples of spelling errors or miscues students made in their writing have been used to make decisions about developmental spelling stages by persons such as East (1993), Gentry (1981), and Kamii, Long, Manning, and Manning (1990). Such miscues also provide examples of children's knowledge of graphophonic relationships (Powell & Hornsby, 1993, p. 101). Observations made as students write provide information regarding strategies they use when constructing their spellings. Such strategies were deemed important by Peters (1985, p. 11). These assessment procedures are analogous to parents' keeping a baby book about a child's development and accomplishments (Engel, 1991, p. 131). Both techniques mentioned above are formative types of assessment, because the teacher can adjust the instruction to address specific needs.

Classroom teachers may use methods such as these as part of their ongoing formative assessment. Such methodology has also been used by researchers who have attempted to determine how to assist young children in the processes of reading and writing (Allen, 1989; Dahl & Freppon, 1995; Healy, 1991; others).

Edelsky and Harman (1991) averred that such assessment is instructionally valid since it is based on authentic literacy activities within classroom contexts. This information should be used to improve students' literacy strategies (p. 150).

Furthermore, Perrone (1991) proposed that reliability of scores, considered to be

important in traditional achievement-testing practices, is less important when observations of a child are made across many settings and over time (p. 26).

Based on work by Teberosky in 1982, DeVries and Kohlberg (1987) offered the following list of children's behaviors to guide teachers' observations:

1. Consciousness of the differences among children's products;
2. Uneasiness over observed differences;
3. Challenging the correctness of other products;
4. Effort to make a copy exactly like the model;
5. Asking for information and giving it to others;
6. Conviction about one's own ideas, and being open to opinions of others;
7. Arguing about graphic products, using interpretations of others' writing as a tool for comparison;
8. Drawing conclusions about conventions, coordinating one's own ideas with those of others (p. 256).

In a comparative study Frisbie and Cantor (1995) examined validity of alternative methods for spelling assessment of second through seventh grade students (p. 55). Their use of the term alternative methods should not be confused with alternative methods described above. Subjects in Frisbie and Cantor's study were assessed by a dictation spelling test and an objective spelling test (p. 55). The dictation was typical of weekly dictation spelling tests used by many teachers (p. 55). Standardized achievement batteries use an objective item format to measure spelling achievement (p. 55). These researchers believed there is interest in determining effectiveness of objective formats

which resemble the writing and/or editing processes used in whole language approaches to language arts (p. 55).

Alternative forms of objective tests used by Frisbie and Cantor (1995) with all grades except second included the following: three-word multiple choice with context; multiple choice, no context, with a 'no mistakes' option; single-word multiple choice with context; true/false without context; true/false with context; and true/false in a paragraph. Frisbie and Cantor did not consider additional spelling assessment alternatives such as free dictation in their study.

To prevent interference of reading effects, the 10 second-grade test forms used by Frisbie and Cantor (1995) had no context. There were 12 test forms for the older students with each form having two parts. To control possible order effects pairs of formats were used (p. 60). Each of these alternative formats was compared to the dictation test, which was used as a standard because of its wide use among teachers for assessing spelling achievement (p. 72). In examining squared disattenuated correlations, "the [true-false/no context] format was consistently low, while the [multiple choice/with context] format tended to show strong relationships across the grades" (p. 72). For second graders, several formats correlated strongly with the dictation test; however, the highest match in score reliability was the multiple choice/single word format.

Therefore, Frisbie and Cantor (1995) felt the multiple choice/single word format could be used interchangeably with the dictation test for second graders. Although the multiple choice/with context format tended to show strong relationships for older students, no single format could be identified from the data analysis as being the best

approach (p. 77). Formats using true/false were more time-efficient. The researchers recommended the multiple choice/no context format because it offered broad content coverage without introducing extraneous factors of reading and vocabulary into the measurement (p. 77).

Whether one supports the use of standardized tests or not, they seem to be a fact of life. Powell and Hornsby (1993) and Allington (1994), among others, believed standardized tests could be used effectively to evaluate programs but not individuals. Allington (1994) suggested omitting student identification to prohibit using results to sort students (p. 27). Assessing performance and achievement of individuals could be accomplished in alternative methods.

In his studies of writing development, Graves (1983) noted the importance of a “child’s growth within the dimensions of *space and time*” (p. 247). This seems relevant considering Johnson’s (1987) caution to teachers that children may not show change each time they are evaluated (p. 24). According to Clay (1991), even a baseline of no writing can be used as a reference point for making notations of progress (p. 105). Because assessment is primarily learner-referenced, Weaver (1992) also recommended that past accomplishments be used for measuring growth of present accomplishments rather than using external criteria or norms (p. 13). Powell and Hornsby (1993) compared collecting data from multiple contexts to a rich and informative collage and a test to a quick snapshot (p. 104).

In considering achievement in spelling, Powell and Hornsby (1993) warned of the need for careful documentation of children’s growth and development in spelling (p. 67).

They suggested looking for miscue patterns such as substitutions, omissions, insertions, and transpositions of letters, letter clusters, or entire words. Teachers should also be aware of differences in dialect and possible faulty auditory perceptions (p. 118). Cramer (1978) recommended examining children's correct and incorrect spellings for useful diagnostic information (p. 115).

Wilde (1992) cited three major ways of grading students. Each way reflects a different philosophy. First is norm-referenced, in which students are compared to other students. This method is known as grading on the curve (p. 168). Criterion-referenced grading, a second method, is the most common in North American schools, according to Wilde (p. 168). In this method a student's score on a text over a body of knowledge determines the grade for that student (p. 168).

Wilde's (1992) third model is based on how well an individual meets self-determined goals. Wilde felt this method could be used in spelling (p. 168). Although expectations under such a method of grading vary from student to student, Wilde defended it. "If grades are to be used at all, shouldn't they send a message that involvement in learning will be rewarded, rather than perpetuating differential recognition based on pre-existing variation in ability?" (p. 170).

Powell and Hornsby (1993) offered a procedure which would allow teachers to assess students' growth individually and provide opportunities for self-referenced grading (Wilde, 1992). They suggested using a dictation approach based on current classroom work with the emphasis on assessing development from temporary to conventionally correct spellings (pp. 127-128). These could be used for analyzing graphophonic

understandings. They cautioned, however, that teachers should follow Clay's (1979, 1991) recommendation of studying miscues at the phoneme and grapheme level and not at the word level (p. 128). They illustrated that importance by providing a sample of a dictation done by a seven-year-old. Had he been graded for success at the word level, he would have scored 45%. However, when graded for graphophonic connections, he scored 85% (p. 128).

Summary. When selecting the manner of assessment to be used in spelling, a teacher has a variety of choices. Assessment should match the instructional procedures used as students learn about print and practice using print. Assessment should span time. Lastly, following a constructivist view, students should be given credit for what they do know, recognizing that they are in the process of constructing knowledge about print. Therefore, their responses may be partially, rather than entirely, correct.

Development of Writing in Young Children

“Spelling is for writing” (Graves, 1983, p. 193).

“Achievement in education clearly depends upon skills of reading and writing”
(Tough, 1983, p. 57).

Goodman (1983) explained her interest in written language development as providing information which could allow educators to establish curricula built on knowledge children bring to school about written language (p. 69). Given the importance of understanding written language development and skills in writing, including that of spelling, the next section of this literature review examines writing development in young children.

Writing is developmental and begins in infancy (Engel, 1991). Vygotsky (1978) believed that gestures are visual signs written in air and that written signs may be gestures that have been recorded. He viewed children's first drawings and scribbles as gestures rather than as actual drawing. He said that children indicate, and the writing instrument fixes the indicatory gesture (pp. 107-108). Vygotsky at least partially attributed his belief that drawing is graphic speech arising on the basis of verbal speech to work by Sully, who studied drawing by young children (pp. 112-113).

Vygotsky interpreted objects used in play as a form of symbolic notation (p. 109). Such objects acquire sign functions in play. Therefore, make-believe play was seen as a major contributor in written language development (p. 110). In discussing experiments conducted by Hertzner to study how symbolic representation of things develops in three-to-six-year-olds, Vygotsky concluded, "Symbolic representation in play is essentially a particular form of speech at an earlier age, one which leads directly to written language" (p. 111). Given this information, it seems natural that Vygotsky recommended teaching writing to preschool children (p. 116). Donaldson (1978) concurred.

Seminal work in the study of young children's understanding of writing was conducted by Ferreiro and Teberosky. Ferreiro (1991) explained differences in how acquisition of written language is viewed (pp. 34-37). She saw it as a conceptual learning process in which children acquire a new object of knowledge (p. 37).

Children's first writing varies in form. It may appear as wavy lines or zigzags. Lines may be broken or continuous. It may be discrete elements which are repeated. To determine if a child were writing when making such forms, it is necessary to establish the

conditions of production. This is done by looking at both graphic and constructive aspects. Included are such things as orientation on the page, orientation and spatial distribution of forms, differentiations, and intent (Ferreiro, 1991, p. 38).

Three major periods in children's first writing attempts occur, according to Ferreiro (1991), and many subdivisions exist within these major periods. The first period occurs when a distinction is made by the child between representation by image and the non-iconic mode. The second period evolves as a child gains control over both qualitative and quantitative variations in the forms. The final period includes the phonetization of writing, moving from a syllabic period to an alphabetical period (p. 40).

In her examination of writing samples and behaviors of young children, Clay (1975) identified a number of principles which guide children's work. One is the recurring principle in which basic forms are repeated (pp. 20-21). Graves (1983) claimed that repetition is an important step in growth, used to mark time and to satisfy needs of the learner-writer (p. 241). Another of Clay's (1975) principles is that of flexibility when the child begins to vary forms. However, the child must learn to use some constraints as accepted and expected in English (p. 22).

Clay (1975) described four parts to the next principle, direction, including starting at the top left, moving left to right across the word or line, returning down left, and locating the next starting point (p. 24). According to Clay, most children gain control of these behaviors after about six months of instruction in school (p. 26). However, children occasionally may misapply the flexibility principle to one or more of these behaviors.

Children sometimes encounter difficulty following these behaviors when the size of their page is constricted or their visual-motor coordination is immature (Clay, 1975, p. 39). Another problem is use of space to signal the end of one word and beginning of the next (p. 53). Parker (1983) spoke of difficulties children experience in early writing, noting that the precarious balance among the features of writing achieved by a child may be disturbed when energy and attention is directed toward mastering a new feature of writing (pp. 49-50).

Another of Clay's (1975) principles is the generating principle, which results in several plans for combining or arranging known elements (p. 27). This allows the child to fill gaps when unable to remember details (p. 29).

A "special kind of structuring to establish opposites" (p. 36) is the basis of the contrastive principle. When a child deliberately uses one symbol to imply a full word rather than writing the full word alone or with help, the abbreviation principle is in use (p. 38).

Clay (1975) named three signs to which children eventually attend. These include letters of the alphabet, punctuation, and their signatures. When young children have a limited knowledge of print, they will produce combinations of real letters, mock letters, adaptations, or inventions (p. 42). For many children, one of the first letters they learn is their first initial, to which they gradually add other letters from their name (Clay, 1987; McGee & Richgels, 1989). Often it is these letters to which the child applies principles such as generating, flexibility, and recurring (Clay, 1975, pp. 42-46).

Between three and five years of age most children produce scribble writing, linear mock writing, or mock letters after becoming aware that people make marks on paper purposefully (Clay, 1975, p. 48). These earliest writings do not “record their own thoughts but very soon the ideas that they want to express begin to communicate to adults” (p. 51).

During the early stages of writing development, children are guided by the preceding principles and learn two concepts. One is the sign concept, which is easy and learned early, according to Clay (1975). It is that sign carries a message. “Problems arise when children fail to move beyond the stage of producing signs” (p. 63). The second concept is that of message, when the child realizes that messages that he speaks can be written down. At the beginning of recognizing this concept, there is no correspondence with what is written and the message intended (p. 63). Later, when the child is able to write a word which is recognized by an adult, she gains a sense of mastery through orchestrating her actions in an appropriate sequence (p. 70). It is for these reasons that Clay views the child’s product as objective evidence of what the child knows (p. 71).

Goodman (1983) also spoke of principles children construct. She proclaimed that “the major principles are best viewed as developmental, since children grow into and through all of them. They develop idiosyncratically, depending on each child’s environment, and they overlap and become integrated” (p. 75). This thought was reiterated by Cramer (1978, p. 20). No matter how such principles develop, most children enter school with a vague, general understanding that some relationship exists among reading, writing, and language (Cambourne & Turbill, 1987, p. 30).

These understandings cited by Cambourne and Turbill (1987) develop prior to formal schooling and were studied in depth by Ferreiro and Teberosky (1982). In their search to understand the cognitive changes in conceptions of print and writing from the viewpoint of the learner, Ferreiro and Teberosky interacted with Argentine children aged four to six from lower-class and middle-class families (DeVries & Kohlberg, 1987). Their perspective was Piagetian. They concluded that children construct and reconstruct hypotheses about how print works. Similarities can be drawn between their findings and those previously discussed by Clay (1975).

According to Ferreiro and Teberosky (1982), children's written constructions progressed from logographic systems like that of the Chinese, to syllabic systems like Japanese, to alphabetic systems such as English. DeVries and Kohlberg (1987) recapitulated findings of Ferreiro and Teberosky, citing five successive levels of the evolution of writing. The first level includes subjective intent and figural correspondence, hypotheses of minimum number, and variation of graphics. Graphic characters are varied and their number is constant (pp. 230-231). Ferreiro (1991) noted that it is very important that the child recognize the distinction between drawing and writing (p. 40). The second level defined by Ferreiro and Teberosky (1982) has children using different graphics for different meanings. Children believe there must be objective differences in graphics in order to read different things (p. 231). In discussing what children write during the first two levels of development, Ferreiro (1991) explained that products were not governed by differences or similarities among signifiers. It is at the

third stage that children attend to similarities and differences in the sounds of signifiers (p. 42).

At the third level, children construct a syllabic hypothesis. At this level, one letter represents one syllable; thus, a child at this level would write a two-syllable word with two letter forms. This, then, causes a cognitive disturbance due to its contradiction of their minimum-quantity hypothesis in which three or more letters are required for something to be read (DeVries & Kohlberg, 1987, p. 231). Also of conflict was the belief that one letter cannot be read (DeVries & Kohlberg, 1987; Ferreiro, 1991; Ferreiro & Teberosky, 1982). Such beliefs demonstrated to Ferreiro and Teberosky that these indeed were constructions of the children rather than a result of teaching by adults (DeVries & Kohlberg, 1987, p. 232). Ferreiro (1991) claimed this level to be of great importance for two reasons. Children apply general criteria for regulating the variations in the quantity of letters used. Furthermore, children attend to differences in the sound patterns of words (p. 42). Adams applauded early writing for causing children to listen to the sound structure of language. She felt this led children to observe how words are spelled conventionally (Teale, 1991, p. 209).

The fourth level is that of syllabic-alphabetic hypothesis. This represents a transition stage when children realize that the syllable may be broken down into smaller elements (Ferreiro, 1991, p. 43). Children often fluctuate between syllabic and alphabetic writing, producing reading and writing which may begin syllabically and end alphabetically (DeVries & Kohlberg, 1987, p. 233; Ferreiro & Teberosky, 1982, p. 270).

At the alphabetic hypothesis, the fifth and last level, the child represents each sound value smaller than a syllable with a letter. It is only at this point that children's and teachers' criteria for what can be written and read meet (Ferreiro & Teberosky, 1982, p. 280). They concluded that children must be at advanced levels of conceptualization to benefit from traditional instruction (p. 280).

Mayher, Lester, and Pradl (1983) also discussed changes which occur in young children's writing development. They suggested that children are motivated to learn conventional writing when they realize that others cannot interpret their nonconforming representational systems (p. 53).

As Clay (1977) stated, children begin with gross approximations in writing and later make refinements (p. 336). She noted that the child's knowledge is very specific, then provided examples of a boy who acknowledged his name only when it was spelled "IAN", not "Ian", and of a girl who only claimed "Jehhy", not "Jenny" (p. 336). Because gross approximations and very specific knowledge exist within one child at the same time, Clay proclaimed that a teacher must assess a child's current writing product by comparing it to what that individual child had done previously (pp. 336-337).

One might assume that copying would encourage children to refine their knowledge of spelling and writing. However, Clay (1977) noted that a child tires quickly of the copying task and begins to invent forms for himself. She found that children made discoveries through their inventions (p. 337).

Summary. Using the words of Wells (1987), "The picture that emerges . . . is one of an active seeker after meaning who is predisposed to construct progressively more

complex conceptualizations of linguistic form and to modify them in the light of feedback of various kinds from the environment” (p. 115). Thus, instruction and assessment should respond to and respect the child as the constructor of meaning.

Invented Spelling

Clay (1975, 1977, 1979) is one of many who have mentioned inventions children create as they write. Ferreiro (1991) defined levels of development in children’s progression toward conventional spelling. When children are moving into her stage three they first begin to represent sounds they hear in words they wish to write (Ferreiro, 1991, p. 42). This researcher chooses to identify this point in the development of writing as the beginning of invented spelling for a given child. The purpose of this section is to describe in greater detail the phenomenon first called invented spelling by Charles Read.

In 1970 Read initially described the creative spelling he observed among preschool children (Hall, 1987, p. 51). These children learned to spell naturally, according to Weaver (1988, p. 194). In his attempt to understand nonstandard spelling, Read (1986) analyzed examples and found they were different from copying errors (p. 2). Read noted the relationships which existed among letters children used and the point of articulation of sounds represented. He found that a child wishing to spell words needed to have some understanding of writing and what words represented. Then the child performed a specific analysis of dividing the stream of speech into units to be represented by alphabetic spelling (p. 107).

This seems to match Clay’s (1985) notion of “searching for relationships” (p. 14). Cambourne and Turbill (1987) called this “spelling as it articulates” (p. 25). Although

adults often find the frequent patterns in beginning spelling strange, those patterns do reflect phonetic judgments with an authentic physical basis (Read, 1986, p. viii). Of great importance is Read's statement that course planning and proper instruction require the understanding of these phonetic judgments (p. viii).

Cambourne and Turbill (1987) later described the process of phonetic spelling as spelling as it sounds. They also found that such spelling had a direct sound/symbol relationship (p. 25). They discovered that children often exaggerated the sounds, causing them to represent phonetic features not normally represented in spellings as they sound out (p. 25).

According to Graves (1983) children need know only about six consonants to compose a message (p. 184). According to Graves (1983) and Clay (1987), children frequently begin by using letters from their name. Graves (1984) described the first stage of invented spelling as "sounding letters" (p. 93). This is followed by writing consonants in the initial and final positions of words (p. 93), which Weaver (1988) called the early phonemic stage (p. 186). Graves (1984) claimed that children are motivated to write before they want to read, speculating that their own marks fascinate them more than marks made by others (p. 65).

As children attempt to represent sounds in words they are writing, they must deal with problems such as the following, identified by Read (1986). Children must learn which letters can appropriately represent the approximately 20 more phonemes than letters of the alphabet. They must learn which letters can be used as a substitute for the same sound. Vowels are particularly troublesome; neighboring sounds influence the

sound of vowels. Differences among speakers and contexts cause vowel sounds to vary to different degrees (pp. 3-4). Read found that children may use standard spellings in the wrong contexts (p. 19).

Read (1986) discussed both strengths and weaknesses in the evidence of children's invented spellings. He identified face validity as its greatest strength, as "these spellings constitute children's spontaneous efforts toward solving the major educational problem of the early school years, the acquisition of literacy" (p. 39). The credibility of such spelling evidence is enhanced by the "phonetic properties that can be demonstrated, measured and manipulated" (p. 39). He listed several weaknesses, including the inability to control the actual phonetic input or pronunciation being represented (p. 40). Read also claimed that some spellings such as those using short vowels are created spontaneously by only a few children (p. 40).

Movement from concrete phonetic spellings to somewhat abstract standard spellings provides evidence that spelling develops. Read (1986) compared writing development to children's drawing, both of which begin with using a few simple strategies representing salient and concrete properties and gradually changing to using a wider variety of strategies to represent increasingly more abstract properties (p. 41). According to Read, children formulate and try out various hypotheses involving relationships of written language to objects and spoken language during the course of about three years (p. 107).

Reading experience and spelling instruction affect spelling increasingly over time (Read, 1986, p. 114). Turbill (1982) agreed that children's spellings move gradually

from representing sound to representing sight, as images of words and parts of words are remembered from reading (p. 50). Weaver (1988) added that, as children attend to more and more visual aspects of print, they begin to spell more conventionally, with some words spelled correctly and with some reflecting overgeneralization of observed patterns (p. 203).

Read (1986) attributed creative spellers' ability to segment speech at an early age without explicit instruction to their awareness of examples of reading and spelling at home and in preschool (p. 120). Read credited the acceptance of the creative spelling by the parents of the children involved in his initial study as motivation for further development. Furthermore, he proclaimed that the real function of preschool and primary education is to help children refine their conceptions of written language (p. 107).

DeFord (1994) said the function of school for the young child is to help them understand the "symbolic acts of reading and writing, their purposes, interrelationships, and uses in the contexts of school and the world at large" (p. 32).

Adams (1990) encouraged the acceptance of invented spelling in school because it requires a child to sound out letters of a word in sequential order (p. 131). Gentry (1987) believed that inventing spelling causes children to think and learn; therefore, it should be encouraged (p. 17). Inventions of spelling allow teachers to determine what children know, which Hoffman and Knipping (1988) said should be their focus, rather than focusing on what they do not know (p. 287).

However, Adams (1990) and others did not expect children to remain in the "cognitive stage" (p. 233) as creative spellers. She challenged teachers to help children

through the cognitive stage efficiently and effectively (p 234). Zutell (1980) suggested that learning environments provide children with opportunities to construct, apply, and evaluate orthographic hypotheses (p. 64).

Invented spelling appears to be a temporary stage along a continuum of development (J. W. Beers, 1980; Gentry & Henderson, 1980; Read, 1986; Stever, 1980). Visual aspects of words gain in influence, and the phonetic influence lessens (Stever, 1980, p. 50). Therefore, if teachers recognize this continuum of development, they are more likely to follow the child's progress without emphasizing errors. Parents need to be informed of this teacher stance (Gentry & Henderson, 1980, p. 114).

According to Graves (1983), children are very aware of their spelling difficulties. In the beginning considerable problem solving is at the spelling level; and, thus, spelling is a central issue in their writing (p. 235). It is usually near the end of first grade that using conventions becomes important if the child has received response from other writers and help from teachers (p. 236).

Eventually children acquire a repertoire of known words. According to Clay (1991) this core allows children to use familiar parts of known words to learn new words by analogy (p. 244). Although Adams (1990) supported inventions in spelling, she also believed children must have knowledge of spellings and their connections to speech (p. 207). Such knowledge allows a child to spend more time problem solving in other areas of the composition process. Additionally, such knowledge allows children "to become confident, thoughtful, reflective, willing, able readers" (p. 207).

Summary. Invented spelling occurs naturally for some children; it should be encouraged for all. It enables children to spell words by sounds as they write from the very beginning (Teale, 1991, p. 209). Children relate their phonemic awareness to letters they know as they segment sounds within words. This important link between spelling and sound allows children access to the written language system (p. 211). Richgels (1995) cited phoneme awareness, invented spelling, and word reading as laying a foundation for extended literacy knowledge and competence (p. 107).

According to Adams (1990), it is more important that a child know that distinct sounds are abstractable and manipulable than to actually hear or produce them (p. 65). Furthermore, Adams told Teale (1991), that inventive spellers learn quite quickly when attention is given to spellings and sounds. She, too, saw inventive spelling as functional from the start as it introduces students to print and literacy (p. 209). Therefore, instruction and assessment should follow the continuum of development as children construct their own understanding of the orthographic system.

Studies Investigating Relationships Between Aspects of Spelling, Reading, and Writing

Many studies have been conducted to investigate relationships between reading and writing. Most have dealt with correlations; some have attempted to prove causality. For emergent readers, most studies have involved variables such as phonemic awareness, segmentation of sounds, invented spelling, and process writing. This section features a discussion of some of these studies in order of the variables listed above.

Studies Involving Phonemic Awareness

Morris (1980) conducted a correlational study with 21 first graders in which children learned to recite a four-line poem. They then learned to finger-point to match the words as they read the poem. After multiple readings with the examiner and then alone, each child was asked to pronounce six words from the poem that were printed in list form. Results of Morris's correlational analysis at the end of the study indicated that a significant relationship did exist between children's concept of word and their phoneme segmentation test performance (p. 110). A second phoneme segmentation test in which children represented consonant segments in invented spellings provided similar results (p. 110). Morris believed this methodology provided a reading readiness conceptual measure which could be applied in classrooms (p. 111).

In her quasi-experimental study, Brown (1982) worked from the premise that instruction in vowel sounds is beneficial to spelling and reading achievement. One group of second-grade children received direct instruction in isolating vowel sounds in words and in applying that skill in word identification (p. 71). A control group of second-graders received no special training. Scores on tests of auditory discrimination and spelling for both groups were compared. The adjusted means for the experimental group were significantly higher on both measures (p. 109). Brown suggested that the results supported the belief that hearing and identifying sounds in words is important in learning to read (p. 13).

A comparative study by Schwartz (1983) analyzed differences among good spellers (upper third), poor spellers (lower third), and learning disabled spellers at each age from 8 to 10 years. Subjects were native speakers of English from predominantly

middle-class backgrounds (p. 306). Three measures involving nonsense words and real words tested knowledge of spelling patterns; test three required production of nonsense words in writing. Poor spellers performed significantly better than learning disabled spellers on all three tests, and good spellers performed significantly better than poor spellers (p. 309). For additional analysis, errors were classified as transitional, nonstandard, and other. Nonstandard patterns occurred more frequently with learning disabled spellers at all ages, indicating their difficulty in spelling phonetically (p. 311).

Furthermore, Schwartz suggested that spelling development for learning disabled students follows a similar but slower sequence than that described as normal by Beers and Henderson (1977) (p. 312). She cited Bruck's (1981) finding that progress in reading and spelling for learning disabled persons continues into early adult life (p. 312).

Kindergartners were involved in an experimental study by Ehri (1987). All children involved were able to read only a few words on a preprimer list and knew 9 of 10 selected letters. However, they were unable to spell with consonant clusters or read any of the words to be used in treatment. Children in the experimental group were taught to use letter tiles to spell words and nonwords with the following letter patterns: CV, VC, CVC, CCV, CCVC, VCC, CVCC. Control group children practiced matching the same 10 tiles to their isolated sounds for many trials. Ehri hypothesized that if children in the experimental group were able to read more words on a posttest than those in the control group, then spelling training facilitated phonetic cue reading.

Analysis indicated that experimental group children were more effective in learning to read the words (p. 5). Because experimental group children provided

reasonable pronunciations to proportionately more letters than those in the control group, Ehri (1987) believed spelling-trained subjects were processing more phonetic cues (p. 5). She also believed that learning to spell facilitated beginners' ability to read words since it helped them to process phonetic cues in words (p. 5). This study seemed to reinforce the belief that a link exists between spelling and reading. The act of writing alerts learners to sounds in words and to which letters might represent those sounds, while reading provides visual awareness of correct spelling of specific words (pp. 8-9).

In a study by Yopp (1988), ten tests of phonemic awareness were assessed for reliability, validity, and relative difficulty by administering them to the same group of kindergartners. Yopp's predominantly white sample began with 50 boys and 54 girls from three schools in a California school district, with a range from lower-middle to upper-middle socioeconomic class (p. 163); by the end of the study 96 subjects remained (p. 168). The reading readiness program used in this district introduced children to letter-sound relationships and a limited number of sight words.

The following is a list of the ten phonemic awareness tests used by Yopp (1988): 1973 Wepman auditory discrimination, 1959 Roswell-Chall phoneme blending, 1974 Liberman et al. phoneme counting, 1964 Bruce phoneme deletion, 1975 Rosner phoneme deletion, Yopp rhyming, 1974 Goldstein phoneme segmentation, Yopp-Singer phoneme segmentation, Yopp modified sound isolation, Yopp modified word-to-word matching, and Yopp phoneme reversal. An additional learning test by Yopp was included to determine the "predictive validity of each measure of phonemic awareness for the initial stages of reading acquisition" (p. 167). That test consisted of 6 three-letter nonwords

with a CVC pattern. It was used to determine the number of trials required for each child to identify the words following “explicit instruction in ‘sound and blending’ together the constituent sounds” (p. 167).

Tests were administered to each child in a different random order during April and May, with one test given per day in most cases. Yopp’s learning test was administered to all subjects last. Reliability was determined using Cronbach’s alpha, resulting in the Roswell-Chall phoneme blending test being most reliable and the Yopp-Singer phoneme segmentation test following closely behind (Yopp, 1988, p. 168). Yopp’s rhyme test was the easiest, and Bruce’s phoneme deletion test caused students the most difficulty (p. 169). In examining correlations, it is evident that almost all of the phonemic awareness tests are significantly correlated but within a wide range (p. 169), which indicated construct validity in the phonemic awareness concept (p. 172).

Principal factor analysis with oblique rotation on the correlation matrix indicated that factor one accounted for 59% of the variance, while factor two accounted for 9.5% of the variance (Yopp, 1988, p. 169). Phoneme blending, segmentation, counting, and sound isolation tests all loaded highly on factor 1, and the two phoneme deletion tasks loaded highly on factor 2. Other tests had moderate to low loading on one or both factors. These two factors were highly related (p. 170). “Both factors accounted for a significant portion of the variance in the criterion variable” (p. 171). Yopp believed there was additional support for the use of two tests for predicting reading acquisition. Factor one required one step and was named ‘Simple Phonemic Awareness’ (p. 172). Factor two required two steps and was called ‘Compound Phonemic Awareness’ (p. 172).

Each test had moderate to high correlations with the learning to read novel words criterion test with Yopp's modified sound isolation test and with Goldstein's phoneme segmentation test, first and second respectively (Yopp, 1988, p. 170). Stepwise regression analysis indicated a significant contribution by Yopp's modified sound isolation test and Bruce's phoneme segmentation test to explaining learning rate variance (p. 171).

Because she included a wide variety of tasks in this study, Yopp (1988) believed this study revealed two factors related to the concept of phonemic awareness (p. 172). Based on her results, she cautioned against the use of rhyming tasks and auditory discrimination tests (pp. 172-173). She defined phonemic awareness as manipulating discrete sounds in speech (p. 173). In conclusion, Yopp recommended using a combination of tests, one from each factor, for predictive validity for the initial steps in reading acquisition (pp. 174-175).

Griffith (1989) collected data from 96 first graders and 87 third graders, all of whom were asked to spell the same 40 words. Using Roper and Schneider 1984 GKR Test of Phonemic Awareness, Griffith examined phonemic segmentation, blending, deletion of first phoneme, deletion of last phoneme, substitution of first phoneme, and substitution of last phoneme. She used multiple regression to determine the impact at each grade level of phonemic awareness and word-specific information on spelling ability (p. 6). Grade level children were divided according to level of phonemic awareness. Additionally, first graders in the high phonemic awareness group were subdivided by high or low word-specific information (p. 7). Analysis indicated that for first graders,

phonemic awareness is the more powerful predictor of spelling ability and that phonemic awareness has a facilitative effect on the development of word-specific information.

Generally, children did not perform well on word-specific information if they also scored poorly on phonemic awareness (p. 8). By grade 3, word-specific information exerted the stronger influence on spelling.

Spelling errors of 45 children from first grade through third grade were examined by Hoffman and Norris (1989) for evidence of parallels to speech sound acquisition. A primary judge and a secondary judge were used for categorization of errors as correct or incorrect orthographically. The latter were categorized as correct or incorrect phonologically by looking for successful representation of syllabic structure and phonetic features of consonants contained within each word. Those that were judged phonetically incorrect were analyzed for types of error similar to those described as phonologically processed in normal speech development (consonant productions that simplified syllable structure and consonant productions that involved phonetic simplification).

Results indicated that children's spelling simplifications resembled speech simplifications. Hoffman and Norris (1989) suggested that the spelling process be compared to a Parallel Distributed Processing Model of cognition. Such a model suggests that the auditory system is used by more children with little experience with print because of a lack of connections to visual representations (p. 793). This continued to be true for poor readers and spellers even after their peers began to use spelling conventions (Fischer, Shankweiler, & Liberman, 1985; Zutell, 1979) (as cited by Hoffman & Norris, 1989, p. 793).

Fingerpoint reading training was an integral part of Ehri and Sweet's (1991) laboratory study with 36 children ranging in age from 4.5 to 5.8 years. Subjects were pretested on letter and word knowledge. This was followed by training for reading a story and fingerpointing with an experimenter. After training, the child fingerpoint-read the story independently (p. 446). Two trials were sufficient for 86% of the children. Then the child and experimenter practiced fingerpoint reading on a second story. On the second day of training, the child and experimenter repeated practice on the second story, with the child fingerpoint reading independently on the third and fifth of five times. After the final reading, six posttests were given to measure recognition of altered text, reading isolated lines of text, reading isolated target words, reading target words in text, recognizing words in text, and letter discrimination (pp. 448-449).

Additional training in phonemic segmentation was given each day following the fingerpoint reading. Using mouth blocks, each depicting a mouth making a different sound, children learned to associate the pictures with sounds. For task performance, 24 two- and three-letter blends were presented and measured for "number of trials to reach criterion the first time in learning associations between the four mouth pictures and sounds" (Ehri & Sweet, 1991, p. 449), the number of correct representations of individual sounds spoken, and the number of correctly segmented blends (p. 449). Ehri and Sweet were surprised at the relative lack of importance of letter knowledge indicated by their analysis. However, they found that phonemic segmentation skill was beneficial to beginners in learning to fingerpoint-read memorized text and in remembering individual words in the text (p. 456). Because phonemic segmentation skill proved more important

than preprimer word reading skill, Ehri and Sweet posited that phonemic units were more influential in the process than lexical units (p. 458). Furthermore, these results “indicate that beginners may be unable to make much progress in various aspects of memorized text reading without also acquiring specific print-related knowledge” (p. 460).

Lie (1991) followed 147 Norwegian children through first grade and second grade in a longitudinal study. Subjects originally were members of 10 classes from seven schools. Their mean age was 7.2 when the study began, which could be slightly older than first graders in other classes. Classes were randomly assigned to two experimental groups and one control group. Trained classroom teachers followed prepared scripts as they conducted daily 10-to-15-minute sessions during the fall semester (p. 239).

Lie’s (1991) positional analysis group was trained in identifying initial, final, and medial sounds in spoken words. The second experimental group was trained in sequential analysis of sounds in words beginning with the first phoneme. Lie emphasized that training for both groups was oral and that children learned a general technique for analyzing their own pronunciations of spoken words (p. 241). To control Hawthorne effects for those in the control classrooms, Lie informed the teachers that they were participating in a training program for concept development. In fact, they followed a reorganized first-grade curriculum which already existed in the Norwegian school system rather than introducing anything new (p. 241).

To provide a more intensive examination of the development of metaphonological skills, Lie (1991) randomly selected a subset of students based on scores on a general intelligence test. Equal groups for low, middle, and high intelligence were formed, with

one boy and one girl per intelligence ranking drawn from each of the three classes in each experimental group and from the three classes in the control group, for a total of 54 students (p. 239).

In addition to the general intelligence test, tests for auditory sequential memory, auditory reception, auditory association, sentence imitation, and letter knowledge were used as pretests (Lie, 1991, p. 242). All subjects were tested for reading and spelling at the end of first grade and again at the end of second grade. Children in the subset group which considered intelligence were given additional individual tests before training began, midway through training, and at the end of training. These tests measured prereading ability and metaphonological skills of initial phoneme analysis, sequential analysis, and synthesis of phonemes as taught in the treatments (p. 243).

Pretest scores indicated that all three groups were comparable in areas tested. When testing at the end of first grade, Lie (1991) noted a tendency toward a ceiling effect in reading and somewhat in spelling, which could have resulted in underestimation of means (p. 244). Nevertheless, the sequential group performed significantly higher on reading than the control group, and other differences were not statistically significant. This trend was observed at the end of second grade, but the difference was only significant at the $p < .10$ level. A significant main effect of intelligence appeared in the analysis of reading scores, with the greatest effect for the lowest group in intelligence (p. 245).

Tendencies in spelling were similar. At the end of first grade, scores ranked the sequential group highest, then the positional group, with the control group last. The

control group was also last at the end of second grade, but the scores of the two experimental groups were almost identical. In examining results for main effect of group, after first grade the order of performance with the difference between each group significant was, first, the sequential group; then, the positional group; and, last, the control group (Lie, 1991, p. 245). After second grade, the control group scored significantly lower than both experimental groups, but the experimental groups did not differ from each other (p. 245). Those in the lowest group for intelligence showed the greatest group effect.

Although training in sequential analysis and training in positional analysis were beneficial to reading and spelling acquisition, Lie (1991) believed that sequential analysis training was more effective (p. 247). Furthermore, “the finding of an interaction with intelligence suggests that instruction in word analysis should be provided according to the pupil’s need for systematic instruction in this area” (p. 248). Lie suggested that such training be conducted in kindergarten or first grade and that it should be of sufficient length to affect the reading and spelling performance of first-grade children (p. 248). Lie concluded that skills in word analysis facilitate learning to read and are not simply a result of reading acquisition (p. 249).

A longitudinal study involving twenty first- and second-grade French children was conducted by Siegrist and Sinclair (1991) as an extension of Ferreiro’s work (p. 59). The researchers considered that, although children at this stage have an understanding of the basic phonographic principle, they are only beginning to learn orthography (p. 59). One method used to investigate spelling included six occasions when students were asked

to write dictated sentences using words with silent letters, homophones, homonyms, apostrophes, and accented letters (pp. 60-61). The researchers also conducted interviews using Piagetian exploratory methodology.

Siegrist and Sinclair (1991) found that some students focused on the same specific aspect in their approach (defined as centration, p. 62), while others changed from time to time or task to task. Subjects often ignored special conventions while focusing on graphophonemic relationships. This occurred in single words and in sentences. At times some children used no blanks between words at all in short sentences, claiming the utterance to be all one word. In longer sentences, some students separated subject and predicate with a single blank (p. 63). Other children separated each syllable (p. 64). Still others showed awareness of print conventions and used correct spellings for certain words (p. 65). By session 4 and into 5 and 6, many children's spelling showed evidence of integrating phonographic correspondences and some French orthography (p. 66). Siegrist and Sinclair praised the Piagetian approach used in their study (p. 68). They noted subjects' consistency in focusing on certain characteristics. Then, as conflicts occurred, subjects adjusted their hypotheses, eventually leading to broader, more conventional theories (p. 68).

Three subjects who had shown strong interest in literacy activities in a Head Start preschool program located in a mid-size Midwest city were subjects of a descriptive study by Smith and Rotman (1993, p. 2). These children's scores on a series of informal measures fell in the top quartile of scores used in a larger study and were considered

advanced literacy learners (p. 2). Additional measures assessed their understanding of written and oral language and their intellectual and receptive language ability.

Observational checklists, questionnaires, records of observations, taped interviews with the subjects, parent interviews, and on-site visitations yielded additional data. Smith and Rotman (1993) analyzed data in an attempt to determine how advanced knowledge was fostered in preschoolers who lived in impoverished environments (pp. 3-4). Results of measures to determine intellectual and receptive language ability indicated that these students were not exceptional in either area.

In this study (Smith & Rotman, 1993), students' scores on measures for letter sounds and phonemic awareness showed considerable variance; however, all were strong in their knowledge of letter names (p. 4). Although these students seemed confident in their ability to write, they all expressed some reservations about their ability to read (p. 5). Observations revealed that these children engaged in frequent writing and reading experiences at home. Their reading/writing experiences occurred less often at school (p. 5). Although parenting styles differed among the three families, someone reportedly read to each of the children (p. 5). Each child had a literacy advocate at home who involved the child in activities with written language (p. 7). Parents and the Head Start teacher all considered these three children natural learners interested in writing and producing letters (p. 7). Smith and Rotman considered these children constructivists who learned about print through their writing experiences, thus confirming their belief in the importance of writing in literacy development (p. 8).

Wagner, Barker, and Rashotte (1994) conducted a longitudinal correlational study in second grade to determine the relationship between orthographic processing ability and word identification (p. 2). Nine kinds of abilities were measured using 29 tasks administered in a single testing session which lasted about two and one-half hours. These included homophone choice, concepts about print, letter name knowledge, phoneme segmentation, blending phonemes, Stanford-Binet vocabulary, and word identification (pp. 3-4). Hierarchical regression analysis indicated the following: step 1, predictor is age, $R = .00$; step 2, predictor is first grade word identification, $R = .58$, $p < .001$, R Change = $.57$, $p < .001$; step 3, predictor is verbal ability, $R = .62$, $p < .001$, R Change = $.04$, $p < .001$; step 4, predictors are segmenting and blending (both considered phonological processing ability), $R = .67$, $p < .001$, R Change = $.05$, $p < .001$; step 5, predictors are homophone choice, concepts about print, and letter name knowledge (all considered orthographic processing ability), $R = .72$, $p < .001$, R Change = $.05$, $p < .001$. These researchers concluded that prior reading ability is not the only variable to affect current or future reading ability (p. 5).

Although the following article does not reflect a study, it adds additional information relevant to this study. Griffith and Olson (1992) claimed that being able to manipulate phonemes is important in word recognition and spelling (p. 518). They proceeded to discuss methods for developing children's level of phonemic awareness and measures for assessing it, as suggested by Yopp (1988). Among suggestions for developing phonemic awareness were reading rhyming texts to children daily, providing daily writing experiences, and using Elkonin boxes (from the Russian psychologist, D. B.

Elkonin) for helping children discern the order of sounds in spoken words (pp. 520-521). However, Griffith and Olson warned that phonemic awareness activities should be placed in a context of real reading and writing in order to be helpful (p. 522).

In a second article, Yopp (1992) cited research which supported the relationship between phonemic awareness and reading, as did Griffith and Olson (1992). Yopp also explained the reciprocal relationship involved in the phonemic awareness/reading relationship. She claimed that children must have some level of phonemic awareness to benefit from formal reading instruction. According to Yopp, reading instruction increases that awareness. "Thus, phonemic awareness is both a prerequisite for and a consequence of learning to read" (p. 697).

Yopp (1992) offered guidelines for developing phonemic awareness. Use of songs was among her suggestions (p. 699). Other activities were categorized as sound matching, sound isolation, sound blending, sound addition or substitution, and segmentation (p. 699). Yopp advised that teachers accept and accommodate individual differences (p. 702). Yopp's suggestions were intended for use with preschool children and above. Use of written words was noted as being helpful with second semester kindergartners (Hohn & Ehri, 1983, as cited by Yopp, 1992, p. 702). These activities can increase students' opportunities for a successful experience in learning to read (p. 703).

Summary. Phonemic awareness has been shown to be interrelated with reading and spelling. Younger children generally appear to focus on sounds they hear as they attempt to write. This reliance on sounds seems to fade in dominance as children gain experience with reading, and their spellings show influence from visual characteristics of

words seen in print. Griffith and Olson (1992) and Yopp (1992) provided specific suggestions for practitioners, some of which are relevant to the study under consideration.

Studies Involving Segmentation of Sounds

Phonemic awareness and segmentation of sounds seem to be closely related. Studies involving phonemic awareness discussed above referred to segmenting sounds (Morris, 1980; Schwartz, 1983; Griffith, 1989; Ehri & Sweet, 1991; Wagner, Barker, & Rashotte, 1994). Therefore, this section will be limited to three studies that focus on segmentation and end with two which deal with learning by analogy.

A seminal longitudinal experimental study by Bradley and Bryant (1985) involved rhyming and alliteration ability of 403 children, initially four and five years old, who were followed for four years. The longitudinal aspect of the study allowed revelation of relationships. The researchers used pretests to measure verbal ability, sound-categorizing, drawing, rhythm, and other unnamed skills. Longitudinal data were analyzed using multiple regression. The researchers found that sound categorization by beginning, middle, and ending had a strong and significant relationship to progress in reading and to spelling for those who were in the original four-year-old group. For the five-year-olds, however, only middle and ending sound categorization predicted success.

A second aspect of the study in which training was provided was used to investigate causal links, according to Bradley and Bryant (1985). Only those at the lower end of the sound categorization scores were used for this training phase. Four groups were developed, three with 13 subjects and one with 26. Group I, an experimental group, was trained on sound categorization only. Group II, also an experimental group, was

trained on sound categorization and given plastic letters to manipulate. Group III, a control group with 26 subjects, was trained on conceptual categorization. Group IV, another control group, received no training.

Six posttests measured single word reading, writing words on a list, intelligence, sound categorization, and mathematical skills. The math test was used as a form of control. Results indicated that students in Group I read and spelled better than those in Group III but not significantly better. Group I students were significantly better than Group IV students in reading and spelling. Group III and IV had no significant differences. Group II children scored significantly better than those in III and IV in reading and spelling and significantly better than Group I students in spelling.

Additionally, children in Bradley and Bryant's (1985) four-year-old group who were successful on sound categorization tests were also successful later in reading and spelling. Lack of success on sound categorization tasks did not necessarily predict failure for four-year-olds. For the older children, the tests were better at predicting failure than success.

Ball and Blachman (1991) conducted an experimental study in which one group of kindergartners received training in segmenting words into phonemes. Another experimental group received training in letter names and letter sounds. A control group received no intervention. Subjects were from six Syracuse, New York, kindergarten classrooms. All students were given the Peabody Picture Vocabulary Test-Revised (PPVT-R) and the Woodcock Reading Mastery Test (Woodcock) subtest of word identification. Students who scored 1.5 standard deviations below the mean on the

PPVT-R and students who also were reported to be readers by their teachers or who scored higher than 3 (raw score) on the Woodcock were excluded. From those students remaining, 30 were randomly selected from each of the three schools (p. 55).

Ball and two trained classroom teachers administered additional pretests in January and February. These tested for phoneme segmentation, letter-name, and letter-sound knowledge. Then the 90 students were assigned randomly to one of three groups. No significant differences among the groups were obtained for age, gender, or race (Ball & Blachman, 1991, p. 55).

The testers also served as instructors for the interventions. Each worked at a different school, where they instructed a subgroup of five from each experimental group in the morning and in the afternoon. All instruction in the experimental condition lasted for 20 minutes each time for four days a week over seven weeks. All participants continued receiving regular instruction in their classrooms, which included whole-class instruction in letter names and sounds (Ball & Blachman, 1991, p. 55).

“Each 20-minute segmentation training session contained . . . say-it-and-move-it activities, other segmentation-related activities, and letter-name and letter-sound training” (Ball & Blachman, 1991, p. 55). The second experimental group, the language activities group, participated in activities for general vocabulary development, listening to stories, learning semantic categorization, and training on letter names and sounds identical to the other experimental condition (p. 56). This group acted as a second control group and allowed investigators to see if phoneme segmentation ability and early reading and

spelling skills could be influenced by increasing only letter-name and letter-sound knowledge (p. 56).

After training, students were retested on phoneme segmentation, letter names and sounds, and the Woodcock. They also attempted to read 21 phonetically regular words and to spell five words (Ball & Blachman, 1991, p. 56). Data were analyzed with analyses of variance and of covariance or nonparametric statistical tests (Ball & Blachman, 1991, p. 59). Significant differences among the three conditions on the phoneme segmentation posttest and reading phonetically regular words resulted. The segmentation group performed significantly better than either of the other groups. No significant difference existed between the language activities group and the control group. Furthermore, those children trained in segmentation improved significantly in segmenting trained and untrained items, although less on those items which were very different from those used in training (p. 59).

According to Ball and Blachman (1991), no significant differences occurred among groups on letter-name knowledge. Both experimental groups scored significantly higher on letter-sound tasks than the control group, although not significantly higher than each other. Two spelling scores showed significant differences with the segmentation group superior to the other two, between which no significant differences resulted. Students in the phoneme segmentation group were superior in breaking the alphabetic code on both the reading and the spelling measures (p. 63). Furthermore, Ball and Blachman concluded that increasing letter-sound knowledge alone was not sufficient to improve phoneme segmentation skills (p. 64).

In a study by Uhry and Shepherd (1993) training in segmentation and spelling was provided as a supplement to classroom instruction for most of their first-grade year for 22 New York City children who mostly came from white middle-class English-speaking families. Using low, medium, and high strata based on estimates of reading potential by kindergarten teachers, Uhry and Shepherd randomly assigned children to two treatment groups (p. 221). Common training over four weeks reviewed consonants using Cox's 1971 Initial Reading Deck along with computer keyboard instruction. Following administration of pretests, subsequent training differed over three training periods, each of which concluded with testing.

Each training period began with the Initial Reading Deck for the experimental group and the control group. For the experimental group this was followed with segmentation/spelling training using red wooden blocks for vowels and blue blocks for consonants followed by computer spelling games. Students in the control group read first, then participated in computer reading games (Uhry & Shepherd, 1993, p. 222). During training period one, both groups worked with CVC words. At period two, CCVC/CVCC words were added. For period three, both groups continued to work with CVC and CCVC/CVCC words. Words used were the same for both groups and were consistent with classroom instruction.

Times for each activity varied per training period. For the first period of training, time was divided evenly, with ten minutes for segmentation/spelling (or reading) and ten minutes for computer work. For the second period, segmentation/spelling (or reading) was allotted eight minutes, and computer time increased to 12 minutes. During the final

training period, time decreased for the segmentation/spelling (or reading) activity to five minutes, and computer time increased to 15 minutes.

Pretest and posttest measures assessed the same knowledge each time for making comparisons both within and between groups (Uhry & Shepherd, 1993, p. 224). Areas measured included nonsense word reading, sight vocabulary, oral passage reading, silent reading comprehension, segmenting, blending, and spelling (pp. 224-225). Pretests had been administered to allow control for intelligence and listening ability. Results indicated no significant differences among students in these two abilities, and students did not differ significantly by age.

After six and one-half months of training experimental subjects outperformed control subjects on measures of nonsense word reading, timed word reading, and timed oral passage reading (Uhry & Shepherd, 1993, p. 229). The researchers assumed a causal role for training since students had made significant gains in segmenting and spelling (p. 229). They claimed, "The important contribution of this study . . . lies in our use of nonsense word and blending measures to indicate superior cipher reading strategies after segmentation/spelling training" (pp. 230-231). Additionally, Uhry and Shepherd noted that these students were all from whole language classrooms, rather than environments in which a skills-and-drill approach was used (p. 232). They concluded that the environment substantiated the finding that the phonetic spelling training in isolation did not produce advantages when using the cipher strategy (p. 232).

Goswami, who has conducted numerous studies investigating learning by analogy, collaborated with Mead in this next study. Their intent was "to provide a more

comprehensive investigation of the relationship among a whole range of phonological variables, nonphonological variables, and analogies in reading in an attempt to provide a more direct test of the onset-rime hypothesis” (p. 154). Goswami and Mead’s 1992 study involved 47 children with a mean age of 6 years, 9 months.

After pretests to measure initial reading knowledge and vocabulary, half of the subjects participated in training sessions involving analogy and in other sessions involving phonological awareness. Training presentation was in reverse order for the other half of the subjects to measure effect of order of training presentation. Analogy sessions involved end analogies, beginning analogies, and words. Phonological awareness sessions involved rhyme and alliteration oddity tasks, syllabic segmentation, deletion of initial or final consonant segmentation, and phonemic segmentation (Goswami & Mead, 1992, pp. 155-156).

Goswami and Mead (1992) found no effects of order but did find a significant main effect of reading. They also found a significant interaction among reading, test, and word type (p. 156). They interpreted results to mean that both groups made analogies in the same way (p. 156). Students read more analogous words correctly than control words and were significantly more successful with end analogous than beginning analogous words, replicating end effect noted in previous studies (p. 157). Nevertheless, students did make analogies between both the beginnings and the ends of words (p. 157).

Although better readers read more words correctly, the poorer and the better readers did not differ in analogizing (p. 157). These last two findings also replicated results from previous studies.

Contrary to an earlier study by Goswami (1990, as cited by Goswami & Mead, 1992, p. 157), correlations indicated that vocabulary was not related to analogizing, but reading was, especially on the Schonell single-word reading test (p. 157). Further analysis was conducted to control for reading level, resulting in the finding that it was mostly onset-rime measures, not phonological knowledge at the syllable and phoneme level, which were related to endings of words (AnalogyE) (p. 158). A significant proportion of the variance in analogizing was accounted for with nonsense word reading (pp. 158-159). This led the researchers to speculate that “rime knowledge and also blending skills may play a role in explaining the relationship with AnalogyE found here” (p. 159).

A slightly different picture emerged when considering AnalogyB (beginnings of words). Consonant deletion tasks and the nonsense word reading measure seemed to account for a large proportion of variance in AnalogyB (Goswami & Mead, 1992, p. 159). The syllable segmentation task which resulted in a nonsense syllable was significant, although less significant than for AnalogyE (p. 159). The researchers found a significant relationship between the awareness of rime units. They did not find a significant relationship between phonemic or syllabic segmentation and rime analogies (p. 159).

Goswami and Mead (1992) conducted a series of three-step fixed-order multiple regressions relating phonological variables to analogy, while controlling for reading ability and nonsense word reading (p. 160). Results indicated making analogies between the spelling sequences at the beginnings and ends of words may involve different

phonological skills (p. 160). When spelling sequences corresponded to the linguistic units of rime, phonological measures of rime awareness were important; when they did not, phoneme manipulation measures were important (p. 160). Ending analogies occurred sooner than beginning analogies, apparently because they are easier and are based on rime units (p. 161). These researchers believed that making beginning analogies requires children to have some reading experience and an ability to segment words in places other than onset and rime (p. 161).

Findings in a 1992 study by Ehri and Robbins found it easier for their 102 kindergarten and first-grade subjects to read unfamiliar words by analogy than by phonologically recoding them, supporting Goswami's 1986 claim (Ehri & Robbins, 1992, p. 19 and p. 22). Nevertheless, reading words by analogy required some phonological recoding skill (p. 22).

Subjects in Ehri and Robbins' (1992) study were divided into decoders and nondecoders based on their ability to read simple nonsense words with short vowels in a CVC pattern (p. 22). These students were assigned randomly to an analogy training experimental group or to a control group. Students from the two groups were paired by reading status. During analogy training, subjects learned to read five words to criterion. Then they were asked to read transfer words with rimes identical to training words. Finally they were asked to write out spellings of words used in training. The final step determined which cues were remembered from words they had learned to read (p. 15). Students in the control group followed a similar procedure; however, rimes in the transfer

words differed from training words but used the same letter-sound relations found in training words (15).

Results for decoders indicated that those trained to read analogs read more transfer words during the five learning trials and read all five words perfectly on more trials than the control group decoders (Ehri & Robbins, 1992, p. 19). Analogy group decoders read conventionally-spelled words correctly, thereby indicating influence on their knowledge of orthography. Their ability to read some of the nonconventionally-spelled words indicated that having knowledge of the specific training words rather than only having knowledge of the conventional orthographic system facilitated subjects' reading words by analogy (p. 19).

After having been provided practice and feedback, nondecoders were successful in reading words by the fifth and last attempt. Ehri and Robbins (1992) claimed this to support their "hypothesis that decoding skill is necessary for beginners to be able to read novel words by analogy to known words" (p. 19). Furthermore, the lack of the nondecoders' success in reading transfer words seemed to indicate to these researchers that those children were unaware of analogical relations between known words and new words in print (p. 20). Examination of errors of the nondecoders in the analogy trained group showed a tendency for those students to misread transfer words as words learned in training. This further supported the notion that these students responded to partial cues, since they did not have sufficient phonological recoding analytic skill to make needed adjustments in their word reading (p. 20). This result also occurred with nondecoders in the control group.

When Ehri and Robbins (1991) examined results from the spelling portion of their study, they found that decoders differed little regardless of their training group (p. 21). Spelling also did not distinguish nondecoders who had been trained in analogies from control group nondecoder students. Decoders spelled 62-72% of the words correctly; 65-70% of the nondecoders spelled no words correctly. Further examination of spellings caused Ehri and Robbins to remark, that all students applied information of letter features of words read to spelling (p. 21).

Ehri and Robbins (1992) called attention to a difference in their study to previous studies by Goswami. Where Goswami kept learned analogs in view of subjects as they were asked to read unfamiliar words, these researchers did not. Ehri and Goswami required short-term word memory to effect the transfer (p. 23). They believed that practice allowed their procedure to resemble normal reading more than Goswami's practices did (p. 23).

Summary. Work by Bradley and Bryant (1985) examined the benefits of segmentation ability to success in reading. Ability of four-year-olds to segment beginning, middle, and ending sounds predicted future success in reading and spelling. Lack of such ability with five-year-olds for middle and ending sounds seemed to predict lack of success. Further evidence of the benefits of ability to segment words was provided by Ball and Blachman (1991). Uhry and Shepherd (1993) found that first-grade children who received training in segmenting words from left to right and who were able to demonstrate their understanding with letter blocks and on the computer scored

significantly better than children who did not receive such training on nonsense word reading, timed word reading, timed oral passage reading, segmenting, and spelling.

Words may be segmented by onset and rime. Goswami and Mead (1992) found that young students were more successful in applying learning by analogy to endings of words rather than beginnings. Ehri and Robbins (1992) supported learning by analogy but cautioned that success is dependent on students having some phonological skill. Adding these results to those of the section on phonemic awareness, it is apparent that both skills are important to success in reading and spelling; and, as claimed by Ehri and Robbins, “reading and spelling processes are closely related at the outset of learning to read and spell” (p. 24).

It would seem prudent to seek a method of integrated literacy instruction that would incorporate knowledge gleaned from studies such as these.

Studies Involving Invented Spelling and/or Orthographic Processing

Chomsky (1971) suggested that children learn to read by writing first, using invented spelling. To accomplish this, children need some sense of phonemic awareness and must be able to segment some sounds, both of which have been discussed previously. This section discusses studies involving spelling and its possible relationship to reading.

When she conducted her study, Beers (1980) predicted that a significant correlation would exist between second graders’ spelling strategies and their conservation performance (p. 75). Furthermore, she expected this to be true between their word recognition abilities and their conservation performance and between their reading comprehension and their conservation performance (p. 76).

To test her hypotheses, Beers (1980) chose 116 second graders as subjects. She used the six subtests of the Concept Assessment Kit to test conservation; the J. W. Beers' spelling word list to test short and long 'a' words, short and long 'e' words, and short and long 'I' words; and Form 1 of the Primary B Gates MacGinitie Reading test. The Pearson product-moment correlation was used to assess relationships among variables. Stepwise multiple regression was used to find which variables or combination of variables best predicted reading vocabulary and reading comprehension (p. 77).

Beers (1980) found significant correlations between conservation performance and the following variables: spelling of short 'I' and short 'a' words, reading vocabulary, and reading comprehension (pp. 77-78). Other significant correlations were found between reading vocabulary and the spelling of short 'I', long 'a', long 'e', and long 'I' words. Additional significant correlations existed between reading comprehension and the spelling of words with short 'a', short 'I', long 'a', long 'e', and long 'I'. Spelling long 'e' words, conservation performance, and spelling long 'a' words were found to be the best predictors for scores in reading vocabulary and reading comprehension (p. 78).

Beers (1980) concluded that children who had a higher level of cognitive development were better at recognizing words and comprehending what they read (p. 79). Furthermore, it is important that a child be able to decenter (a critical prerequisite to the ability to conserve) in order to understand how short vowel words are spelled (p. 81). Finally, "the child who consistently spells long vowel words correctly probably has a greater command of word knowledge than one who does not" (p. 81). Because of these

findings, she recommended integrating language arts for students in the primary grades (p. 83).

Seventeen third- and fourth-grade students were involved in a comparative study in which Radebaugh (1985) investigated their spelling strategies. Nine had been identified as good spellers, and eight had been identified as poor spellers. Subjects were involved in a 15-minute taped interview during which they wrote and were questioned about their decisions regarding spelling. Results indicated that good spellers used more strategies to spell difficult words, including visual imagery for words previously seen in print. Poor spellers seemed to sound out words letter by letter, but good spellers tended to break words into smaller parts, or chunks, and then spell each part (p. 535).

Radebaugh suggested that it may be worthwhile to instruct poor spellers in strategies useful to good spellers (p. 536). From this study it may be inferred that it is important to call attention to patterns of letters seen in print which recur in standard English spelling.

A different comparative study conducted by Morris, Nelson, and Perney (1986) examined the relationship between spelling power (accuracy) and quality of errors in spelling for 252 students in grades 2-5 (p. 186). They also examined whether there were significant qualitative differences in children's spelling at prespecified power/accuracy levels (p. 186). During the first week in October students were tested in spelling one level below grade level, at grade level, and one level above grade level for a total of 30 words.

Morris, Nelson, and Perney (1986) used the qualitative scoring scheme previously developed by researchers from the University of Virginia for the second- and third-grade

levels (p. 187). Spelling categories included the following, from lowest quality to highest: nonphonetic (0 points), preconventional phonetic (1 point), conventional phonetic (2 points), and morphemic (3 points). The assignment of points differed for fourth- and fifth-grade levels. The researchers used orthographic features to evaluate misspellings and to assign points, with 0 and 1 remaining as described above. They prorated qualitative points on a base of 10 (p. 190). A bigraph count was used as an alternative scoring system. (See Morris, Nelson, & Perney, 1986, pp. 188-191, for a complete explanation regarding evaluation)

In general, across the grade levels, correlations between accuracy and quality of spelling errors were fairly high (Morris, Nelson, & Perney, 1986, p. 191). Correlations were lower at grade three, where words were less complex morphemically (p. 192). Further analysis used composite scores from grade level and below grade level, since testing occurred so early in the school year. "Excepting fifth grade, the composite score correlations are consistently stronger than those based on grade-level scores alone" (p. 192). These results indicated that children's quality of errors increased as their accuracy of spelling increased.

Children who spelled less than 40% of a grade-level list correctly had spelling errors of a poorer quality than children who scored 60% or better on the same list (Morris, Nelson, & Perney, 1986, p. 195). These researchers concluded that children should work at their own instructional level in spelling (p. 195). Furthermore, since there were no significant differences in spelling error quality when children scored 40%-59%

in accuracy suggests that 50% accuracy could serve as a dividing line between spelling frustration and instructional levels (p. 195).

These researchers suggested that spelling could be treated similarly to reading with independent, instructional, and frustration levels. Implications for classroom practice could include grouping students by level of ability for spelling instruction, using spelling materials appropriate for different levels, and examining qualitative differences in spelling attempts (Morris, Nelson, & Perney, 1986, p. 196).

Errors in children's spellings also were examined in a much smaller quasi-experimental study by Moxley and Joyce (1987). When analyzing the spelling development of three kindergartners and one first-grader, they found that spelling was influenced by both visual and phonological cues. They found evidence of analogical wholes, standard spelling segments, letter reversals, semiphonetic spellings, and phonetic spellings.

Treatment in this study (Moxley & Joyce, 1987) consisted of four month-long phases of 20 sessions each, occurring four to five days a week with each session lasting approximately 20 minutes. Students used the computer to copy words and to write stories. At the end of each phase spelling tests were dictated and analyzed, as were stories within each phase. Analysis revealed that writing seemed to develop in a multidirectional manner, showing influence of both oral language and written language (p. 21). These researchers believed that children's spelling was influenced at least partially by their experiences of seeing words in print (p. 22). Moxley and Joyce

postulated that spelling strategies may be influenced by instructional strategies, just as children's reading strategies are (p. 22).

In conclusion, Moxley and Joyce (1987) recommended that teachers begin developing children's sensitivity to visual features of words as early as possible (p. 22). They suggested that some children may prefer visual strategies more than using phonological cues. Nevertheless, being able to use both strategies available may be the most beneficial to students (p. 22).

Clarke (1988) conducted a naturalistic study to compare effects of instructional methodology for first graders using invented spelling versus first graders from a traditional spelling program, as did Bunt (1993-1994). However, Clarke examined effects on both spelling and reading, while Bunt examined only spelling. Middle-class students in four first-grade classrooms were used. They were divided evenly between those whose teachers encouraged invented spelling and those whose teachers used a traditional basal approach to spelling. Students represented a range of abilities, but top students from one class from each approach were excluded in this study. All classroom teachers used the same reading basal, and phonics skills were taught as part of the language arts program (p. 282).

Pretests were administered to individual children in October to assess equivalence between groups in letter knowledge, ability to write words, and reading high-frequency words (Clarke, 1988, p. 283). Data were collected every two weeks on the children's writing behaviors, using a coding sheet with 20 preselected specific behaviors from the following general categories: child-centered activities, teacher-centered activities,

writing, and other (p. 284). Once a month from November through March, a writing sample for each student was examined for length, word usage, spelling achievement, and classification of misspellings. In March posttests for spelling and reading achievement were administered.

Analysis using two-tailed t-tests yielded results described below. Students who were encouraged to use invented spelling averaged 67% of correctly spelled words, while students from traditional classes averaged 94% correctly spelled words. Interestingly, the percentage of correctly spelled words decreased over time for the invented spelling group, but their errors categorized as transitional and phonetic increased significantly during that time. The percentage of correctly spelled words remained stable over time for traditional spellers. In analyzing samples of writing, Clarke (1988) found that text length and variety of words used increased significantly for both groups. However, students in the invented spelling classes had significantly greater speed and significantly greater rate of increase in speed (p. 293).

Children in the invented spelling group scored significantly higher on the Wide Range Achievement spelling subtest, a spelling list adapted from the 1980 Baron and Treiman, and the Durrell Word Recognition/Word Analysis tasks. There were minimal difference in scores on the flash condition of the Durrell Word Recognition test and comprehension of the passage on the Woodcock Reading Mastery Tests (Clarke, 1988, p. 297). When pretest scores were correlated with posttest scores, more significant correlations existed for the traditional spelling classes, suggesting that outcome on posttest measures could be predicted by performance on pretest tasks (p. 298). This

predictive aspect did not occur for those using invented spelling. Additional analysis compared 12 matched pairs for high achieving children and 12 matched pairs for low achieving children across groups. No significant differences existed for high achieving students. However, initially low achieving children seemed to receive the most benefit from using invented spelling since they accounted for most of the gain in spelling and reading for those using invented spelling (p. 304).

Students from traditional classrooms in this study did not appear restricted by their repertoire of known words or by words supplied by the teacher as had occurred in previous studies (Chomsky, 1979; Graves, 1978, as cited by Clarke, 1988, p. 304). Also contrary to other studies (Beers, 1980; Gentry, 1977; Henderson, 1981; Read, 1971, as cited by Clarke, 1988, p. 306), children in this study who used invented spelling did not increase in their use of standard spelling.

Contrary to Moxley and Joyce (1987), who encouraged teachers to develop children's visual strategies, Clarke (1988) recommended that teachers encourage students to use invented spelling, which "may induce [children] to shift from processing words visually toward using phonetic cue processing earlier than would otherwise occur when using a basal reading program" (p. 307). Clarke cited inventive spellers' superior spelling and phonic analysis skill as a benefit of their matching sound segments of words to letters in their writing (p. 307). Clarke noted additional effects of invented spelling to be independence and confidence (p. 307).

Using two groups of first- and second-grade students who were matched initially by scores on achievement tests, Stice and Bertrand (1990) also compared students from

classrooms using two differing approaches--whole language and traditional. They used both quantitative and qualitative methods for data collection in their two-year study, in which they focused on achievement of students identified as at risk.

Stice and Bertrand (1990) found that, while the whole language at-risk students did not perform significantly better on standardized measures of reading and spelling than their traditional classroom counterparts, they performed as well. Results of the qualitative measures were more impressive and similar to effects noted by Clarke (1988) and Healy (1991). In reading, whole language students read for meaning more, self-corrected more frequently, provided more complete retellings, appeared more confident, and possessed a wider variety of strategies (p. 1). They also wrote more than did their counterparts (p. 1).

In a replication of Clarke's 1988 study, Healy (1991) also examined how written expression and progress in reading were affected by classroom approach to spelling. She also investigated "whether the practice in phonemic segmentation and blending involved in invented spelling aided in learning phonics over and above what was learned in the systematic phonics lessons which all of the children experienced" (pp. 3-4).

Healy's (1991) research design matched that of Clarke (1988) with a few exceptions. The two teachers of the traditional (control) classrooms in Healy's study postponed most writing activities until mid-year. Therefore, writing samples were collected from all classrooms only during January and February. Also, teachers of the two experimental classrooms where invented spelling was encouraged held an informational parent meeting at the beginning of the year (p. 70).

Healy (1991) utilized the following pretest measures: 1989 Gates-MacGinitie Reading Tests subtests of literacy concepts, reading instruction relational concepts, oral language concepts including phoneme matching and segmentation, and letters and letter-sound correspondences. She also used Taylor's 1990 Classroom Phonemic Segmentation and Blending Test. Scores from these pretests were used to place students into low, average, and above average readiness levels (p. 72). Scores from the last test indicated that 12 children in the control group and 16 children in the invented spelling group were at risk for failure in reading. Differences between groups were not significant on pretests, although all pretest means except age were slightly higher for the control group (p. 110).

In addition to the samples of writing from journals collected during January and February, a creative writing sample was collected for each student in March. A final sample of writing was obtained in April when the researcher asked each child to write an informative letter to an incoming first grader. Healy (1991) evaluated writing samples for number of words and number of T-units used (p. 74). Samples taken from January through March were evaluated with spellings categorized using Gentry's 1987 levels. Three independent evaluators assigned a holistic score to the April samples, with an interrater reliability of .87. Like Clarke (1988), Healy found that students in the control group generally spelled more words correctly than did those in the experimental group, who generally were at the phonetic or transitional stages of spelling (p. 110). For the April writing sample, children in the experimental group used significantly more words and more T-units in their writing pieces than did students in the correct-spelling group (p.

111). Furthermore, according to the holistic scoring system, pieces by the inventive spellers were of significantly higher quality than those by the traditional spellers (p. 111).

Three posttest measures for word identification yielded no significant differences between the experimental and control groups (Healy, 1991, p. 112). She speculated that practice all subjects in this study experienced with nonsense words as part of the 1983 Metra-Summerhays companion Reading Program may have “obviated any difference which might have resulted from the differing writing experiences” (p. 126). There also were no significant differences between groups on two posttest comprehension measures. Readministration of the Classroom Phonemic Segmentation and Blending Test in January for those students who had previously scored at 75% or less yielded significantly higher results for those students in the experimental group. There was no significant interaction of treatment and ability on posttests of reading ability (p. 113).

On two sections of the Baron and Treiman test both Clarke (1988) and Healy (1991) used, Clarke found significant differences favoring the invented spelling group both times. Healy’s results favored the invented spelling group on irregularly spelled high-frequency words and the control group on regular low-frequency words; differences were not statistically significant, however. Healy speculated that students in the control group in her study spent more time studying regularly spelled words for the spelling tests. This could also explain why they outscored experimental group students on the Gates Vocabulary test, primarily a word-to-picture matching test (p. 127). No significant differences in means occurred on the comprehension tasks in Healy’s study, which corresponded with Clarke’s 1988 findings.

Lastly, Healy (1991) considered it positive that there was no “statistically significant difference between groups for children at-risk for failure in reading on the Classroom Phonemic Segmentation and Blending Test” (pp. 128-129). Also, students in the experimental group, who spent time writing, performed as well on tests of reading ability as students in the control group who spent time on phonics worksheets and oral drills. Because students in the experimental group outperformed peers on all measures of writing skill, Healy recommended that teachers eliminate traditional worksheets and provide children with more time to read and write independently (pp. 134-135).

To examine the role of orthographic skills in several different reading tasks, Barker, Torgesen, and Wagner (1992) conducted a correlational study involving 87 third graders (p. 337). Third graders were selected because of their well-developed orthographic skills and their rapidly developing word identification skills (p. 337).

“Data were collected in the following areas: isolated word recognition both timed and untimed, oral and silent reading speed for words in context, nonverbal intelligence, verbal intelligence, reading experience, phonological ability, and orthographic ability” (Barker, Torgesen, & Wagner, 1992, p. 338). One measure for the last area, which involved picking the correct spelling from two choices that sounded alike, was designed to assess a child’s knowledge of conventional spelling (p. 339). A second measure of orthographic ability was a homophone choice task in which students selected a word from two choices in response to a question.

While most measures were administered individually, the Title Recognition Test and the Raven’s Progressive Matrices Test were administered to groups (Barker,

Torgesen, & Wagner, 1992, pp. 339-340). Computers were used for some data collection. Test administration required approximately one and one-half hours which was divided equally between individual tasks and group measures.

Results interpreted by Barker, Torgesen, and Wagner (1992) indicated that all reading variables were significantly correlated to measures of phonological and orthographic processing, excepting the silent reading measure and the phoneme deletion and homophone choice tasks. A significant relationship occurred between the two measures in the orthographic processing area described above. The measures of phonological processing also were significantly related. The reading experience measure was more highly correlated with the text reading measures than with the isolated word reading measures (p. 340).

To answer the main question of this study regarding the independent contribution of orthographic process to performance on the selected reading measures, the researchers used a series of hierarchical regression analyses (Barker, Torgesen, & Wagner, 1992). "Order of entry was dictated by . . . interest in determining whether orthographic skills accounted for a significant proportion of the variance in word reading skills after the variance due to other factors was extracted" (p. 340). Orthographic skill accounted for statistically significant independent variance in reading ability, with a higher contribution to text reading than to isolated word reading (p. 340). Apparently, being able to process visual word representations fluently facilitates reading connected text (p. 343).

Barker, Torgesen, and Wagner (1992) continued analysis to determine how individual differences in orthographic skill are affected by differences in print exposure

(p. 342). After controlling for effects of age, IQ, and phonological skill, they determined that only print exposure accounted for significant variance for reading rate measures (pp. 342-343).

To determine the effect of reading skill on the relationship between orthographic processing and the reading measures, the researchers divided the sample into three ability groups based on scores on the Woodcock Word Identification subtest (p. 343). They then compared the upper third and the lower third. They found no specific differences in the relationship between orthographic skill and phonological skill for poor and good readers (p. 343). Barker, Torgesen, and Wagner (1992) credited this result to their sample of less-skilled readers being “not as impaired as those used” (p. 345) earlier.

In a study involving third graders and seventh graders, Dreyer, Shankweiler, and Luke (1992) addressed three questions. Question one dealt with retention of practiced spellings of a list of words from one week to the next. The second question asked whether reading ability affected retention of word spellings. Finally, the researchers wondered if there were qualitative differences in the types of spelling errors made by good readers and those made by poor readers.

Ten measures were used, including one each for decoding, listening comprehension, reading comprehension, letter-word identification, and word attack. Five measures assessed spelling. As expected, the researchers found good readers to retain words more successfully than poorer readers. They also found that poorer readers were usually poorer spellers and attributed that to possible difficulty acquiring knowledge about orthography (Dreyer, Shankweiler, & Luke, 1992, p. 1).

Assink, Bos, and Kattenberg (1993) also investigated differences between normal and poor readers and their use of context during processing of orthographic information. Their study focused on orthographic processing in silent reading in a naturalistic setting. Secondly, using a controlled computer, they presented target words containing letter substitutions to normal and poor readers to examine the role of sublexical high frequency letter clusters (p. 4). These letter substitutions could affect words in three ways, “labeled ‘sound’ (e.g., cote for coat), ‘shape-legal’ (e.g., coet for coat), and ‘shape-illegal’ (e.g., bcok for book)” (p. 4).

For their experiment, Assink, Bos, and Kattenberg (1993) matched 20 Dutch children assessed as normal readers, whose mean age was 8.9 years, with 20 Dutch children assessed as poor readers, whose mean age was 12.1 years. The latter students scored at least two years below the age norm. Comparable instructional materials and teaching methods had been used for both groups. For their first session, students were asked to report any spelling irregularities they observed when reading connected text. A second session required students to take a spelling test. Data analysis revealed that poor readers had no more difficulty detecting letter substitutions in contexts that were semantically coherent than did good readers (p. 8). According to these researchers, “normal and poor readers do not primarily differ in their use of context, but in the way they process letter information at the intra word level” (p. 9). Therefore, they concluded that poor readers should be taught to process letter information at the word and subword levels rather than by context and syntactic processing (p. 9).

Using her own class of first graders, East (1993) investigated their development of spelling knowledge over five months and the relationships of that spelling to their subsequent word recognition (p. 2). One instrument she used was Clay's Writing Vocabulary task administered three times over the five months to small groups (p. 53). In September she assessed students' knowledge of letters, using Clay's Letter Identification task. Three samples per child collected over the five months were analyzed for spelling, using Gentry's 1982/1993 stages for classifying nonconventional spellings. For this analysis, two raters were used with an interrater reliability of $r = .99$. Scores from these measures were used as independent variables. For dependent variables, East used the 1987 Woodcock Reading Mastery Test-Revised subtests for word identification and word attack. Additional data were provided through qualitative descriptions of examples of four students' writings and their writing behaviors.

Data analysis included simple descriptive statistics for all continuous variables at each testing time. Frequency counts of writing vocabulary words and invented spelling stages were made each time. Joint frequency distributions were made to compare students at each stage. Pearson product moment correlations were calculated to determine associations between variables. These correlations identified which single variables were predictive of word recognition (East, 1993, p. 65). Three multiple regression models assessed the predictive ability of two of the predictor variables together with criterion variables in separate regressions. Word identification was significantly related to letter identification, conventional spelling, and invented spelling. Word attack was related significantly to conventional spelling and invented spelling, but not to letter

identification (p. 98). Improvement in conventional spelling occurred without spelling instruction in the traditional sense of daily spelling exercises and/or weekly spelling tests (p. 104).

In emphasizing the importance of young children knowing their letters, East (1993) noted that students who identified 50 or more letters correctly in September wrote at the Phonetic stage or higher in November and January. In May those same students scored grade equivalent of 1.8 or higher on the Word Attack test (pp. 101-102). Furthermore, low scores on letter identification appeared to predict which students would score below grade level on both the Word Attack test and the Phonetic Stage of invented spelling and which students took longer to reach the Phonetic stage of spelling (p. 102).

In discussing stages of misspellings, East (1993) described random letters inserted in the middle of words that generally were labeled as semiphonetic. She believed that children did this to make their representations more word-like in appearance (p. 105). Noting that spellings of transitional spellers reflected awareness of visual-orthographic features of printed words adds substance to East's claim above.

She further concluded that children's spellings vary according to the task. She found that children focused on spelling and forming letters in a spelling test format. However, on a writing sample, children had to focus on the composing task also (East, 1993, p. 108). With that in mind, East recommended research explore different ways of implementing invented spelling (p. 114).

Richgels (1995) used a causal-comparative design in a study involving 32 six-year-old kindergarten students identified as good inventive spellers or poor inventive

spellers. He viewed his study as an extension of studies by Ehri and Wilce (1985, 1987) and Scott and Ehri (1990). His study, however, used natural inventive spellers rather than students trained to be inventive spellers, as occurred in the earlier studies. Richgels had two research questions. First, he wondered if kindergarten children who were non-word-readers untrained in phoneme awareness and spelling but who were alphabet-knowledgeable and good inventive spellers would learn to read phonetically simplified words more effectively than peers similar in each way but who were poor inventive spellers (pp. 99-100). His second question was: "When word difficulty is determined by similarity of boundary letters, will invented spelling ability interact with word difficulty?" (p. 100).

After initial screening provided information for placing 16 students into a group for good inventive spellers and 16 other students into a group for poor inventive spellers, a printed word phase began. From March 30 to May 7, the researcher worked with individual students on three screening tasks. In Task 1 students were asked to identify letters of the alphabet. For Task 2 students were asked to identify seven correctly spelled words, 12 phonetically spelled words, two calendar words, and three numerals. For Task 3 students used plastic magnetic letters to write 10 words represented by pictures on cards. In a subsequent phase from May 11 to May 22, subjects participated in printed word learning using phonetically simplified words (Richgels, 1995, p. 101). Scores were recorded during each session, and all sessions were audiotaped.

Average scores were analyzed using a split-plot design. Findings indicated that statistical significance occurred for both the group effect and the condition effect. The

interaction between group and condition was not statistically significant, however (p. 104). Criterion scores were also computed and analyzed using one-way ANOVA, which showed a significant effect of group on both easy and hard words (p. 104). Similar results occurred for recall scores obtained on the second day based on Day 1 words (p. 104). Richgels (1995) concluded that good inventive spellers are also better word learners (p. 104).

Richgels (1995) prompted future researchers who pursue classroom assistance for invented spelling to recognize the reciprocal relationship between phoneme awareness and invented spelling (p. 107). “Phoneme awareness, invented spelling, and word reading comprise only a single, albeit a very significant, piece of the larger picture of children’s developing literacy knowledge and competence” (p. 107). He further suggested using holistic teaching approaches. “If a teacher’s demonstrating and highlighting are sufficiently holistic, . . . embedded in meaningful, social-communicative contexts, then it is possible for children to apply a single teaching event to varying individual problems they are on the verge of solving” (p. 108).

Summary. There is a tendency for good readers to be good spellers. Furthermore, children who use their alphabetic knowledge in invented spelling seem able to transfer that knowledge to help them in reading. Young children often invent spellings by relying on phonemic awareness, but extended experience with print usually results in spellings which reflect visual influences. Apparently reading and spelling have a reciprocal relationship. Therefore, instruction in both should utilize this reciprocity, increasing opportunities for children to increase their constructed knowledge of print.

Studies Involving Writing

Writing connected text has been a component of some studies already discussed. However, writing generally assumed a lesser role in those studies than those in the forthcoming discussion in which writing was a major consideration. In the present study the researcher assumed that reading and writing have a mutually beneficial relationship (Sulzby & Teale, 1985, p. 11). Both play an integral part in this study's methodology. Again, reviewed studies are presented in chronological order.

Writing and writing behaviors of three young children in a home setting were the topics of an ethnographic case study conducted by Coe (1987). Six months of field notes, interviews of parents and children, and writing samples were the sources of data. He believed that the supportive home environments of these four-, five-, and six-year-old subjects, who already were writing, would improve the possibility for understanding these children's writing development (p. 13). Socioeconomic status was not a consideration in Coe's study. This review primarily focuses on the findings related to the six-year-old because of age similarity to subjects in this paper's study.

Coe (1987) arranged with each mother to visit regularly in the home for several hours. He included the three mothers as participants. Coe felt that appreciation shown by each mother of her child's efforts could be an important consideration (p. 15). He also believed that having the physical provisions for writing activities to occur in the homes was important. At times he supplied materials such as writing implements and paper (p. 15). During home visits, he visited with the child and the mother about any writing

which had occurred since his previous visit; at times no writing had been done. In those cases, writing-related issues and parent or child concerns were discussed (p. 15).

Coe (1987) began data analysis using several frameworks found in research literature, including those of Britton and Moffett (pp. 20-21). However, not all needs were met using previously developed frameworks, so he developed an author-generated category scheme to fit the situation and which would describe the functions of the written language in these children's samples (p. 21). Coe's scheme allowed him to analyze writing samples from a number of perspectives involving function, features, and form simultaneously (pp. 21-23). For development of his framework Coe drew heavily from work by Britton, Moffet, and Clay. (For a more thorough description of this scheme, see Coe, 1987.)

Context was the emphasis of Coe's analysis, focusing on the child's text for discussion but also relying on the child's perspective of the situation (Coe, 1987, p. 27). He also considered parents' comments important. One aspect was the child's intent, which, according to Coe, the children were able to articulate quite clearly (p. 27). Context within which the writing occurred and audience for whom it was written were also examined. Samples were assessed for typology (not defined) and genre (pp. 27-28).

Results indicated that "young capable writers demonstrate the use of integration strategies beyond the scope of classroom instruction and teacher expectations" (p. 46). Samples often revealed multiple purposes or functions within the same piece (p. 52). Some of the 59 different functions of writing found within the 296 samples used in Coe's 1987 study (p. 138) were the following: interactional, social, self-oriented,

representational, informational, knowledge-oriented, experimental, and narrative (p. 62). The children in this study had a variety of purposes for writing and showed the ability to make decisions about appropriate conventions for their products (p. 138).

Coe (1987) concluded that children “encounter print before they are able to read and yet somehow manage to organize these continual encounters in such a way as to develop fundamental concepts about both reading and writing” (p. 140). According to Coe, this study provided another example of how children continually test hypotheses about written language (p. 141). He also found that these children did not always use narrative form and that they could write for an audience other than themselves (p. 142).

Coe (1987) identified issues or themes as he worked through the transcripts of parent and child interviews chronologically (p. 65). He was also interested in defining the roles of the parents in modeling, intervening, and supporting their children. He examined the way in which adults communicated their perceptions, praise, and expectations (pp. 65-66).

According to Coe (1987), there is a subtle difference between natural literacy development and formal literacy training (p. 68). The six-year-old in this study cited her parents rather than her teacher or the school situation as being responsible for her knowing how to write (p. 68). Coe believed this was due to her literate home environment in which she had many opportunities to witness the functions and uses of written language. He speculated that may not so true in school environments (p. 68). In discussing her spelling, she explained her process of sounding out words, beginning with

a couple of letters and working on the sounds and letters until getting to the end of the word (p. 68).

Allen (1989) conducted an observational study of 183 kindergartners' writing and spelling progress in seven mid-west whole language classrooms and related that progress to reading. Reading measures were administered in September and May to assess letter identification, ability to read environmental print words and color words, connected text reading, and sound-to-letter analysis (p. 129). However, the researchers found measures used to be ineffective and not comprehensive (p. 142). Additional data were collected from quarterly teacher questionnaires, examining them for common elements each quarter and trends across quarters (p. 129).

Writing behaviors were recorded on a researcher-developed form, which included four levels of invented spelling among its 24 behaviors (Allen, 1989, p. 128). These categories were found to be nonexclusive. Most children seemed to add new writing behaviors to their repertoires without necessarily dropping previous ones (p. 137). Many children exhibited three or more types of writing. Most of the students (84%) showed growth over the school year. Another 5% seemed to regress; 8.5% seemed to make no progress at the prephonemic category; and 2.5% remained at the top level all year (p. 134).

Spearman correlations showed no significant correlations between children's entry level knowledge of letter, sounds, and words and progress they made in writing (Allen, 1989, p. 140). Correlations between initial writing behaviors and gains in reading knowledge were also insignificant (p. 140). According to Allen, children grew as writers

regardless of limitations in alphabet, sound, or word knowledge when they entered school (p. 140). Furthermore, “their acquisition of . . . reading-related behaviors [was not] limited by their level of writing sophistication upon entering kindergarten” (p. 140).

Comparisons were made between pretest and posttest reading behaviors and quarterly writing behaviors to examine relationships between reading knowledge and writing knowledge (Allen, 1989, p. 130). Correlation values increased between the four phonemic writing categories and reading knowledge by the fourth quarter (p. 141). Other correlations existed between letter, sound, and word knowledge at the end of the school year and spellings using beginning, middle, and ending letters (p. 141). Correlations between reading posttests and writing were highest when testing times were closest to each other at the end of the year (pp. 141-142). The increase in the correlations between reading pretests and writing over the school year may mean predictive value in entry reading measures for children’s use of invented spelling (p. 142). In this study conducted by Allen, children increased in ability to make connections between sounds and letters in words they were reading while learning to write (p. 142).

Writing and reading were used to self-check spellings in an experimental study by Block and Peskowitz (1990). Their sample included 40 fourth graders, aged 9 to 11 years. During phase one of this study, all students were asked individually to predict their spelling performance on 18 medium to difficult words, as rated by the Iowa Scale. The experimenter said each word and used it in a sentence, then the student responded with a ‘Yes, I can’ (3 points), ‘Maybe I can’ (2 points), or ‘No, I can’t’ (1 point) to predict their ability to spell that word (p. 154). Following these predictions, the

experimenter repeated her procedure, and the student spelled each word by printing it on an index card. Students did not review their earlier predictions nor did they receive any feedback.

After a half hour of unrelated activity and without foreknowledge of a subsequent second phase, students participated in a differentiated phase two. A control group of 10 students repeated the identical process used in phase one. An experimental group (PS) had the teacher orally pronounce (P) the word and read it in a sentence. Then each student was shown their spelling of the word, told to read it silently (S), and asked to rate its accuracy. Ratings included 1 (the word is incorrectly spelled), 2 (perhaps it is correctly spelled), or 3 (the word is correctly spelled) (Block & Peskowitz, 1990, pp. 154-155). A second experimental group (NPO) did not hear the word pronounced (NP) again by the experimenter but were asked to read it out loud (O), then rank their spelling as described above. Students in the final experimental group (NPS) also did not hear the experimenter pronounce (NP) the word again; however, they were asked to read the word silently (S) and then rank their spelling of it. To be sure students attended to the words rather than glance quickly at them, the experimenters had added nine additional words, three of those misspellings of students in a comparable population (p. 155). According to Block and Peskowitz (1990), experimenters set a thoughtful mood, allowed a generous amount of response time, and provided no feedback regarding accuracy until all words were judged (p. 155).

These researchers found that the words were of medium difficulty for students in the control group, the PS group, and the NPO group with correct and incorrect spellings

being nearly equal (Block & Peskowitz, 1990, p. 155). However, those in the NPS group were more accurate in their spellings, with 62% correctly spelled. Students were fairly accurate in their predictions when they subsequently spelled words correctly. However, for words later spelled incorrectly, their predictions showed less certainty, indicating that students showed the most uncertainty about their spellings of words which were indeed incorrectly spelled (p. 155).

When asked to rate their own spellings, students seemed more able to detect correct spellings (Block & Peskowitz, 1990, p. 156), although the increase in detection of accuracy was not significant. Analyses also showed a tendency for students allowed to read their spellings to be able to detect incorrect spellings (p. 157). Students in groups PS and NPO showed significant gain in detecting incorrect spellings, but students in the control or NPS groups showed no gain (p. 157). These researchers proposed that visual inspection of words accompanied by either hearing the word pronounced by self or experimenter helped students self-check (p. 158). Evidently, there were harmful effects from inspecting misspellings. Visual inspection seemed to allow more students to become more discriminating in determining spelling accuracy (p. 161).

Students in the control group who replicated phase one during phase two by writing the words again generally spelled words correctly the second time that they had also spelled correctly the first time. Students who had spelled words incorrectly the first time usually did not replicate the exact same misspellings later (Block & Peskowitz, 1990, pp. 159-160).

Block and Peskowitz (1990) concluded their report with various suggestions for practitioners to develop 'spelling consciousness' (p. 162). They included a discussion of strategies for remembering spellings (p. 163), and suggested that poor spellers might benefit from explicit strategy instruction for learning and using strategies (p. 164).

Using a case study approach, Freppon and Dahl (1991) followed one child's development in reading and writing in a whole language kindergarten. Observations, writing samples, and discussions with the child's teacher provided data. According to the researchers, Jason benefited from individual sessions with the teacher to help him make connections between letters and sounds in his writing attempts (p. 193). He also received help from peers (pp. 193-194). Freppon and Dahl found instruction in Jason's kindergarten to be learner centered, meaning based, integrated, and demonstrated. Furthermore, instruction occurred in context of reading and writing in which students actively participated, and multiple sources of information were used (pp. 195-196).

Richgels and Barnhart (1994) examined "the concurrent development of reading and writing behaviors in a cross section of preschool and kindergarten children across diverse language and literacy tasks" (p. 2). Sixteen preschool children in a program for three- and four-year-olds and 12 kindergarten children comprised the sample used in this study. (It should be noted that the kindergartners' ages ranged from 4 years 5 months to 5 years 9 months, so the range between the two groups is not so great as might exist elsewhere.) All subjects were from a large suburban community.

Measures used were both formal and informal language and literacy tasks, including the 1981 Peabody Picture Vocabulary Test-Revised (PPVT-R), the 1989 Test

of Early Reading Ability (TERA), and the 1989 Invented Spelling Task (InvSp) (p. 2). Richgels and Barnhart (1994) investigated the relationship between performances on formal and informal tasks and the differences in four- and five-year-olds' emergent reading and writing behaviors (p. 2).

Several statistically significant relationships emerged between performances on the literacy and language tasks, but the two groups differed on the degree of consistency (p. 6). The pattern of relatedness varied more with the preschoolers, while being more unified with the kindergartners (p. 6). According to Richgels and Barnhart (1994), performance on these tasks depended on the level of development of the abilities required to do the tasks (p. 6).

There was no significant relationship between the PPVT-R and any other measure for the preschoolers. However, for the kindergartners, the PPVT-R was statistically significant with all other measures (Richgels & Barnhart, 1994, p. 6). These researchers stated that this result supported the belief that the PPVT-R is not an intelligence test, but "it described an ability with receptive vocabulary whose relevance to performance on written language tasks depended on age" (p. 6).

The InvSp was significantly correlated with TERA and one informal measure at preschool but was significantly correlated with all other tasks at kindergarten. Richgels and Barnhart (1994) therefore claimed the InvSp instrument to be especially useful (p. 6), and they recommended other measures used in this study as helpful (p. 7). A statistically significant relationship between open-ended writing and performance on InvSp occurred

when attention focused on the nature of the writing systems children used for story production tasks (p. 7).

Richgels and Barnhart (1994) declared that developmental differences among children influences their ability to apply literacy knowledge across tasks and for different purposes (p. 7). These findings exemplify the need for teachers to be cognizant of what individual children know and to be accepting of differences in performance.

Summary. Writing has been shown to be beneficial to children's development in spelling and reading. Students who were encouraged to use invented spelling progressed as well as those who used a more traditional approach (Allen, 1989; Stice & Bertrand, 1990). Writing words and then visually and orally rereading them was found to help students monitor the accuracy of their spellings (Block & Peskowitz, 1990). When considering the written work of children, it is important to not underestimate them (Coe, 1987) and to remember that children progress at different rates (Allen, 1988; Richgels & Barnhart, 1994).

This literature review now has shown the reciprocal relationship among reading, writing, and spelling. It has shown the importance to orthography of phonemic awareness and its application and of the influence of visual attention to print. Furthermore, individual children construct, test, and revise their own hypotheses about print; and they do so at their own unique pace. Literacy instruction and assessment should reflect this research.

Text

Preceding sections have provided background information on spelling instruction and assessment; young children's development in writing and invented spelling; and previous research of relationships among phonemic awareness, segmentation of sounds, spelling, writing, and reading. In general, spelling has been discussed in terms of writing single words or in process writing. References to reading have involved brief comments about texts used in whole language and traditional classrooms, or, reading related to testing situations. In this study, reading and text selection are important to methodology and motivation. The following section discusses aspects dealing with text selection.

Allen (1995) noted the following three reasons why elementary classroom teachers use children's literature. First, teachers want children to know and love reading. Second, they use children's literature to demonstrate strategies used in reading and writing and to provide opportunities to practice those strategies. Third, they use it to address and meet content objectives and/or goals (p. 44). These three reasons are applied in the current study.

"The fact that we have literature for children is neither accidental nor unimportant" (Henderson, 1990, p. 47). Just as others such as Maley (1987) and DeVries and Kohlberg (1987) said, Henderson claimed that literature provides a model of written language, including its form, rhythm, meaning, and use (p. 47). Lewis and Long (1991) claimed that children could construct a wide range of knowledge from using literature (p. 120).

Children's increased knowledge has been witnessed by practitioners, such as McConaghy (1990), who reported that her first graders' writing was influenced by

literature they read, especially poetry. Similarly, researcher Eckhoff (1983) reported that more linguistic structures, formats, and styles were reflected in writing by students who read more natural texts than in writing by students who read from controlled text. According to Adams (1990), acquisition of spelling, word usage, and interpretation are influenced by meaningful experiences with words. Reading meaningful words in meaningful contexts is recommended as a way to develop children's visual vocabulary (p. 156).

Not only is students' writing affected, according to Adams (1990), children improve their speed, accuracy, expression, and comprehension with repeated readings of difficult words and passages (p. 133). Clay (1991) also spoke of the benefits of children's rereading of texts, saying, "They look at them again in the light of new knowledge they have gained" (p. 177). Dowhower (1987) found that repeated reading practice allowed transitional readers to improve their rate, accuracy, comprehension, and their ability to read in meaningful phrases (p. 389). Rereadings improved first graders' retellings and use of story schema (Pronger, 1985). Trachtenburg and Ferruggia (1989) found that rereading big books improved transitional first graders' self esteem, sight vocabulary, and likelihood of attempts to read (p. 289).

Holdaway (1991) alluded to children's attempts to read when discussing his model of shared reading. "The early stages in the development of any complex human skill is activity which is *like* that skill and approximates progressively toward an activity which incorporates real processes and operations in mature use of the skill" (p. 102). According to Clay (1991), knowing all the symbols in writing is not essential for being

able to read stories. She claimed that it takes children several years of looking at details in print to become proficient (p. 263).

Henderson (1990) stated that a teacher's guidance is needed for most children to attend and to learn (p. 103). Askew and Frasier (1994), DeFord (1994), and others talked about the crucial role of the teacher, who must use every avenue available to support learning while challenging students to extend their knowledge of reading and writing (DeFord, 1994, p. 52). Cazden (1983) called this scaffolding (p. 16), and Cambourne and Turbill (1987) addressed this issue in their discussion of conditions for learning (p. 7).

According to Allington (1994), all children need models, explanations, and demonstrations of how reading works; and some children require more than others (p. 21). Cramer (1978) and Richgels (1995) explained that not all children respond in the same way in the highly individual process of acquiring skills in reading and writing.

Texts selected for this study were songs or poems. Maley (1987) and McConaghy (1990) found positive effects of using songs and poetry in their classrooms, and Morris (1980) used poems in his research with first-grade readers. Holdaway (1991) found that "the ancient satisfactions of chant and song . . . sustain[ed] the feeling of involvement" (p. 105) for children. He recommended an enlarged print format of favorite poems, jingles, chants, and songs for literacy learning (p. 105).

McDonald (1992) (as cited in Powell & Hornsby, 1993) provided suggestions for using rhymes in enlarged print for primary classes. As was done in this study, she suggested reading the rhyme first for pleasure, rereading it, and later using it for word analysis activities (pp. 60-61). McDonald claimed that this provides a text in which

students have a genuine interest in words, and that interest facilitates learning the meaning and spelling of new words (p. 61). Powell and Hornsby claimed children to be naturally interested in chants and rhymes, as manifested in playground activities and teasing.

Summary

To better understand the transactions which occurred in this study, information was provided on how young children develop as writers and invented spellers. Both phonemic awareness and visual information gleaned from reading affect children's developing knowledge of orthography. Reading, writing, and spelling have reciprocal relationships. Additional information was provided regarding traditional spelling instruction and assessment. The last portion of the literature review explained the relevance of text selection.

In this study, some students read a song or poem on multiple occasions and later wrote a student-selected portion of that continuous text. Others read the same text on one occasion and later wrote the identical portion, for which they had no voice in selecting. The third group simply wrote the portion selected by other students with no prior interaction with the text from which the selection was made. This chapter now concludes with a restatement of the research questions.

Research Questions

This project was designed to answer the following questions about the teaching/learning/assessing of spelling using continuous text in a manner congruous with constructivist theory of learning, varying treatment in three groups of first graders:

- 1) Are there treatment-based differences in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
 - 2) Are there treatment-based differences in quantity of standard spelling of words by students on student-selected dictated text?
 - 3) Are there differences over time in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
 - 4) Are there differences over time in quantity of standard spelling of words by students on student-selected dictated text?
 - 5) Is there an interaction of time and treatment in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
 - 6) Is there an interaction of time and treatment in quantity of standard spelling of words by students on student-selected dictated text?
 - 7) What is the nature of differences across time and among groups?
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CHAPTER 3

METHODOLOGY

Introduction

The specific purpose of this study was to determine whether interactions of first graders with peers and an adult regarding continuous text on topics they chose and whether reading and writing that continuous text would facilitate their construction of knowledge of graphophonemic and orthographic relationships more than that of first grade students who only wrote the same continuous text.

Research Design

The statistical design of this study was based on a quasi-experimental nonequivalent control group design (Campbell & Stanley, 1963, pp. 47-50) with an additional within-subjects factor. It included two levels of treatment in addition to the control group. Treatment condition was assigned randomly to each of three first-grade groups within the same school. Since students had not been randomly assigned to classes, this study did not meet the criteria for an experimental design.

Additionally, this study used elements of qualitative research. Included were student interviews, teacher interviews, parent questionnaires, and qualitative analysis of weekly assessments. Interviews followed an open-ended format moving from structured questions to spontaneous questions based on responses of participants (Bogdan & Biklen,

1992, p. 97; Gorden, 1992, pp. 33-40). Data from these sources provided “thick description” (Erlandson, Harris, Skipper, & Allen, 1993, p. 33) and triangulation (Erlandson et al., 1993, p. 31). Peer debriefing occurred with the researcher and three Reading Recovery teachers who worked in the same building (Erlandson, Harris, Skipper, & Allen, 1993, pp. 140-141). The primary purpose of this peer debriefing was to determine if those teachers agreed that weekly assessments were being evaluated appropriately.

Subjects

Subjects in this study were 58 students in their first semester of first grade in the equivalence of three classrooms in the same school. Two classrooms were comprised of first graders only. Two additional classrooms were comprised of first and second graders; those first graders’ scores were pooled to equal a third first grade.

All students received the treatment assigned to their class. Of students who were enrolled at the beginning of this study, scores for three students who moved during the study were excluded from analysis.

Students in this study attended a two-year-old school which had approximately 710 students. The school was located in a southern state. The majority of the school population qualified for free or reduced lunch, meeting the criteria to qualify as a Title I school. One of 10 elementary (K-6) schools in a community of approximately 70,000, the school served a population representing an ethnicity ratio of approximately 48% Caucasian, 30% African-American, 28% Hispanic, and 2% other ethnicities.

In each of the classrooms used in this study, students sat at tables or grouped desks with peers (usually four to six students). Literacy instruction in all classrooms included shared, guided, and independent reading. Students wrote daily in guided, independent, and/or interactive situations. A trained Reading Recovery teacher assisted each classroom teacher with literacy instruction for approximately 45 minutes daily. Each classroom featured print in multiple locations.

Poems and songs were selected as the continuous text for this study for three reasons. Logistically, time permitted use of short texts rather than longer texts as in a storybook. Second, poems, chants, and songs are of interest to and intrinsically motivating to young students. Finally, poetry provides an excellent source for word studies (Powell & Hornsby, 1993, p. 62). Level of difficulty was not a conscious consideration. Restating Waterland (1985),

There is only one criterion that needs to be taken into account when choosing [texts] for any age child if reading is to be approached as a natural learning activity. Will the child enjoy the [text]? There is no need to worry about vocabulary control, type face, phonic consistency or any other problems beloved of teachers' manuals . . . If the adult is to provide support, it matters only that the child should want to read that [text] (cited by Clay, 1991, p. 178).

Instrumentation

Data used in this study were collected with pretests as well as weekly assessments. Two scores were obtained each week, one for appropriate graphemic representation of phonemes and one for words spelled conventionally. These scores

varied each week depending on the portion of text selected for dictation by students in the complete treatment group (Group One). These weekly scores were transformed to scores with mean of 50 and standard deviation of 10. Qualitative data were derived from weekly assessments, student interviews, teachers interviews, and parent questionnaires.

Prior to implementation of treatment, all subjects were given the Observation Survey (Clay, 1993), which is comprised of the six tasks. Each Observation Survey was administered individually by trained Reading Recovery personnel. Scores from initial Observation Survey tasks of Writing Vocabulary and of Hearing and Recording Sounds in Words served as covariates in the statistical analyses. These tasks are described below.

Pretest Instruments

Writing Vocabulary. This task provided each student with an opportunity to show how many words could be written in ten minutes. Each student was given a blank piece of paper and a pencil and told, "I want to see how many words you can write. Can you write your name?" (Clay, 1990, p. 35). Each child continued for ten minutes unless unable to write for that length of time. Prompts were given if necessary; these usually referred to categories of words, such as names of animals. Each word spelled correctly was counted as accurate unless the child wrote one different from one prompted by the tester or when the child called it something else.

Citing Robinson (1973), Clay (1990) gives reliability for this task for children aged 5 years, 6 months in 1972 as 0.97, test-retest. From the same source, validity was 0.82 when correlated with reading with children aged 5 years, 6 months in 1972.

Hearing and Recording Sounds in Words. This task was used to determine whether a child could isolate sounds heard in words and represent them appropriately with graphemes. A blank piece of paper and a pencil were provided. This task required each child to listen to a short two-sentence story. The story was repeated word by word with the child recording what was heard to the best of his or her ability. A different form of this task was used for the post-test.

Of this task, Clay (1990) said, "Susan Robinson and Barbara Watson devised and used these texts...[which] proved to be useful indicators of the child's ability to go from his analysis of sounds in spoken words to written forms for representing these sounds" (p. 38). It has been referred to as a dictation test, although Clay (1990) claims that it "is not a true dictation or spelling test" (p. 38).

In scoring, one point was given for each phoneme represented by the child in an understandable manner, such as when a child wrote 'k' but conventionally 'c' was correct. When two phonemes were represented but the graphemes were recorded in reverse order, only one point was given. A word's sounds received credit only once even though the word might appear more than once in the dictated selection. When additional letters were included by a child, they did not affect scoring as long as the phonetic representation matched the phoneme in the word. One example that affected scoring was when a child wrote 'th' for the phoneme /t/. There were 37 possible points.

Weekly Assessments

During the treatment period students in all three groups were given a task similar to Clay's Hearing and Recording Sounds in Words. Selected portions of weekly texts

were dictated to an entire class at one time, rather than individually. Each week the text differed. There was no control for text difficulty or phonemes included. Text length was kept to no longer than two or three sentences in most instances. Students' recorded responses to the dictated text were assessed for number of phonemes represented by graphemes which could represent that sound and for number of words spelled correctly. Copies of student papers and a correct response key were made available to classroom teachers whose students participated in this study and sent home to those students' parents/guardians on a weekly basis.

Qualitative Instruments

In conducting qualitative research portions of this study, guidelines for proper procedure as espoused by Erlandson et al. (1993) were followed. Major components are described.

Student Interviews. Randomly selected students from Group One whose data were included in analysis and whose parent/s granted permission were interviewed at the end of treatment. Guidelines recommended by Gorden (1992) were followed. (See Appendix C for interview questions.)

Teacher Interviews. Teachers in participating classrooms were interviewed at the beginning, intermittently throughout treatment, and at the end of treatment in both formal and informal settings. Interviews included both broad and narrow questions in scope and open-ended and closed-answer in type (Gorden, 1992, pp. 33-40). (See Appendix D for interview questions.)

Parent Questionnaires. Parents of students in Group One were asked to respond to a questionnaire at the end of treatment. Questions were closed-answer in type with responses restricted to a Likert-type scale. (See the Parent Questionnaire in the Appendix E.)

Other Data Collection

In addition to scores on Observation Surveys, weekly assessments, and qualitative measures, demographic information on each student was collected. Included were gender, age, ethnicity, number of siblings, ranking in birth order, attendance in kindergarten, and SES.

In accordance with recommendations of Erlandson et al. (1993), the researcher kept a reflective journal throughout data collection. Results of peer debriefings and members checks (Erlandson et al., 1993, p. 31) were included in the reflective journal. Peer debriefings occurred to monitor the researcher's scoring of weekly assessments. Members checks occurred with informal discussions with individual teachers whose students were involved in the study. The purposes of these discussions were to be sure the researcher was informed of situations that occurred in classrooms when she was not present and to provide opportunities for the teachers and the researcher to discuss events resulting from the researcher's time in each classroom, including the weekly assessments.

Treatment

The following section describes the procedures and instrumentation included in the treatment. Treatment was randomly assigned among three first-grade groups.

Treatment for the three groups differed in the following ways: exposure to the continuous text used in weekly assessments, interaction among peers and with an adult in response to that text, and ownership in selection of the dictated text. Description of treatment begins with the full-treatment group and concludes with the group receiving the least treatment. These groups are referred to, in turn, as Group One, Group Two, and Group Three.

Group One

This group received the complete treatment. While baseline data were being collected by the Reading Recovery teachers, this class and the other classes had the opportunity to suggest topics of interest to the researcher. Based on those suggestions, poems and songs which matched their interests as nearly as possible were selected (see Appendix). Additional consideration was given to selecting poems or songs which followed a reasonable sequence from week to week. These were reproduced in chart form using enlarged print.

Treatment for Group One followed a day-to-day sequence which was repeated each week, culminating weekly with data collection. Treatment is described from day to day.

Monday. The researcher presented the selected poem/song to the class after a discussion to activate prior knowledge and set a mood of anticipation. She conducted a shared reading of the text, using a pointer at each reading to demonstrate directionality and one-to-one match with words. This was followed by additional discussion in which students were given the opportunity to frame words of interest to them with a framer

made from a manilla file folder. The framer had a slide which could be adjusted to fit a word with one letter or a word with multiple syllables.

Several times during the study, the researcher used a cloze procedure to help students learn to predict and to allow checking with visual cues. If this procedure was followed there generally was insufficient time for students to frame words.

Another shared reading followed discussion. Students then were asked to consider which part was their favorite and to be ready to select a favorite part democratically on Tuesday. The enlarged copy of the text was posted in their classroom.

Students then were directed to use their learning logs (a spiral notebook given to them by the researcher) to reflect or react to the text. This generally included making a picture and/or writing about it.

While students worked in their learning logs, the researcher sat on the floor in the whole group area and called students to the floor a few at a time to look over their last week's dictation. She made comments to students to praise them and/or to encourage them to notice something specific. The classroom teacher often joined the group on the floor to look at students' work also. This was the only interaction she displayed during the course of a week, although during each day's proceedings, she observed from a nearby table.

This procedure generally took 30 minutes.

Tuesday. After a quick review about the contents of the text, the researcher led a guided reading using the enlarged text. Additional students framed one word each and talked about what they noticed in that word.

Students then were asked to nominate their favorite part, being told that only three parts would be nominated this time. Volunteers who nominated a part were asked to tell the class why that part was their favorite. This continued until three different parts had been nominated. Members of the class were asked to tell any reasons they thought the class should vote for a certain part. The researcher wrote the numbers 1, 2, and 3 in the margin of the enlarged text on the chart. Finally, the class voted on their favorite part. The researcher wrote the number representing how many voted for each part next to the number in the margin. In this manner students were able to see the democratic process at work as they determined which excerpt won. After determining which part won, the researcher marked the enlarged copy to show that part.

A second rereading of the poem occurred. This process generally required 30 minutes.

Wednesday. This usually marked the day when rereadings became more of a shared responsibility rather than a guided reading (where the main responsibility fell on the researcher to lead the reading).

After the rereading, more individual students who had not been called on previously during the week had the opportunity to frame a word and tell the class what they noticed about the word. Occasionally other students and the researcher commented on those words. A second rereading usually occurred then.

The researcher told the class that today they were going to take a close look at the favorite part they had selected on Tuesday. By the third week most students were aware

that on Friday they were going to be asked to write that part without a copy to use as a reference.

Students were encouraged to “really look” at hard words. The researcher modeled strategies for looking at words. For example, she showed how she thinks about what comes first, what comes next, etc.; how she looks for a part of that word that she knows; or how a word is like another word she already knows. In the first six weeks of this treatment period, the researcher used the overhead projector to guide students as they worked in their learning logs on words from the dictation which students had mentioned during their framing opportunities.

During the last six weeks of the treatment period, students often worked at their seats in their learning logs on words they selected from the dictation. An individual copy of the poem with the dictation marked was provided for their use. Students were encouraged to discuss with other persons at their seats what they were working on and what they noticed that might help them remember how to write a word or how a given word looks. At other times students were paired and asked to give each other the dictation and to check it together.

Sometimes students worked on function words or other words that had a common pattern with onset or rime. Often the researcher made decisions to scaffold learning based on previous data collection.

All students were allowed to take home an individual copy of the poem for practice at home on Wednesday. This occurred at that time in this study because

Wednesday is when the classroom teachers sent work home in what that school called “Wednesday envelopes.”

In addition to individual copies provided to students, the classroom teacher provided half-sheet copies of the portion of the text selected for dictation for students who wished to use them at a writing center. Her intention was to provide handwriting practice for students.

Students were told that they would work on parts again on Thursday and that if they wanted to practice writing the excerpt when at home, they could do that. Again, time allotted for treatment generally was 30 minutes, with approximately half on reading and framing and half on individual work on words.

Thursday. Students read the entire poem or song with help from the researcher only as needed. Additional students framed and discussed words from the poem.

Students were given their learning logs and dismissed to their tables. The researcher prepared to work at the overhead projector while students found a new page and dated it. All students worked together on key words selected from the dictation by the researcher; often these were words students had framed throughout the week. Students provided input on how to use the sounds to help spell a word and on similarities and differences between or among words. The purpose of the latter part of that discussion was to encourage students to learn a new word based on analogy. The researcher and students shared ways that help them remember how a word should look. The researcher emphasized that writing words was not just a matter of sounding out but

also of noticing how words really look in print. This was mentioned periodically throughout a given week.

At the outset of this study, this day's procedures were intended to have the most variance from week to week. Varying these activities was believed to maintain motivation and to facilitate learning for students with different learning styles. However, the interest in framing words was so high among these students that the researcher decided to capitalize on that interest and continue this activity from week to week.

A few times students were paired and a more-able peer was asked to show a less-able peer how they figured out how to write words of the selection. At other times each individual was asked to confirm that the partner had been successful in a specific task.

Students again were told that they could work on this at home if they chose to do so. The 30-minute period was divided fairly equally between reading and framing and then working on words in learning logs.

Friday. The classroom copy and all student copies were removed from view. Following room procedures, students selected a piece of lined paper of their choice and a pencil. Precautions were taken to assure independent work.

When ready, the selection was read to them at a normal pace first, then repeated one word at a time. The researcher assured them that she would say each word one at a time and they would be given time to think about what sounds they heard and to think about how that word looked in print. They were told that each person would write it the best way they could. Students were allowed to repeat the word softly to themselves in

order to listen to the sounds they heard. This process continued until the entire excerpt had been dictated.

Finally, the passage was reread slowly to enable them to see if everything looked right. Students were asked to use their eraser end of their pencil to point to the words as I read them because this helped their eyes to look closely at the words as we went along.

This session usually required 20-30 minutes. This five-day routine was repeated until the first semester ended (13 weeks).

Group Two

Group Two received only two days of interaction with the chosen text each week. This partial treatment condition was limited to Monday and Friday and is described below.

Monday. On Monday of each week that Group One received treatment, Group Two received an enlarged copy of the same text shared with Group One. Group Two students also had been given the opportunity to offer topics of interest to them to be given consideration when the researcher selected weekly texts.

The researcher introduced the text in the same way that it was introduced to Group One. The researcher led the class in guided reading of the text. Students were allowed to comment and occasionally to frame words they noticed. Then they read the text again. An enlarged copy of the poem/song was posted on a wall in the room where students could read it again if they desired. The researcher did not enter the classroom again until Friday.

Friday. This was the second day the researcher interacted with students in this group. Before students entered the room on Friday, she removed the copy of the text. She told students that they were going to write part of that poem/song in their own best ways. The same procedure followed with Group One was repeated with Group Two for the dictation. The opportunity to proofread ended the treatment each week for Group Two. Papers were collected by the researcher. The classroom teacher observed on both days, occasionally making anecdotal records of student literacy behaviors.

Group Three.

Group Three received the least interaction with the researcher. Each Friday during the treatment period the researcher entered the classroom and told students they would be writing a short story. They were told that some of the words might be hard and that they should say the word softly to themselves, listening for the sounds and writing down what they heard. Again, students had their choice of lined paper and got their pencils. While students wrote their name and date on papers, the researcher introduced the theme of the dictation, noting connections to interests shared by students and to the previous week's dictation.

The dictation procedure described previously was repeated with Group Three. After proofreading their papers, students gave them to the researcher, who then left. This procedure was repeated each week during the treatment period.

Data Analysis

Descriptive statistics were used to characterize the participants in this study. To answer Research Questions 1-6, a between-subjects/within-subjects multivariate analysis

of covariance was used. The between-subjects factor was the treatment condition with three levels. The within-subjects factor was the twelve weekly test scores. The two dependent variables were the scores for phoneme representation and the number of words spelled conventionally on weekly dictations. The pretest scores from Clay's Observation Survey tasks of Hearing and Recording Sounds in Words and Writing Vocabulary were the concomitant variables. The subscale of Hearing and Recording Sounds in Words served as covariate for the phonemic representation scores of the weekly dictations. The subscale of Writing Vocabulary served as covariate for the standard spelling scores of the weekly dictations.

Descriptive statistics and narrative discussion were used to report coded results of interviews and questionnaires and to describe the nature of the differences over time and between groups in answer to Research Question 7.

CHAPTER 4

RESEARCH RESULTS AND FINDINGS

Purpose of the Study

The purpose of this study was to determine whether first grade students who read and wrote continuous text on topics of their choice would learn more about graphophonemic and orthographic relationships than first grade students who only wrote the same continuous text. This study also investigated whether interactions with peers and an adult regarding the selected text facilitated construction of knowledge of graphophonemic and orthographic relationships.

Research Questions

Research conducted in this study was designed to answer the following questions:

- 1) Are there treatment-based differences in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
- 2) Are there treatment-based differences in quantity of standard spelling of words by students on student-selected dictated text?
- 3) Are there differences over time in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
- 4) Are there differences over time in quantity of standard spelling of words by students on student-selected dictated text?

- 5) Is there an interaction of time and treatment in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
- 6) Is there an interaction of time and treatment in quantity of standard spelling of words by students on student-selected dictated text?
- 7) What is the nature of the differences across time and among groups?

Results

The statistical design of this study was based on the quasi-experimental nonequivalent control group design (Campbell & Stanley, 1963) with an additional within-subjects factor. To answer Research Questions 1-6, a between-subjects/within-subjects multivariate analysis of covariance was used. The between-subjects factor was the treatment condition with three levels. The within-subjects factor was the twelve weekly test occasions. Additionally, this study used the following elements of qualitative research: student interviews, teacher interviews, parent questionnaire, and qualitative analysis of weekly assessments.

Quantitative Results

Prior to beginning treatment, the Hearing Sounds in Words and Writing Vocabulary tasks from the Observation Survey (Clay, 1993) were given as pretests to serve as covariates. Oneway analysis of variance was carried out on these scores to check for group differences on the covariates. Results indicated groups did not differ for either covariate.

This section continues with a discussion of results of the multivariate statistical test followed by results of the tests related to analysis of covariance. Results of analyses for Questions 1-6 are presented in sequence.

All scores were transformed to T-scores (mean 50 and standard deviation 10) for analysis. Results of the multivariate test indicated that there was a treatment effect ($F(48, 34) = 2.22, p < .01$), no within-subjects effect ($F(23, 23) = .84, p > .05$), and an interaction effect ($F(46, 34) = 1.93, p < .05$).

Prior to conducting an analysis of covariance, the assumption of homogeneity of slopes must be verified. For this data, the homogeneity of slopes assumption was valid for both dependent variables, appropriate graphemic representation of phonemes ($F(2, 38) = 1.48, p > .05$), and standard spelling ($F(2, 38) = 2.57, p > .05$). The significant multivariate results for treatment and treatment by occasion interaction were followed with univariate analyses for each dependent variable.

Additionally, designs involving within-subjects factors must validate the assumption of sphericity. If this assumption is violated, the test statistics are distributed as a non-central F-distribution. In situations as these, an adjusted degrees of freedom test must be carried out using Greenhouse-Geiser epsilon (Kirk, 1995). Results of this analysis indicated the assumption failed for both dependent variables: appropriate graphemic representation of phonemes ($\chi^2(65) = 145.05, p < .001$) and standard spelling ($\chi^2(65) = 121.78, p < .001$). Therefore, results of the statistical significance tests were determined for Questions 5 and 6 using Greenhouse-Geiser epsilon to adjust degrees of freedom.

Results of Question 1. Are there treatment-based differences in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text? The null hypothesis for question 1 was that treatment groups would not differ in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text. Results of the test for statistical significance indicated the null hypothesis should be rejected ($F(2,40) = 19.89, p < .001$). Thus, the three groups differed on the quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text.

Further investigation of the treatment effect was carried out using Tukey's pairwise post hoc analysis. Using a 0.05 level of significance, results indicated that Group One mean was significantly higher than Group Two and Group One was significantly higher than Group Three. Groups Two and Three did not differ significantly.

A retrospective power analysis was carried out. For the statistically significant treatment effect for appropriate graphemic representation of phonemes the estimated power was .99. This indicates a high probability of finding a significant difference, if one exists, thus providing supporting evidence that the decision to reject the null hypothesis was correct.

Results of Question 2. Are there treatment-based differences in quantity of standard spelling of words by students on student-selected dictated text? The null hypothesis for question 2 was that treatment groups would not differ in quantity of standard spelling of words by students on student-selected dictated text. The results of the test for statistical significance indicated the null hypothesis should be rejected

($F(2,40) = 14.19, p < .001$). The three groups differed in the quantity of standard spelling of words by students on student-selected dictated text.

Results of Tukey's pairwise post hoc analysis (0.05 level of significance) indicated that Group One mean was significantly higher than Group Two and Group One was significantly higher than Group Three. However, Group Two and Group Three did not differ significantly.

A retrospective power analysis was carried out. For the statistically significant treatment effect for standard spelling of words the estimated power was .99. This indicates a high probability of finding a significant difference, if one exists, thus providing supporting evidence that the decision to reject the null hypothesis was correct.

Results of Question 3. Are there differences over time in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text? According to the null hypothesis for question 3, it is assumed that there are no differences over time (within-subjects factor) in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text. Since there was no significant multivariate effect over time in the quantity of appropriate graphemic representation of phonemes, no univariate test was carried out.

Results of Question 4. Are there differences over time in quantity of standard spelling of words by students on student-selected dictated text? The null hypothesis for question 4 was that there were no differences over time (within-subjects factor) in quantity of standard spelling of words by students on student-selected dictated text. There

was no significant multivariate effect over time in the quantity of standard spelling of words; therefore, no univariate test was carried out.

Results of Question 5. Is there an interaction of time and treatment in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text? For this question, the null hypothesis was that there is no interaction of time by treatment in the quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text.

Results of the test for statistical significance indicated that the null hypothesis should be rejected ($F(22,440) = 3.54, p < .001$). An interaction of time and treatment occurred in the quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text. Figure 1 reflects this interaction, showing that Group One students improved more over time than their peers in Groups Two and Three.

A retrospective power analysis was carried out. For the statistically significant interaction effect for appropriate graphemic representation of phonemes the estimated power was .99. This indicates a high probability of finding a significant difference, if one exists, thus providing supporting evidence that the decision to reject the null hypothesis was correct.

Results of Question 6. Is there an interaction of time and treatment in quantity of standard spelling of words by students on student-selected dictated text? Question 6 null hypothesis was that there is no interaction of time by treatment in quantity of standard spelling of words by students on student-selected dictated text. The results of the test for statistical significance indicated that the null hypothesis should be rejected

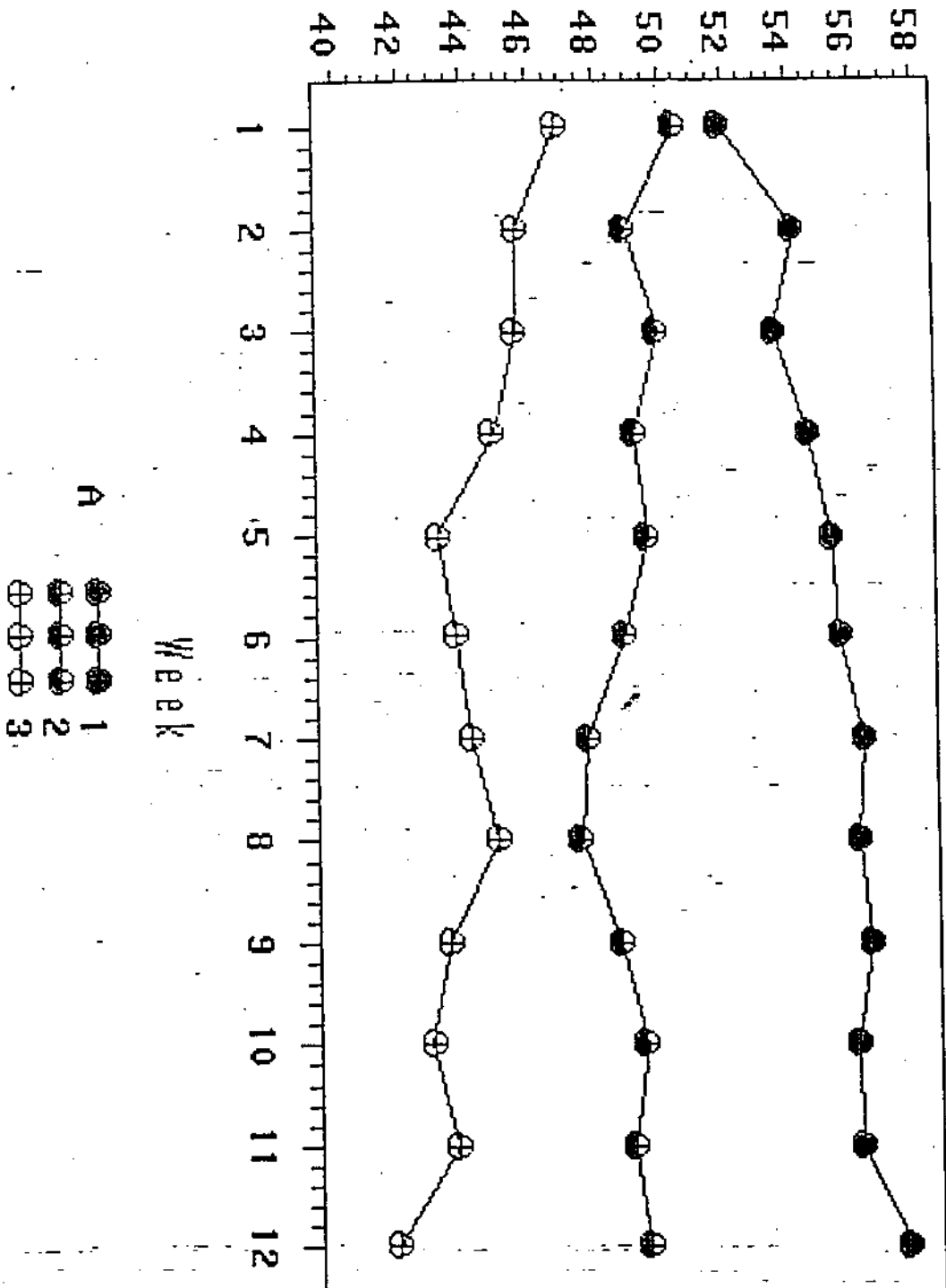
Figure 1

Comparison by Groups in Interaction of Time and Treatment on Appropriate Graphemic

Representation of Phonemes (AGRP)

A-G-R-P

Mean T-scores



($F(22,440) = 2.05, p < .05$). An interaction of time and treatment in quantity of standard spelling of words by students on student-selected dictated text did occur. This interaction effect, with Group One showing greater increase over time than that of students in Groups Two and Three, is reflected in Figure 2.

A retrospective power analysis was carried out. For the statistically significant treatment effect for standard spelling of words the estimated power was .99. This indicates a high probability of finding a significant difference if one exists, thus providing supporting evidence that the decision to reject the null hypothesis was correct.

Qualitative Results

This section includes the analyses of the weekly assessment products in response to Research Question 7. It begins with a discussion of the process used for analyzing data. Results are presented in three 4-week segments which comprised the 12-week treatment period. This section concludes with discussion of results from student interviews, teacher interviews, and parent questionnaires.

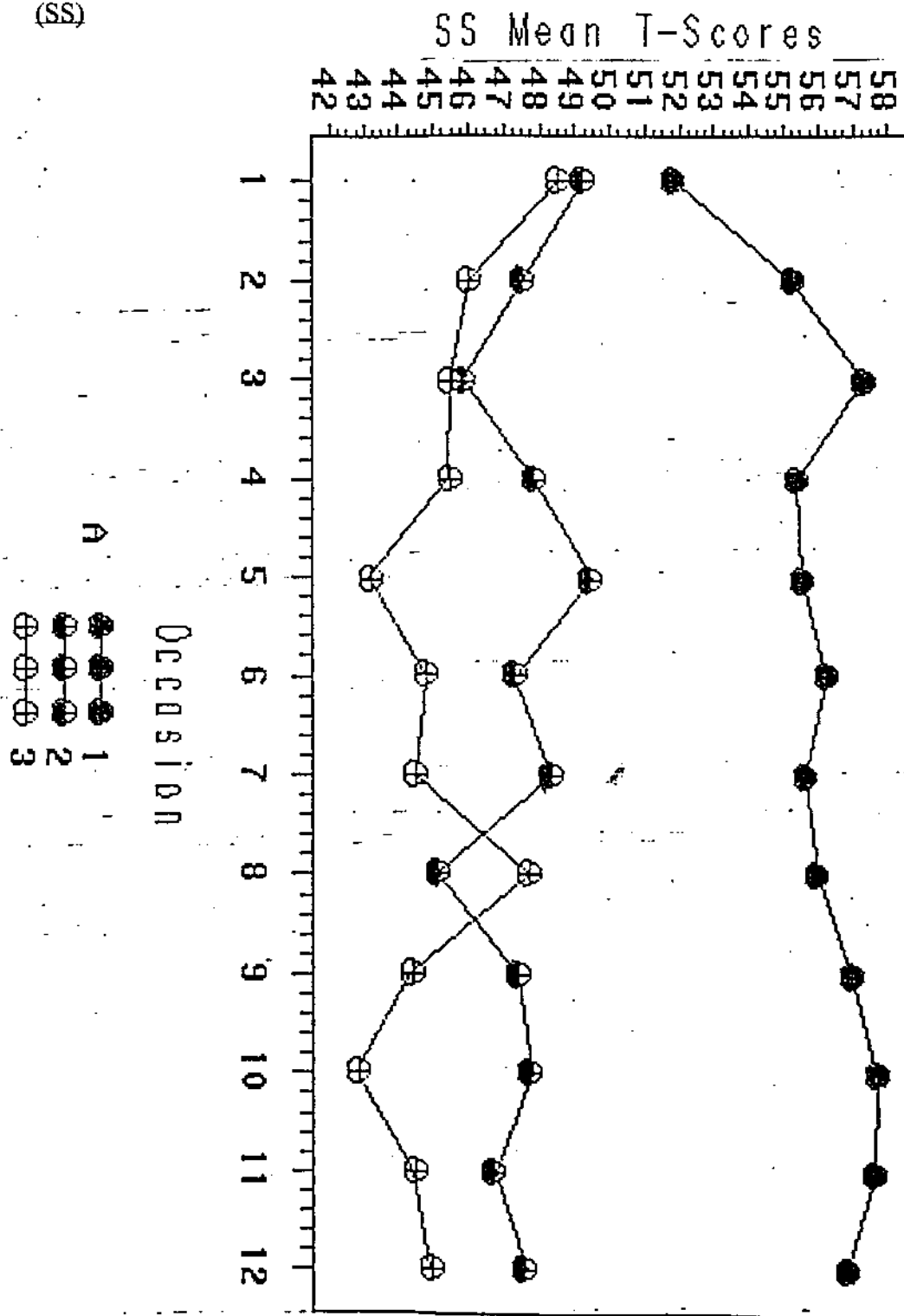
Results of Question 7. What is the nature of the differences across time and among groups? To answer this question the 12 weekly dictations spanning the treatment period were analyzed every fourth week to look for trends. Dictations were taken from texts used for whole group reading and were selected to coordinate with expressed interests of students in the treatment groups rather than by level of text difficulty.

No codes had been determined prior to this analysis. At the end of the fourth week, all dictations to that point were examined. After several careful examinations of

Figure 2

Comparison by Groups of Interaction Effect of Time and Treatment for Standard Spelling

(SS)



those student products and in keeping with the variables considered in this study, the following coding system was developed. Graphemic representations of phonemes were coded by recording appropriate representations of all consonant phonemes at the initial, medial, and final positions within words. All vowel phonemes were coded similarly.

Graphemic representations of phonemes were considered appropriate when they were useful, regardless of conventionality. An example of a useful but unconventional representation would be the use of *k* rather than *c* when writing *caught* or *cage* in week 11. An inappropriate graphemic representation would be the use of *t* without the *h* when writing *the*, even though the conventional spelling requires the use of *t*.

All standard spellings were recorded for complete words per student and for parts of words per group. In this study parts of words are referred to as chunks, which are defined as a cluster of graphemes representing more than one phoneme but less than a complete word. The *-ing* ending found in several different dictations is an example of a chunk. Another example from week 12 is *-ook*.

A master record form was developed for coding. A separate form was used for each group each week. At the top of each form the group number and treatment week were listed. Under that, the two main categories (consonants and vowels) were listed. Each main category was divided into three columns for the initial, medial, and final phoneme. The number of different phonemes in each section were counted and recorded at the top of the corresponding column in parentheses, next to the placement-within-a-word subheading. These were preceded on the left with a column heading for student

identification number. An additional column followed the phonemes for words spelled correctly. Table 1 provides a sample of the top section of the form for week 11.

The process of analysis involved examining each student's dictation for all phonemes represented and all words spelled in standard form. This information was transferred to the form for the appropriate group. Thus, going across one row came the student identification number and a record of the specific graphemes the student used appropriately in representing phonemes in each category according to placement in a word. At the end of the row was the record of words that individual had written in standard form. The column headings and records for three individual students are provided in Table 1 as examples. A typed duplication of work by those same three

Table 1

Sample of Record Form with Coded Appropriate Responses from 3 Group One Students'

Week 11 Dictations

Week 11 - Group One							
	Consonants			Vowels			Standard
Student	i=5	m=3	f=7	i=4	m=5	f=1	Spelling
15	th,s,l,p,c	t	n,l,k,t,p,g,ed	ī,ā,ī	ě,i,ā,o/augh	ol/aw	then,I,a,it,cage
12	th,s,l,c,p	t,ck	n,l,ck/k,t,p,g,ed	ī,ā,i,u	ě,i,a,oo/u	aw	I,it,up,little,a then,picked,saw
9	th,s,l,c,p	t,c/ck	n,l,c/k,t,p,j/g,ed	ī,ā,u	ě,ā,o/augh,u		then,I,a,put

Note: St=Student; i=initial; m=medial; f=final

students is provided in Table 2. Table 2 also provides a standard model of the scored dictation. Their work is based on the following dictation: "Then I saw a little snake. I caught it. I picked it up. I put it in a cage" (Barchas, as cited in Baskwith, 1986). A full page example of a weekly record form for one group may be found in Appendix F.

After all students' responses had been filled in, a circle was placed around each set of graphemes which indicated that all possible differing phonemes within a specific category were represented by a given individual. At the bottom of each column for phonemes, the number of students for that group who represented each possible differing phoneme in that category was recorded. For example, in Table 1, the following would

Table 2

Typed Responses from 3 Students and the Standard Scored Week 11 Dictation

#15	1 23 4 5 6 7 891011 121314 151617 1819 202122 23	then I sol a litl sak I kot it I pit it op I 24 25 26 272829 pot it n a caGE.
#12	1 23 4 5 6 7 891011 121314 15 16 1718 192021 22	Then I Saw a little saick I cat it I picked it 2324 2526 27 2829 303132 up I poot it in a cag
#9	1 23 4 5 6 7 8 9 101112 131415 16 17 1819	then I srlu a letlu sac I cot etu I pect etu 20 212223 24 252627 opu I put etu n a caju
Model	1 23 4 5 6 7 891011 12131415 16 17 18 1920	Then I saw a little snake. I caught it. I 21 22 23 24 2526 272829 3031 323334 picked it up. I put it in a cage.

Note: Phonemes in words that are repeated count only once.

have been circled: initial and final consonants for all three students; final vowel for students #15 and #12; and initial vowels for students #12.

In the remaining space at the bottom of the page specific items of interest, such as the -ing chunk were listed. A tally of students in each group who represented each item of interest was kept. If an item such as the -ing chunk occurred more than once, a subheading to correspond with all possible number of times, such as 1x, 2x, all, was made. If the phoneme occurred in different places within words, such as th, subheadings such as beg (initial), end (final), both, were made. This process was repeated for each separate group each of the 12 weeks. These forms provided information for analyzing trends over each four-week period.

First Four Weeks. At the beginning of the study, Group One had 22 students whose parents had given permission for participation in this study. This group was considered the full-treatment group because they spent approximately 30 minutes daily with the researcher in reading and writing activities, including close examination of words, letter patterns, and graphophonemic relationships.

Group Two had 21 students participating in the study. This group was considered the partial treatment group because they spent approximately 30 minutes with the researcher the first and last days of each week during the treatment period.

Group Three had 18 students. They were the control group for this study. The researcher spent time conducting the assessment procedure on the last day of each treatment week.

The following section begins with a discussion on single phonemes including digraphs. Table 3 provides a week-by-week overview of each group's appropriate graphemic representation of phonemes for this period.

Discussion of orthographic knowledge including conventional spelling of complete words and word chunks follows the discussion of phonemes. Table 4 compares the three groups on the number of words spelled conventionally and the percentage of total possible words spelled correctly by each group. Differences in percentages are due to the varying number of students who were present in each group.

By week 3 noticeable differences developed in the number of students in each group who represented initial consonant phonemes in an acceptable manner. Seven Group One students represented each of the six differing phonemes. This compares to two students in Group Two and no students in Group Three. Few differences among groups occurred in all other phonemes and locations. By week 4, however, 12 Group One students represented all final vowel phonemes correctly compared to 5 in Group Two and 3 in Group Three. The dictation for week 3 used two digraphs--sh and th. Nine students in Group One used sh correctly, and 10 used th correctly. Ten students in Group Two used sh correctly. Their teacher said the students were familiar with this digraph because one of the student's names begins with it. Two Group Two students used the th correctly. No Group Three student used sh, but three used th correctly.

After the first four weeks of dictations, students in Group One represented more words with standard spelling. Differences increased dramatically from week one to week four. For week one Group One had 55 correct spellings, Group Two had 46, and Group

Table 3

Weekly Group Comparisons of Students who Appropriately Represented All Phonemesper Category: Weeks 1-4

		Week 1					
		Consonants			Vowels		
Group	N	Initial (9)	Medial (4)	Final (5)	Initial (3)	Medial (4)	Final (2)
One	21	3 (14%)	0 (0%)	5 (24%)	9 (43%)	0 (0%)	8 (38%)
Two	21	1 (5%)	0 (0%)	0 (0%)	4 (24%)	0 (0%)	2 (10%)
Three	18	2 (11%)	0 (0%)	2 (11%)	0 (0%)	0 (0%)	3 (17%)
		Week 2					
		Consonants			Vowels		
Group	N	Initial (6)	Medial (2)	Final (7)	Initial (4)	Medial (5)	Final (2)
One	21	7 (33%)	3 (14%)	9 (43%)	7 (33%)	1 (5%)	14 (67%)
Two	21	5 (24%)	0 (0%)	1 (5%)	0 (0%)	1 (5%)	9 (43%)
Three	17	3 (18%)	1 (6%)	3 (18%)	1 (6%)	0 (0%)	5 (29%)
		Week 3					
		Consonants			Vowels		
Group	N	Initial (8)	Medial (7)	Final (5)	Initial (2)	Medial (8)	Final (3)
One	20	7 (35%)	11 (55%)	3 (15%)	4 (20%)	2 (10%)	1 (5%)
Two	20	2 (10%)	10 (50%)	4 (20%)	3 (15%)	0 (0%)	0 (0%)
Three	17	0 (0%)	3 (17%)	1 (6%)	1 (6%)	0 (0%)	0 (0%)
		Week 4					
		Consonants			Vowels		
Group	N	Initial (10)	Medial (3)	Final (8)	Initial (6)	Medial (7)	Final (5)
One	21	1 (5%)	7 (33%)	3 (14%)	0 (0%)	3 (14%)	12 (57%)
Two	20	0 (0%)	3 (15%)	1 (5%)	0 (0%)	0 (0%)	5 (25%)
Three	18	0 (0%)	1 (6%)	1 (6%)	1 (6%)	0 (0%)	3 (17%)

Three had 37. For week four, Group One had 158 conventionally spelled words compared to 86 for Group Two and 52 for Group Three.

The word know was used in the second dictation. Ten students in Group Three wrote no, a phonetically correct alternative. Group Three students had no other inventions with visual similarities to the correct spelling. Students in Group Two had seen the word in the poem. Eleven students in this group also wrote it with no. However, there were three inventions which had visual similarities to the standard spelling--kno, knoe, and now. Four students in Group One wrote the word correctly; 11 used no. Three

Table 4

Comparison of Words Spelled Correctly by Each Group: Weeks 1-4

Week	Group One		Group Two		Group Three	
	# Correct	% of Total	# Correct	% of Total	# Correct	% of Total
1	55	13%	46	11%	37	10%
2	45	19%	14	6%	7	3%
3	67	27%	27	11%	19	9%
4	158	35%	86	20%	52	13%

inventions included knoy, now, and wno, all of which are visually similar to the standard spelling.

Week 1 dictation used the sk cluster, a small chunk. Several students in Groups Two and Three substituted c for /s/ or c for /k/, both of which were acceptable phonetically. No students in Group One made such substitutions.

Table 5 provides a comparison among groups on several features of the following dictation: "When I go back, my mother will say, 'Did you ever see the moon using a spoon way out in space?'" (cited in Baskwith, 1986). These comparisons are taken directly from the bottom of the week 4 record forms.

During the first four weeks, students in the full-treatment group began to show awareness of spelling conventions in whole words and some word chunks. They appeared to be more phonetically sensitive to initial consonant phonemes and final vowel phonemes than their peers in Groups Two and Three.

Table 5

Bottom Portion of Week 4 Dictation Record Forms: Number of Students per Group who Represented Specific Items

Group	Specific Items															
	sp								_th_		_er_		silent e			
	-ck	1x	2x	-ing	say/way/both	spoon/moon/both	i	m	1x	2x	wh					
One	3	5	7	2	5	0	5	0	6	7	15	9	4	4	2	1-space
																1-saesce
Two	0	1	1	1	2	0	1	0	2	0	8	3	0	0	0	0
Three	1	1	0	0	0	0	2	0	2	0	4	1	1	0	0	0

Middle Four Weeks. The number of participants from each group remained the same as the first four weeks of the study. Discussion follows the sequence of phonemes, orthography, and summary. Table 6 shows a breakdown of students in each group who appropriately represented all different phonemes in each category for weeks 5-8. Table 7

Table 6

Weekly Group Comparisons of Students who Appropriately Represented All Phonemes

per Category: Weeks 5-8

Week 5							
		Consonants			Vowels		
Group	N	Initial (8)	Medial (4)	Final (7)	Initial (4)	Medial (5)	Final (3)
One	21	8 (36%)	6 (27%)	11 (50%)	8 (36%)	1 (5%)	4 (18%)
Two	20	7 (35%)	2 (10%)	2 (10%)	5 (25%)	0 (0%)	2 (10%)
Three	17	2 (12%)	1 (6%)	0 (0%)	2 (12%)	0 (0%)	0 (0%)
Week 6							
		Consonants			Vowels		
Group	N	Initial (7)	Medial (4)	Final (5)	Initial (2)	Medial (5)	Final (3)
One	21	6 (29%)	8 (38%)	10 (48%)	14 (67%)	5 (24%)	16 (76%)
Two	21	1 (5%)	6 (29%)	8 (38%)	6 (29%)	1 (5%)	13 (62%)
Three	17	0 (0%)	1 (6%)	2 (12%)	4 (24%)	0 (0%)	8 (47%)
Week 7							
		Consonants			Vowels		
Group	N	Initial (8)	Medial (3)	Final (7)	Initial (4)	Medial (5)	Final (4)
One	22	13 (59%)	15 (68%)	10 (45%)	11 (50%)	3 (14%)	11 (50%)
Two	21	6 (29%)	10 (48%)	3 (14%)	4 (24%)	1 (5%)	2 (10%)
Three	17	4 (24%)	5 (29%)	3 (18%)	1 (6%)	0 (0%)	4 (24%)
Week 8							
		Consonants			Vowels		
Group	N	Initial (6)	Medial (4)	Final (5)	Initial (6)	Medial (4)	Final (2)
One	21	2 (10%)	6 (29%)	14 (67%)	6 (29%)	9 (43%)	15 (71%)
Two	18	2 (11%)	1 (6%)	3 (17%)	1 (6%)	2 (11%)	15 (83%)
Three	17	0 (0%)	2 (12%)	4 (24%)	1 (6%)	3 (18%)	10 (59%)

reveals the number of words spelled conventionally by each group for weeks 5-8 and percentage of total possible per group per week.

The middle four weeks of the treatment period provided indication that students in Group One were improving more than their peers in Groups Two and Three in representing consonant and vowel phonemes in all positions within words. This includes use of consonant digraphs, clusters, and vowel diphthongs and digraphs.

Although each week's results showed that, generally, more students in Group One were successful in representing phonemes at each location, week 8 dictation results are used to illustrate this point. Six differing initial consonant phonemes occurred, including one cluster (br-) and one digraph (sh-). Two students in Group One and 2 in Group Two represented each possible phoneme, but no student in Group Three did so. Of the four different medial consonant phonemes, including the digraph -th-, 6 Group One students represented each. One student in Group Two represented each, and 2 in Group Three did.

Six different initial vowel phonemes were in the dictation for week 8, including one diphthong. Six students in Group One wrote each different phoneme; 1 Group Two student and 1 Group Three student represented each phoneme. Of the four different medial vowel phonemes, 9 students in Group One wrote all of them. Two students in Group Two and 3 students in Group Three wrote all. Fifteen Group One students wrote both final vowel phonemes; 15 in Group Two represented both; 10 in Group Three were successful.

After eight weeks of having dictations, students in Groups One and Two continued to use the digraph sh with more success than those in Group Three. The

digraph *th* occurred in medial position for week 8; this position appeared to be more difficult for students to detect than when it is in the initial position in a word. Five students from Group One, 1 student from Group Two, and 3 students from Group Three represented the phoneme correctly.

What is commonly called silent *e* occurred three times in week 8's dictation. Treatment was such that students in Group One had repeated reading experiences with text using examples of words using silent *e*. Students in Group Two had an introduction to the same words on the first day of each week of treatment, and the text was visible in their room throughout the week. It is not known what specific experiences students in Group Three may have had with words using the silent *e*. Four students in Group One wrote it correctly once; 4 others wrote it correctly twice; and 2 students wrote it correctly all three times. The silent *e* was not represented by anyone in Group Two on any occasion. One student in Group Three represented it on all occasions.

Table 7

Comparison of Words Spelled Correctly by Each Group: Weeks 5-8

Week	Group One		Group Two		Group Three	
	# Correct	% of Total	# Correct	% of Total	# Correct	% of Total
5	115	36%	73	24%	33	12%
6	91	36%	57	22%	36	17%
7	123	43%	76	27%	45	20%
8	131	44%	46	18%	46	19%

Week 8 dictation included the word know again. Seven students in Group One wrote it correctly; 11 others wrote no; and one student wrote kno. One student in Group Two wrote it in conventional form; 14 wrote no; 1 wrote knoe; and 1 wrote keno. No Group Three student wrote the word conventionally; however, 1 wrote kow, and 14 wrote no.

Students in Group One used more word chunks than their peers in Groups Two and Three. For example, at week 7, Group One had 15 students who correctly wrote the -ing, while 3 from Group Two and 0 from Group Three wrote that ending correctly. As could be expected by opportunities to see the word correctly in print, 9 students in Group One wrote I'll correctly, and 3 others wrote it without the apostrophe. Two students in Group Two wrote it correctly. No student in Group Three wrote it correctly, and none in Groups Two and Three wrote it with the correct graphemes but with the omission of the apostrophe.

The trend observed by week 4 in which students in Group One wrote many more words conventionally than their counterparts in the other groups continued during the middle four weeks. To substantiate this finding, 131 words in standard form were recorded by students in Group One. Group Two students had 46, and Group Three students had 46.

Students in the full-treatment group who had repeated exposure to words in repeated readings of continuous text and who had daily interactions about words and representation of phonemes performed with more success in writing continuous text. They generally represented more consonant and vowel phonemes at each position within

words. They wrote substantially more words in standard form and showed awareness of word chunks when they wrote. Students who experienced limited exposure to the text with few opportunities for interactions about that text, experienced slightly more success in their writing than did those with no previous exposure or interactions about the text.

Final Four Weeks. The number of students whose work was considered during qualitative analysis for this period decreased for two groups. Two students from Group Two and one from Group Three moved, leaving 19 students in Group Two and 17 students in Group Three. Discussion of analyses focuses first on phoneme representation which is then followed by orthographic information.

Table 8 shows a breakdown of students from each group who appropriately represented all possible differing phonemes in each category for the final four weeks. Table 9 indicates the total number of words spelled in standard form per week by students in each group and the percentage of possible words by group per week.

Trends observed in previous weeks continued to hold true for weeks 9 through 12. Students in Group One were superior in phonetic representation of consonant and vowel phonemes in locations within a word. They spelled more word chunks and complete words correctly. Students in Group Two generally achieved less success than their Group One counterparts but outperformed students in Group Three. Written representation of texts by students in Group Three showed slight improvement from work done during the first weeks of dictations.

These findings are substantiated with evidence from dictations. At week 10, the *sh* digraph occurred in final word position twice. Although students in Group Two

Table 8

Weekly Group Comparisons of Students who Appropriately Represented All Phonemes
per Category: Weeks 9-12

Week 9							
		Consonants			Vowels		
Group	N	Initial (7)	Medial (5)	Final (6)	Initial (3)	Medial (6)	Final (1)
One	21	2 (10%)	8 (38%)	12 (57%)	10 (48%)	3 (14%)	16 (76%)
Two	20	0 (0%)	2 (10%)	4 (20%)	2 (10%)	2 (10%)	13 (65%)
Three	17	0 (0%)	0 (0%)	4 (24%)	0 (0%)	0 (0%)	8 (47%)

Week 10							
		Consonants			Vowels		
Group	N	Initial (9)	Medial (1)	Final (8)	Initial (3)	Medial (5)	Final (3)
One	22	10 (45%)	13 (59%)	3 (14%)	16 (73%)	8 (36%)	18 (82%)
Two	19	7 (37%)	6 (32%)	0 (0%)	12 (63%)	1 (5%)	12 (63%)
Three	17	3 (18%)	7 (41%)	1 (6%)	5 (29%)	0 (0)	8 (47%)

Week 11							
		Consonants			Vowels		
Group	N	Initial (5)	Medial (3)	Final (6)	Initial (4)	Medial (5)	Final (1)
One	21	17 (81%)	11 (52%)	16 (76%)	14 (67%)	5 (24%)	17 (81%)
Two	19	12 (63%)	2 (11%)	4 (21%)	11 (58%)	0 (0%)	7 (37%)
Three	17	4 (24%)	1 (6%)	3 (17%)	6 (35%)	0 (0%)	2 (12%)

Week 12							
		Consonants			Vowels		
Group	N	Initial (5)	Medial (5)	Final (7)	Initial (4)	Medial (6)	Final (1)
One	20	8 (40%)	8 (40%)	8 (40%)	19 (95%)	5 (25%)	17 (85%)
Two	19	7 (37%)	1 (5%)	1 (5%)	16 (84%)	1 (5%)	11 (58%)
Three	17	1 (6%)	1 (6%)	1 (6%)	10 (59%)	0 (0%)	12 (71%)

initially represented this phoneme as successfully as those in Group One, by week 10 Group One students were more successful. Fifteen students in Group One represented both occurrences; one other student represented it once. Eight students in Group Two wrote it correctly both times; 3 others wrote it correctly one time. One Group Three student wrote sh in both words; 2 students wrote it in once.

Similarly, the th digraph occurred at the initial position of thing and at the final position of with in the dictation for week 12. Nine students from Group One wrote it correctly in both words; 2 wrote it correctly only in the initial position; and 3 wrote it correctly only in the final position. Five Group Two students wrote it correctly for both; 2 wrote it in standard form in thing; and 1 wrote it only in with. Only 1 Group Three student wrote it correctly for both; 2 others wrote th when in the initial position; and 2 wrote it when in the final position.

Table 9

Comparison of Words Spelled Correctly by Each Group: Weeks 9-12

Week	<u>Group One</u>		<u>Group Two</u>		<u>Group Three</u>	
	# Correct	% of Total	# Correct	% of Total	# Correct	% of Total
9	88	26%	31	9%	16	5%
10	171	43%	82	23%	54	17%
11	157	39%	70	19%	50	15%
12	107	41%	61	24%	46	20%

Another example from week 12 is the -ing ending--used in thing and looking.

From Group One, 18 students wrote it correctly both times. From Group Two, 5 students

wrote it correctly in both words, and 5 others wrote it correctly in only one of the words. One student from Group Three wrote it correctly in both occasions; 1 other wrote it in standard form in one word.

Week 12's dictation included the word *legs*. Four students from Group One spelled it correctly. Interestingly, 2 students represented it by writing *Leggs*. This substitution did not occur with students in Groups Two and Three.

The dictation for week 12 used *funny-looking* in hyphenated form. For counting words in the text it was counted as two separate words since it was expected that students in Group Three would not have had an opportunity to see those words in that form. However, students in Groups One and Two had such an opportunity. Thirteen students from Group One used a hyphen when writing those words; no student from Group Two did. Interactions initiated by students in Group One during treatment called attention to the hyphen.

Eight students in Group One wrote the *oa* diphthong correctly in *roar* during the ninth week. No student in Group Two or in Group Three did so.

Another example of spelling a word or part of a word conventionally existed at week 9 with *can*. Fewer students in Group One used *k* when writing *can* than students in Groups One and Two. It was expected that *can* should have been a familiar word in print to all students by this time. *Can* was spelled correctly by 16 students in Group One, 7 in Group Two, and 5 in Group Three.

Weeks 9 and 10 dictations used the orthographic feature *silent e*, discussed previously for week 8. Words requiring this feature at week 9 included *there*, *are*, and

waves. Words from week 10 with silent e included takes, more, and take. Students in Group One continued to show more awareness of this feature than those in Groups Two and Three. Students in Group Two used it more frequently than those in Group Three.

Two word chunks from week 10 provide additional examples of standard spelling of word chunks. This dictation used the word bait. The initial /b/ phoneme created no challenge to students at this time. Therefore, this word is examined for the -ait chunk. This chunk was spelled correctly by 8 Group One students and by 0 students from the other two groups. Group One students offered a number of substitutions, including one each of bate, bit, beit, batu, and baut and four of bat. Four Group Two students substituted with bat. One student from Group Three wrote eight, making a connection to print visible in the classroom.

The second word chunk examined from week 10 is -ook. It was expected that many students in all groups would have had some prior experience with the -ook chunk by this time. Eleven students in Group One correctly wrote the chunk, and 1 substituted -ooc. No student from the other groups wrote it correctly nor provided appropriate substitutions such as the -ooc recorded by the Group One student.

Final evidence of performance in standard spelling comes from week 11 and week 12. For week 11, Group One students had 157 correctly spelled words compared to 70 for Group Two and 50 for Group Three. For week 12, students in Group One had 107 words spelled conventionally, while Group Two had 61, and Group Three had 46.

Table 10 reflects information recorded on the bottom of week 11 record forms for the three groups. This is provided as another example of the analysis process and as

evidence of Group One's superiority in conventionally representing phonemes, word chunks, and words.

Trends observed after the first and second four week periods continued to be evident. Students in Group One outperformed their counterparts in the other treatment groups in both appropriate graphemic representation of phonemes and standard spelling of words and word chunks. Group Two students generally surpassed students in Group Three in the same areas. Group Three students showed slow improvement in phonemic representation and standard spelling.

Table 10

Bottom Portion of Week 11 Dictation Record Forms: Number of Students per Group Who Represented Specific Items

Group	Specific Items									
	silent e			all	th-	sn-	-augh	-aw	-ck-	-ed
little	snake	cage								
One	7	4	2	7	17	13	3	12	10	5
	(1-littlel)	(1-snaeck)						(1-wa)	(3-snack/snake)	
Two	1	3	1	0	12	5	0	0	0	0
Three	0	1	1	1	6	0	0	0	0	0

Standard Spelling of Words Across Time

Some common words were found frequently in dictations used throughout the 12-week treatment period. This section traces some of those words over time. At week 1, 20 Group One students, 18 Group Two students, and 12 Group Three students spelled the

word a correctly. Through subsequent weeks these numbers stayed about the same. For the week 12 dictation, 20 Group One students, 19 Group Two students, and 17 Group Three students correctly represented this word. These numbers represent 100 per cent of the students who took this dictation.

Similar results occurred with the word I. At week 1, 15 Group One students, 18 Group Two students, and 14 Group Three students represented it correctly. For the final dictation, 20 Group One students, 19 Group Two students, and 16 Group Three students wrote it in standard form. However, contraction forms of the word yielded different results. For week 3, the dictation used I'm. Eleven Group One students, 1 Group Two student, and 0 Group Three students wrote it correctly. Week 6 dictation used I'll. Ten students from Group One, 2 Group Two students, and no Group Three students wrote the word conventionally.

Another common word, the was used first at week 3. At that time 10 students from Group One, 1 student from Group Two, and 3 students from Group Three wrote it conventionally. The last time it was used, at week 10, 20 Group One students, 15 Group Two students, and 9 Group Three students wrote it correctly.

The word and was used first at week 5. At that time, 9 Group One students, 6 Group 2 students, and 1 Group Three student represented it in standard form. At week 8, 11 Group One, 2 Group Two, and 3 Group Three students wrote it correctly.

The word than uses part of the word the and part of the word and. The dictation at week 10 used than. Ten students in Group One and 1 student each from Groups Two and Three wrote than conventionally. A similar word for demonstrating combining known

parts is thing from week 12. As noted early, at week 10, students who correctly wrote -ing included 18 from Group One, 10 from Group Two, and 2 from Group Three. One Group Three student wrote thing correctly. Eight Group One students and 2 Group Two students wrote it conventionally.

Additional qualitative data came from interviews of students and teachers and from parent questionnaires. As these were analyzed, it became apparent that an eighth research question could have been posed to cover their responses. The next part of this chapter presents a discussion of these data, beginning with student interviews.

Student Interviews

Five students were interviewed from Group One. These students were selected randomly by using student identification numbers and a table of random numbers. Originally eight students were selected. Parent permission slips and letters of explanation were sent home with the first five selected. Two students did not return permission slips after two requests; therefore, letters of explanation and permission slips were sent to the parents of the sixth and seventh students. Three girls and two boys were included. Four of these five students generally scored in the top half for their class. The fifth student (a girl) appeared to experience difficulty making connections between graphemes and phonemes.

All five students responded positively when asked how they felt about the dictations. Responses included the following: "Happy", "Good" (two), and "Fine" (two). Explanations for why they felt that way differed. The student who experienced the most difficulty explained her positive feeling saying, "Because it's hard work." She then

explained that she liked hard work. Another student said, "Because they were kind of easy", explaining they were easy "because of the words that I knew." Two students said they like to write, and the fifth said, "It felt kind of fun."

When asked if they thought they were getting to be better spellers, all answered with a nod, "Yea", or "Yes." One student provided support for her answer by saying she was better at writing words "because I sound them." Another explained her reason, saying, "Because I can write better." Another said, "It's just easier", claiming that "sounding it out" was easier. Another said, "I'm getting to write more words--different kind and hard." The fifth student replied, "Because I can sound out the letters, and a lot of times I get it right."

Students were then asked, "How do you figure out how to spell a word if you don't know it already?" Four students responded with comments about sounding out the new word. One of these four demonstrated how he would do the word 'cat' by slowly articulating it and then providing the three letters in sequence. He added, "Then I just ask my mom, and she tells me if I got it right or wrong." He did not feel that he had a way to check himself when at school, however. The fifth said, "You keep on practicing", explaining that she tries and tries "until I get it right." When asked how she could try it if she didn't have the word there to look at, she responded, "You can sound it out."

Four students had no additional comments to make when given the opportunity. The boy who provided the demonstration on spelling 'cat' added, "They were fun. They tell you how to read." When asked if he felt like he got to be a better reader by doing dictations, he nodded.

Randomly selected students from Group One responded positively to their experiences of working with the poems and writing dictations. They seemed to believe that they became better spellers. They appeared to rely most heavily on the strategy of sounding out the words. One student added that he also became a better reader.

Teacher Interviews

A copy of the basic teacher interview form is provided in Appendix B. Questions were modified to fit the familiarity of the responding teachers with the total process. The process to be used and the purpose of the interview was explained preceding interviews; permission slips were provided and signed. Interview notes were recorded on the interviewer's forms, and an audio recording was made of each interview. Four teachers were interviewed, because Group Three was comprised of first grade students from two different multi-age classrooms.

All teachers related benefits from the dictation procedure used in this study for student phonemic awareness and spelling. Teacher from Group One indicated the main benefit she observed was that students transferred what they learned from involvement in this study to their reading and their writing. She noted that she had never seen such transfer from traditional spelling programs used in her years of teaching students ranging from first grade through fourth grade. She said that students who had used a traditional spelling program from previous classes might be able to spell a word correctly on Friday but would forget it by Monday. For the present students, the teacher had witnessed their use of strategies to spell other words. She had heard students discussing specific parts of words as they worked. She provided the example, "Look; here's the 'er' that Mrs.

Frerichs talked about.” She observed their writing of ‘th’ “with the little umbrella over the top like you would; they thought that was part of it.” (This was in reference to using an arc over the ‘th’ to indicate that those two graphemes went together to represent one phoneme.)

Group Two teacher focused on benefits from reading the poems on the day they were introduced to her class. She said, “I like the framing of the words and how before reading you activated their knowledge.”

Both teachers from Group Three referred to phonetic benefits. Teacher A said, “I think they really started thinking about what sounds go with what letters a lot more because they had to sit there and think about it; and then later, that began to transfer to their other writing. They would really try to think about the sounds and letters.” Teacher B’s response was similar. She noted, “Over time students started to think about sounds and letters that correspond to the sounds rather than writing letters randomly.”

When asked if they had noticed any problems using the dictation procedure, Group One teacher responded with a simple, “No.” Group Two teacher considered it a problem that I came in only on Monday (and Friday). “It just wasn’t enough. Students had insufficient knowledge of the spelling of the words used in the dictation--especially of irregularly spelled words.” Teacher A from Group Three noted that some students got frustrated, “but they were usually the children who got frustrated easily anyway.” Teacher B commented that “some of the students were wiggly, and it was hard for them to concentrate; but they’re a wiggly bunch anyway. It didn’t have anything to do with the procedure.”

All teachers were asked if they had been able to use the results to help them plan their instruction. Group One teacher said that it had assisted in long-term planning and told how she would continue to use the full procedure in combination with words taken from student journals that were used over and over. Teacher from the second group said the immediate results helped her to focus on spelling with her reading groups. Teacher A from Group Three found that results helped her “get a general idea of what they knew. It helped me to find out where they are.” Teacher B (who had been introduced to the assessment process previously) noted that she had been using a dictation “usually” once a six-week’s (grading) period. “This way, I got to use one every week to help assess what students know. I use this to report on report cards. Parents got a copy every other week so they could see how their kids were progressing.”

In response to a question about feeling comfortable using this procedure or preferring to use another way to assess spelling, Group One teacher indicated concern over the amount of work involved in scoring dictations. She added that she did plan to use a modified form plus words from journals, as noted above. Group Two teacher and Teacher A from Group Three indicated that they would like to use this procedure in its expanded form. Teacher B from Group Three responded, “I would continue to use this but not every week, and I would add a standard list of words.”

The next question focussed on responses from students and from parents. Teacher from Group One said, “The responses from the students were favorable. I had a center where they would practice, and they liked that. It made them feel grown up. From

parents--I had only several from parents who don't understand it but feel good about it anyway."

Group Two teacher replied, "The students looked forward to it and would ask if it was time to do it. One parent was concerned; wanted to know what the dictation was going to be ahead of time so they could help their child at home." (Treatment for Group One allowed that opportunity for parents.)

Teacher A in the third group stated, "Before we even began, one of the parents that knew about it (from the researcher having had an older sister) was very excited that we were going to be doing it. One of the students at the end, when they found out it was the last one, said, 'Oh, just when I was getting good at it.' He was real successful at doing it, though; some of the ones who weren't so successful probably were happy that it was over." The response from Teacher B was, "The students took them in stride. One parent asked about spelling instruction." (Note: Students in Group Three had no interactions about material used in Friday dictations.)

Teachers were asked if they had discussed this project with the other teachers involved. Group One teacher noted that she had discussed it with the teacher of Group Two "who wanted to ask me questions and ask for my opinion about how it was going." Group Two teacher confirmed this, saying, "I wanted to know what you do in (Group One teacher's) room. I wanted to know the thorough procedure and why (she) was excited about it." Teacher B in Group Three said that she talked occasionally with Teacher A, saying, "I was able to explain some of it to her."

When asked for any additional comments, Group Two teacher responded, "I am excited about having the kids be so involved and take ownership. I think this is a real positive, meaningful way to teach so much--they learn a poem, they take responsibility, they have experience with poetry. They learn about the reading process also."

At the end of each interview, copies of daily anecdotal records of working in Group One were provided to all four teachers to help them understand that the entire process is more than an assessment tool for checking phonemic awareness and spelling. After receiving her copy, Teacher A from Group Three said, "I just want to find out more about it, and since you gave me these notes, that will help. I am interested in continuing with what you were doing (in Group One)." Teacher B also said that the notes would be helpful. She said that, "even though I have been in the room across the hall from you in previous years when you had used this procedure in your room, I never knew what you had done on a daily basis."

All four teachers observed benefits to their students from being involved in this study. Benefits observed by teachers whose students had some interaction with an adult over the weekly material seemed broader than the benefits for grapheme/phoneme association noted by teachers whose students only had opportunity to record the dictation at the end of each week. All teachers plan to use the procedure in some form. Any problems involved were minimal and related to behaviors, such as students' not being able to sit still. Responses from students and parents generally were seen as positive.

Parent Questionnaire

Questionnaires and letters of explanation (see samples in Appendix B) were sent to parents of the 22 students in Group One at the end of the treatment period. Second requests were sent to those who had not responded after one week. A total of 15 questionnaires were returned in time to be included in analysis. Two additional questionnaires were received later, and those responses were consistent with those analyzed. Table 11 summarizes questionnaire responses by item.

The questionnaire featured eight statements with five possible responses on a Likert-type scale. Space was provided to write additional comments. Responses recorded on the Likert-type scale were analyzed for frequencies, means, standard deviations, and range of response. For analysis, three questions considered to be in a negative form were recoded to allow consistent indication of agreement or disagreement with the dictation procedure used in the treatment. Possible responses on the questionnaire included the following: 5 = strongly agree; 4 = agree; 3 = no opinion; 2 = disagree; and 1 = strongly disagree. For simplification of interpretation of results, these values were adjusted as follows: strongly agree = 2; agree = 1; no opinion = 0; disagree = -1; and strongly disagree = -2.

Statement 1 said, "I like this way of seeing what my child knows about letters and sounds." Seven parents marked strongly agree, and seven marked agree; one parent abstained. After adjusting the values, these responses resulted in an adjusted mean of 1.5, indicating general approval of this assessment method.

Parents were asked if they could see that their child was getting better at spelling for item 2. Strongly agree was indicated by eight parents; six marked agree. The same

parent abstained. The adjusted mean for item 2 was 1.4, which showed that parents believe their children were becoming better spellers as indicated on the dictation assessment.

Item 3 stated, "I wish my child had a list of words to learn and a weekly spelling test instead of the dictation." This was considered negative and was recoded so that a circled answer of disagree actually indicated that parents were in favor of using the dictation for assessing spelling. One parent's response indicated a strong desire for a weekly spelling test based on a list of words; two others indicated a less-strong wish for the traditional approach. Five parents had no opinion. Six marked agreement with the dictation approach. Again, the same parent abstained from responding. The adjusted mean for this question was .1, which indicated little agreement on the statement among parents.

Responses to the statement "I think this method will keep my child from learning how to spell words correctly" were recoded. In original form one parent agreed, two had no opinion, ten disagreed, and one strongly disagreed. One parent did not respond. Responses of disagreement to the questionnaire statement indicate agreement with the dictation method. The adjusted mean for question 4 was .8. This shows that, overall, parents do not think this procedure would prohibit their children from becoming good spellers.

Statement 5 was, "This method is fairer to children than having to spell the word correctly in every way." Two parents strongly agreed; 11 parents agreed; two parents abstained. The adjusted mean for responses to question 5 was 1.1, showing that most

parents favor this assessment as being more fair than the right/wrong dichotomy in a traditional approach.

Table 11

Questionnaire Item Response Frequencies and Means

Item	Responses					None	Mean
	S.A.	A.	N.O.	D.	S.D.		
	+2	+1	0	-1	-2		
1	7	7				1	1.5
2	6	8				1	1.4
3		6	5	2	1	1	.1
4	1	10	2	1		1	.8
5	2	11				2	1.1
6	1	7	1	5		1	.2
7	4	8		2	1		.8
8	6	8				1	1.4

Note: S.A. = Strongly Agree

A. = Agree

N.O. = No Opinion

D. = Disagree

S.D. = Strongly Disagree

Item 6 said, "The dictation papers that came home were hard for me to understand at first but now I do." This item was not recoded, because it was assumed that it might be difficult for parents to understand them at first. One parent had no opinion, and one failed to state an opinion. Five parents disagreed with the statement. Seven agreed, and one strongly agreed. Just over half of the parents who responded found the dictations difficult to understand initially. The .2 adjusted mean indicates a lack of a strong opinion either way.

The seventh statement continued the idea of difficulty, saying, "I still don't understand how the dictation papers are scored." This item was recoded since it was hoped that difficulties would have been overcome by the end of the study. Two parents indicated continued difficulty; a third parent expressed strong agreement of having difficulty. The latter parent was the one who had abstained on all other responses. Eight parents disagreed with the statement, and four strongly disagreed. All parents had an opinion on this item. This item alone brought responses covering the full range of possible responses. The adjusted mean was .8, showing that most parents who responded understood the scoring by the end of the treatment period.

The last statement was, "My child is a better speller now than at the beginning of the school year." Six parents strongly agreed; eight agreed; one did not respond. The adjusted mean of 1.4 indicates that children improved their spelling during the treatment period.

Three parents wrote additional comments. One wrote, "My daughter (name omitted here), (Group One student's older sister), is in (second grade teacher's) class. I

have found that both (she) and (he) are on the same reading level, and at times (he) can sound out a word that (she) is having a problem with. I have even seen where (she) has spelling words that she has to study, and after she writes them ten times each, and I give them out to her, she will stumble on a word, and (he) will say that he can spell it. I'll say, 'OK, (name of Group One student), how do you spell it?' He will actually spell it out by sounding it out. I don't think (she) knows her sounds of letters as well as (he), and he is one year younger than she is."

Another parent wrote, "Keep up the good work. My child is doing great. He reads wonderfully. Thank you."

The third parent wrote two notes--one on the questionnaire and one on a piece of paper she stapled to the questionnaire. Her remark on the questionnaire is, "I try to understand, but it is sooo new to us who graduated years ago! But I believe it has been good for my son." Her second note thanked me for my time and patience in working with her son. She added, "I have seen improvement in his reading and spelling skills. He's a very smart little boy. Thanks again!"

To summarize, after treatment ended, 15 of 22 Group One parents returned questionnaires as requested. Parents generally agreed that the dictation assessment instrument allowed them to see what their children knew about sounds and letters. It became easier for them to do so as they became more familiar with the dictation papers sent home weekly. Parents viewed the procedure of giving credit for everything the child knew to be more fair than having to know each word correctly in every way. All parents

agreed that their children were better spellers after treatment. Written comments indicated that some parents had noticed improvement in reading also.

Summary of Qualitative Results. Examination of the weekly dictations provided evidence regarding the nature of differences among groups in achievement resulting from the three levels of treatment. Students in Group One read continuous text based on interests expressed by fellow students. They interacted daily with each other and with an adult about the meaning of the text, words of interest, spelling of words, and representing phonemes in print. Students in Group Two read the identical complete text and interacted with peers and the researcher on the first day of each treatment week. They wrote the dictation on the last day of each treatment week. Students in Group Three were the control group and only wrote the dictation on the last day of each treatment week.

During the treatment period Group One students appropriately represented more phonemes in initial, medial, and final positions within words than did their counterparts. Students in Group Two represented fewer phonemes than Group One students but more than students in Group Three. The same trend occurred with orthography, including standard spelling of words and word chunks.

As reported in interviews of randomly selected Group One students, students had positive reactions to their experiences during treatment. Students viewed themselves as having become better spellers and appeared confident in their ability to sound out words. This finding is affirmed through opinions from parents and the Group One teacher and from qualitative and quantitative analysis of study results. Additional comments from

students, parents, and the Group One teacher indicated that students also improved in reading, although this was not a topic of this study.

Overall, students from full-treatment Group One constructed knowledge about appropriate graphophonemic and orthographic relationships through repeated readings of texts of interest to them, visual analyses of words, scaffolded discussion and instruction, and rewriting self-selected continuous text. Results of statistical analyses indicate significant differences in their appropriate representation of phonemes and standard spelling when compared to work by peers in partial-treatment Group Two and control Group Three.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter begins with an introduction reviewing the study's purpose, design, subjects, research questions, and data analysis. Results are summarized following the introduction.

Results are followed by a section on conclusions and implications. That section elaborates on reasons affecting results and the implications thereof. A restatement of implications concludes that section.

The chapter concludes with suggestions for further research.

Introduction

The specific purpose of this study was to determine whether interactions of first graders with peers and an adult regarding continuous text on topics they chose and whether reading and writing that continuous text would facilitate their construction of knowledge of graphophonemic and orthographic relationships more than that of first grade students who only wrote the same continuous text.

The statistical design of this study was based on a quasi-experimental nonequivalent control group design (Campbell & Stanley, 1963) with an additional within-subjects factor. It included two levels of treatment in addition to a control group. Elements of qualitative research were included. Treatment condition was assigned

randomly to each of three first grade groups within the same K-6 elementary school located in a southern state. The majority of the school population qualified for free or reduced lunch, meeting the criteria to qualify as a Title I school. The school served a population representing an ethnicity ratio of approximately 45% Caucasian, 30% African-American, 28% Hispanic, and 2% other ethnicities.

The 58 subjects were in their first semester of first grade and comprised two first grade classes and a combined group of first graders from two multi-age classes of first and second graders. Although students were not assigned randomly to these groups, oneway analysis of variance carried out on pretest scores indicated that groups did not differ in their ability to appropriately represent phonemes with graphemes or in their orthographic knowledge. During the semester literacy instruction in all classrooms was similar and included shared, guided, and independent reading. Students wrote daily during experiences in guided, independent, and interactive situations. One trained Reading Recovery teacher assisted the classroom teacher during literacy instruction in each of two study classrooms, and another trained Reading Recovery teacher assisted in the other two study classrooms.

The following seven questions guided research in this study:

- 1) Are there treatment-based differences in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
 - 2) Are there treatment-based differences in quantity of standard spelling of words by students on student-selected dictated text?
-

- 3) Are there differences over time in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
- 4) Are there differences over time in quantity of standard spelling of words by students on student-selected dictated text?
- 5) Is there an interaction of time and treatment in quantity of appropriate graphemic representation of phonemes by students on student-selected dictated text?
- 6) Is there an interaction of time and treatment in quantity of standard spelling of words by students on student-selected dictated text?
- 7) What is the nature of the differences across time and among groups?

Data collection included pretests and weekly assessments over 12 weeks during treatment. A between-subjects/within-subjects multivariate analysis of covariance was used to analyze quantitative data. Significant multivariate results for treatment and treatment by occasion interaction were followed with univariate analyses for each dependent variable.

Qualitative data were derived from weekly assessments, student interviews, teacher interviews, and parent questionnaires. Descriptive statistics and narrative description reported those results. The following section summarizes both quantitative and qualitative results.

Results

In considering research questions 1 and 2, students in Group One differed significantly from Groups Two and Three, indicating that they heard and recorded significantly more sounds in appropriate ways and spelled more words conventionally

than students in either Group Two or Group Three. Groups Two and Three did not differ significantly.

Additionally, in response to questions 5 and 6, an interaction of occasion and treatment was statistically significant for both appropriate graphemic representation of phonemes and standard spelling of words. Students' understanding of letter-sound correspondences and conventional spelling of words and their application of that understanding differed over time relative to the treatment they received. In this case, students in Group One showed greater increase over occasions than did students in Groups Two and Three as evidenced by group means diverging over time.

For Questions 3 and 4, the null hypotheses were retained because no significant multivariate effect over time occurred when means for all three groups were pooled. These results likely occurred because students in Groups Two and Three did not improve enough to raise the overall mean significantly. This would confirm the importance of students' being involved in the full treatment rather than partial or no treatment.

Qualitative analyses of students' work on the dictated student-selected continuous text each week during treatment confirmed results of quantitative analyses. Students in Group One generally outperformed students in Groups Two and Three in both appropriate graphemic representation of phonemes and standard spelling week after week.

Additionally, regardless of level of performance, opinions of randomly selected students from Group One indicated positive response to the assessment instrument used

during treatment. All five students discussed benefits to being able to write words and expressed confidence in using sounds to help in the process.

Parents of students in Group One who responded to a questionnaire supported this assessment method, favoring it over traditional weekly spelling tests involving lists of words. Responses from students and parents of children in Groups Two and Three were not solicited because they lacked experience with the full treatment.

However, all four classroom teachers were interviewed. Teachers whose students received only end-of-the-week assessment of recording the dictation of continuous text indicated they had observed positive effects. They believed that their students became more sensitive to listening and recording sounds within words because the dictation procedure required that response. No teacher reported negative effects directly related to the methodology or assessment instrument.

Responses from the Group Two teacher indicated a concern that her students were missing out on something. She focused benefits of the treatment more on what occurred with her students on the first day of each treatment week rather than on the weekly assessment at the end of the week. For this group, treatment involved introducing the complete text to students at the beginning of the week. Students had opportunity to discuss and read the text. She liked the aspects of students being able to frame words in the text and the activation of knowledge before reading. She was eager to know more about the full treatment and commenced using it early in the second semester of school.

Group One teacher had opportunities to observe her students using information they gleaned from daily interactions about the texts used each week. She reported

students not only used newly constructed knowledge about letter-sound correspondences during out-of-treatment writing activities, but they also used that knowledge during other reading activities. This transfer of knowledge seemed to impress her more than any other aspect of the treatment effect. This teacher and one student noted that treatment resulted in positive benefits to reading. She also began to use the procedure early in the second semester.

Results indicated significant treatment effect and interaction effect of treatment and occasion for students in Group One. The next section deals with possible reasons for these effects.

Conclusions and Implications

This section provides support for possible explanations of significant treatment effect and interaction effect of treatment and occasion for student in Group One. It is divided into sections for closer examination of elements involved in treatment.

Construction of Graphophonemic and Orthographic Knowledge

Children in Group One showed their awareness of appropriate letter sequences in their weekly assessments with consistently higher scores in words and parts of words spelled conventionally than children in Groups Two and Three. They seemed more aware of appropriate letters to match sounds. The results of this study are consistent with those of Brown (1982), who found that specifically training second grade students in isolating specific sounds increased their scores on spelling tests.

Qualitative analyses of children's spellings showed that children in all groups represented both consonants and vowels from the beginning of the study. Initially medial

sounds in both categories were omitted; however, some representation of medial sounds occurred by the second week of treatment for students in Group One. Throughout the remainder of the study students in Group One represented at least some of the sounds in each position within words except for initial vowel sounds in the fourth week. Students in Groups Two and Three were less consistent in their representation of sounds in all positions. Generally, medial vowel sounds had fewer appropriate representations than sounds at any other position throughout the study.

The representation of both vowels and consonants from the beginning of the study indicated that students used a variety of strategies in spelling rather than follow any particular developmental set of stages, as has been reported by Cambourne and Turbill (1987), East (1993), Ferreiro and Teberosky (1982), and Graves (1983, 1984). This finding of individual children working at multiple levels on any given occasion seemed more in agreement with that of Allen (1989), Milz (1984), and Sulzby (1992).

Significant treatment effect for appropriate graphemic representation of phonemes for Group One indicated benefits of word analysis and sequencing of sounds (Ehri, 1987; Griffith, 1989; Lie, 1991; Richgels, 1995). Students in Group One examined letter sequences and other orthographic features of words on days preceding the weekly assessment. Their assessment products provided evidence that such examination was worthwhile.

One example occurred in the ninth week with the word roar. Eight students in Group One wrote the oa correctly, and another wrote raor. No student in either Group Two or Group Three used both vowels.

Another example of development of orthographic knowledge was that of using silent letters (Adams, 1990). As early as the third week 11 examples of using silent *e* appeared in work by students in Group One, while only one student from Group Three and no student from Group Two used that feature. At the ninth week, work by Group One students exhibited 40 examples of the use of silent *e*. Nine examples occurred in Group Two's work, and three appeared in work by Group Three (all from the same student). Repeated readings in conjunction with social interaction apparently facilitated development of awareness of visual features of print (Adams, 1990). Talking about text, specific words, and parts of words helped students construct understandings about phonemic representations and conventional spelling.

At week 12, the final week of treatment, the dictation called for the recording of *thing*. By this time *the* was a known word to most subjects. The *-ing* ending was used successfully two times each by 18 students in Group One this same week. However, only nine Group One students succeeded in using the known parts to construct *thing*. Ten students in Group Two used *-ing* at least once, but only two wrote *thing* conventionally. In Group Three only two students used *-ing*, and one student spelled *thing* correctly. This indicated that combining known parts of words to make a different word (Clay, 1991) may be a more difficult task than using the parts as originally learned.

Students in all three groups represented both consonants and vowels at the onset of this study. Group One students advanced in their representation of all sounds in all places within words more than students in Groups Two and Three. Given the low

number of students who successfully wrote thing but who knew words that were similar may indicate that teachers should address this strategy frequently during word analysis.

Assessment

The dictation assessment used in this study provided information helpful to students, teachers, and parents for examining understanding of the graphophonemic system used in English and for observing growth in writing vocabulary. In this procedure a portion of continuous text was read word by word while children recorded what was heard to the best of their ability. The dictation procedure provided on-going assessment across the 12-week treatment period, “a personalized process with a heavy reliance on close, careful examination of a student’s work” (Johnston, 1992, as cited by Allington, 1994, p. 27). This procedure integrated curriculum, instruction, and assessment (Teale, 1989); addressed individualized constructive processes of learning to spell (Files, 1992); and was useful to the teacher for instructing the individual child (Schattgen, 1993). The weekly assessments examined graphophonemic connections at the grapheme and phoneme level (Clay, 1979, 1991) in addition to standard spelling.

Furthermore, because students earned two scores, one for each appropriately represented phoneme and one for words spelled conventionally, the assessment instrument credited success at more than one aspect of writing. The instrument gave credit for what each child represented, describing the child’s work rather than judging it. Each weekly assessment product related what the student did at that time, yet a model of what could have happened (Engel, 1991) was provided with the enlarged text available

throughout the week for students in Groups One and Two and with a correct record of the dictated text marked and attached to each student's product for all students.

The dictation method fulfilled the purpose of assessment, which is to facilitate learning and to show various audiences what learning has been occurring (Powell & Hornsby, 1993, p. 131). This performance assessment provided an opportunity for students "to *demonstrate* their understanding and to thoughtfully *apply* knowledge, skills, and habits" (Marzano, Pickering, & McTighe, 1993, p. 13). When considering assessment of spelling, teachers should consider whether their instrument allows students to demonstrate understanding and application while honoring each individual's level of development.

This study recognized the different levels of literacy knowledge among the subjects, also reported by Beers (1980), Cramer (1978), and Morris and Perney (1984). Its assessment instrument respected those differences in rate of children's progress while enhancing their literacy engagement (Alvermann, 1994).

This study provides an alternative measure for determining what students know about writing and spelling words. The assessment instrument used in this study provided information to multiple audiences on each student's weekly performance in hearing and recording sounds heard and in standard spelling. Credit was given for all reasonable responses in representing phonemes and for words spelled conventionally, thereby recognizing and respecting different levels of literacy knowledge among subjects.

Students in Group One read and reread natural texts based on interests of children involved in the study. They interacted with peers and were guided by a more

knowledgeable adult in such things as word analysis and letter sequence patterns.

Considering the significant effect of treatment for Group One students in both standard spelling and appropriate graphemic representation of phonemes, these activities appeared to benefit those students.

Students did examine and discuss words and letter sequences. These were pulled from the context of what students were reading and/or writing for closer examination (Adams, 1990; Peters, 1985; Read, 1986). After examination students reread the complete text, seeing those words back in text. Thus instruction in spelling remained in the context of reading and writing, as recommended by Adams (1990), Cox (1988), Davis (1983), Peters (1985), Sulzby and Teale (1985), and Zutell (1980).

Group One students constructed graphophonemic and orthographic knowledge while reading and rewriting quality texts. They examined words and features of words from the text in detail. These activities provided opportunities for their construction of knowledge, leading to significant effects of treatment and of treatment and occasion.

Motivation

The beneficial aspects of the assessment instrument were important in providing a motivating instructional context to facilitate construction of literacy knowledge in this study. Additionally, authentic conditions for reading were provided and were accompanied by social interaction, which Teale (1982) called a key to natural literacy development. Thus, this research avoided a problem often associated with experimental research in which tasks required of students contrast with normal reading (Ehri & Robbins, 1992).

Students in this study were engaged in topics they mentioned as interesting to them during brainstorming sessions conducted in all four classrooms prior to treatment. However, only students in Group One were involved in selecting a portion of each weekly text for dictation used in assessment. Students in Group One appeared to expand on their developing literacy knowledge to gain new knowledge as they explored personal interests and needs. This aspect paralleled work by Alvermann (1994).

Rather than attempting to motivate Group One students extrinsically, motivation came from within students. This may have occurred because of the following: they had multiple exposures to quality texts based on student interests; students had opportunities to make choices which guided their learning; and they reviewed their weekly assessments, thus monitoring their own learning. The success of students in Group One supported work by Holdaway (1991), who claimed that educators frequently do not utilize engagement with high quality texts to provide satisfaction naturally.

Students in Group One read and reread the weekly text many times for a variety of purposes including pleasure, looking for known words, and examination of visual features of words. Guthrie (1994) also found that motivated children often read widely for a variety of purposes.

Poems/songs used in this study were of high quality and were not controlled for level of difficulty. Students in Group One and Group Two seemed to take pleasure in reading these texts, supporting Powell and Hornsby (1993), although Group Two students had limited exposure to them.

Students in Group One had daily opportunities to read, reread, and interact with texts selected by the researcher based on interests of all students in the study. Students in Group Two had opportunity to read and reread selected texts with peer and researcher interaction only on the first day of each week, so their treatment lessened possible motivational aspects. They could refer to the displayed text independently or with peers throughout the week. Group Three students had no introduction to selected texts and no opportunities to read and/or interact about those texts during treatment and, therefore, were least likely to receive benefits of motivation from interaction with the texts. This suggests continued engagement with texts and ownership of decisions involved in selecting portions for rewriting and individual work were responsible for at least part of the significant treatment effect for Group One.

Students who are allowed to make choices guiding their own learning and who read from quality texts based on their own interests were self-motivated to learn. In this study, students who had the above options and who monitored their learning regularly constructed significantly more graphophonemic and orthographic knowledge than did their peers who did not have those options.

Disposition for Learning

Additional evidence of self-motivation in Group One students was their acquiring the disposition for learning. Such a disposition increased substantially as weeks of treatment went by. Students had the opportunity to frame words on the enlarged text on days preceding assessment. Many students framed words they knew, but others framed words they found interesting or in which they noticed similarities to other words. Their

intense interest in framing words become a surprise in this study. In fact, the activity of framing words became such a dominant part of the daily 30-minute treatment period in early middle weeks of treatment it became necessary to make a list of students who wanted to frame words. This list was maintained over several days to insure that all students had their turns and to allow time for other activities. This desire to visually examine words was not observed at the onset of the study, and it increased over time. This indicated that students in Group One acquired the disposition for learning.

Group One treatment with engagement, ownership, and acquiring the disposition for learning supports findings based on classroom observations by Dahl and Freppon (1995). They found a distinction between literacy skills and literate behaviors, with the latter being broader and more important to motivation. They concluded that, “in the final analysis, acquiring the disposition for learning may be the most critical occurrence in the early grades” (p. 72).

Students in Group One who were engaged in and had ownership of what they were reading, writing, and learning acquired the disposition for learning. Such a disposition for learning may have had an important role in causing the significant treatment effect and interaction of treatment and occasion effect for Group One.

Instructional Environment

Students in Group One were engaged with quality texts purposely selected to match student interests. They had ownership of selecting portions for study and rewriting. Furthermore, these students constructed literacy knowledge through social interactions with peers and the researcher in a supportive environment in which their

contributions were valued. These factors support the theory for literacy learning posited by Oldfather and Dahl (1994) in which transactive processes within the domains of Classroom Culture, Interpersonal, and Intrapersonal are integral to motivation.

Examination of treatment for Group One showed the inclusion of honored voice, sharing the ownership of knowing, collaboratively constructing meaning, a generative literacy curriculum, and supportive social structures. These are components of Classroom Culture determined by Oldfather and Dahl (1994). Students in Group One expressed themselves, learned from others, and were supported by the researcher who scaffolded their learning through work such as word analysis and learning by analogy. These are elements of Oldfather and Dahl's Interpersonal Domain. Elements of their Intrapersonal Domain found in treatment for students in Group One included self-determination, personal and social visibility, sense of self as valued participant, and epistemological empowerment in which "learners experience a sense of intellectual agency and ability to know that emerge from a sense of integrity of the learner's own processes of constructing meaning" (p. 144). The significant effect of treatment for Group One seemed to confirm the power Oldfather and Dahl associated with these domains.

Group One treatment also met criteria mentioned by Gambrell (1994). Students had opportunities for choice. Students were encouraged and supported through social collaboration in learning. The instructional environment for students in this group included an atmosphere where there was respect for and trust of both teachers and learners, noted as important by Edelsky, Altwerger, and Flores (1991).

Students from all classrooms involved in this study were asked to suggest topics of interest. These topics were used by the researcher in selecting weekly texts. Only students in Group One had voice in selecting portions of those texts for rewriting. These same students constructed knowledge at their own pace with help from peers and support from the researcher. In order to determine effects of these elements, students in the other treatment classrooms had little to no support and no voice in selecting portions for rewriting. Results indicated that treatment for Group One had a significant effect on their construction of graphophonemic and orthographic knowledge. This implies the importance of including components from Oldfather and Dahl's (1994) Classroom Culture, Interpersonal, and Intrapersonal domains.

The instructional context during treatment, along with assessment techniques and motivational components, seemed important in yielding significant results. Teachers should consider these aspects when developing their classrooms and instruction.

Summary of Implications

The above section of Conclusions and Implications provided reasons to support the significant effects of treatment and of interaction of treatment and occasion for Group One. The following summary clarifies implications based on these conclusions.

1. Instruction in graphophonemic relationships and standard spelling should occur in context of reading and writing experiences.
 2. Individual words from texts may be examined closely to facilitate construction of knowledge of orthography and graphophonemic relationships but then should be returned to the text from which they originated.
-

3. First grade students progress at different rates in their construction of graphophonemic and orthographic knowledge. An individual child may use a variety of spelling strategies on a given occasion. Therefore, examination of what a given child knows is more beneficial in facilitating future learning than trying to place that child in a specific developmental stage.

4. Classroom teachers and researchers may select a method or instrument for assessing orthographic and graphophonemic knowledge that provides credit for everything a child knows rather than a method which only examines the dichotomy of right/wrong.

5. Motivation may be increased by utilization of students' interests, providing them with choices, and honoring what students know.

6. Students who are engaged in activities of interest to them and who feel they have ownership in decisions are more likely to develop a disposition for learning.

7. Providing an instructional environment in which students feel their feelings and opinions are honored and where they socially construct knowledge with support from the teacher increases the likelihood that students will be motivated to learn.

Recommendations for Further Study

This study addressed the issues of individual students constructing graphophonemic and orthographic knowledge during reading and writing activities conducted in an instructionally motivating climate which encouraged social interactions. Results indicated that advantages existed for students who had such experiences across a 12-week treatment period.

This study did not investigate whether such treatment might yield benefits to students in their reading achievement, letter identification knowledge, or concepts about print. Further research could determine whether treatment as described in this study might benefit students in those areas also.

In this study three groups of first graders were provided different treatments. Results were analyzed and interpreted for group effects. It would be of interest to follow the construction of knowledge by individual children who vary in their initial level of literacy knowledge as case studies. Clay (1991) said the exploration of details in words and letter patterns takes the learner several years. Clay (1994) also stated that she assumes literacy learning will be difficult or confusing for some children in every program. Perhaps case studies could provide clues to why that might be true and provide direction for researchers and teachers to assist such children.

If we believe that students should have ownership and responsibility in making decisions about what they will read, write, and learn, teachers and researchers who would use this method in another study would need to follow the lead of the students. Although exact replication of this study seems impossible, treatment and assessment procedures used in this study could be applied in future studies and in regular classroom practice. Indeed, at least two of the classroom teachers whose students were involved in this study are continuing the practice.

Ferreiro (1991) emphasized the need to prevent illiteracy among adolescents and adults by improving literacy acquisition during childhood. Wells (1987) said that "literacy involves mastery of the written language" (p. 109). Birnbaum and Emig (1983)

called writing the enabling literacy and claimed that writing is powerful politically. Fox (1988) also proclaimed the power in writing. Power is diminished when pieces of writing hold errors involving conventions of print (Brown, 1982). Researchers and teachers alike must continue to search for ways to provide students the opportunity to hold the power of literacy in their hands.

This study described both a method of instruction and a process of assessment which can provide young students with increased opportunities to construct graphophonemic and orthographic knowledge, both of which are important in the processes of reading and writing. This is a step forward in reaching the power that literacy can provide.

APPENDIX A

DIRECTIONS FOR SCORING ASSESSMENT

DIRECTIONS FOR SCORING ASSESSMENT

A student received two scores for each dictation, one for appropriate graphemic representation of phonemes and one for standard spelling.

Scoring for Sounds

Allow one point for each phoneme the student represents with a letter or letters that would make sense for that sound (e.g., c/k, z/s, etc.). These alternatives must be acceptable phonetically.

Where two letters are necessary to represent one sound as in digraphs, both letters must be written in correct sequence for one point (e.g., th, sh, wh, ch, etc.).

If the student transposes two correct letters, only one point is given for the two with a little arrow written above to indicate incorrect order.

Letters necessary for standard spelling but which represent no sound receive no credit (e.g., silent e).

No points are added or deducted if the student adds unnecessary letters.

When a word is repeated within the dictation, points for its sounds are credited only one time.

Scoring for Standard Spelling

The student received one point credit for each word that is spelled conventionally, no matter how many times that word may occur within the dictation.

Example of Scored Text

¹ ² ³ ⁴ ⁵ ⁶ ⁷ ⁸ ⁹ ¹⁰ ¹¹ ¹² ¹³ ¹⁴ ¹⁵ ¹⁶ ¹⁷ ¹⁸ ¹⁹
 This study is about sounds
²⁰ ²¹ ²² ²³ ²⁴ ²⁵ ²⁶ ²⁷ ²⁸ ²⁹
 and spelling.

There are 29 possible points for representing sounds.

There are 7 possible points for standard spelling. I circle
 all words spelled conventionally.

APPENDIX B
PERMISSIONS FOR CONDUCTING RESEARCH



PERMISSIONS FOR CONDUCTING RESEARCH
University of North Texas

Sponsored Projects Administration

August 25, 1995

Linda C. Frerichs
2016 Lake Shore Ct
Sanger, TX 76266

Dear Ms. Frerichs:

Your proposal entitled "Exploring First-Graders' Understanding of Graphophonemic and Orthographic Relationships: Reading and Writing Student-Selected Continuous Text," has undergone expedited review and has been approved by the IRB under 45 CFR 46.110.

If you have any questions, please contact me at (817) 565-3946.

Good luck on your project.

Sincerely,

A handwritten signature in cursive script that reads "Sandra L. Terrell".

Sandra Terrell, Chair
Institutional Review Board

ST/lts



Independent School District
Division of Instructional Services

Assistant Superintendent
1307 North I.

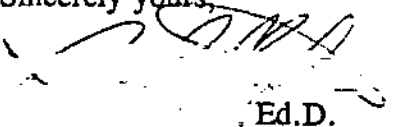
May 30, 1995

Ms. Linda Frerichs
2016 Lake Shore Court
Sanger, TX 76266

Dear Ms. Frerichs:

I am pleased to inform you that your research proposal has been approved by the principal at _____ Elementary School and our curriculum instruction division. Please contact Ms. _____, to initiate you research activities.

Sincerely yours,


_____, Ed.D.
Assistant Superintendent
Instructional Services

RR:sk

cc: _____

Attachment

Letterhead

August ____, 1995

Dear First Grade Parent/Guardian,

Improving literacy is a major focus for teachers at _____. We are particularly concerned about providing our kindergartners and first grade students with the types of activities which will allow them to develop necessary concepts. We believe that if we can intervene in their early experiences, we will be able to prevent problems later on.

The regular first grade classes are receiving extra assistance from the Reading Recovery teachers this year. All Reading Recovery teachers will be working in first grade classrooms as partners with regular teachers. This letter is to inform you of just one portion of that partnership.

We believe it is important that young children learn letters and their sounds but that they learn them in a natural manner. We also believe that young children need to develop a group of words which they can spell correctly and that they need to begin noticing how words look. For the first semester this year, spelling is going to be assessed in a way that gives credit for all a child knows, not just whether the child can spell words correctly. Also, this will be done in sentence format rather than a list of words. The idea is not that children will be expected to memorize the words, but that they pay attention to the sounds they hear and how the words look. Therefore, they may only get part of each word correct for a while, but they will receive credit for any part that makes sense by its sound. Each week you will receive a copy of what your child did on this dictation plus a copy of how it would look if everything were exactly correct. You will be able to see how your child's spelling is improving. This is a natural way to learn, and research shows that it does not harm children's eventual ability to spell correctly at all! This program will begin in about two weeks.

I will be supervising this project and will utilize three different models in order to determine their effectiveness. To know if one way is better, I will need to add all the scores for each classroom each week and a class average. These averages will then be

compared. All scores will be summarized and reported as groups; individual scores will not be made available or identified.

I would like your permission to include your child's score to get this whole group score. I have attached a permission slip for you to sign and return to school. Please contact me at _____, if you have questions. If I do not receive your permission slip, I will contact you to discuss questions you might have. There will be no adverse effects on your child; all children in the regular first grade classrooms are being asked to voluntarily participate. Your child may be withdrawn at any time without penalty, prejudice, or loss of benefits.

(School district) has approved this project, as have (principal) and your child's teacher. We all want to know how we can best help your child learn. At the end of the project, you will be given an opportunity to tell us how you felt about it and what you learned from your child's work. This project has also been reviewed and approved by the UNT Committee for the Protection of Human Subjects (817-565-3940), as I am a doctoral student and will be using this information for my dissertation research.

Thank you for taking the time to read this letter. I look forward to receiving your permission in the next few days to include your child's score as part of the group analyses.

Sincerely,

Linda Frerichs
Reading Recovery Teacher

+++++

Permission Slip

August _____, 1995

I give permission to include my child's (_____)

spelling score as part of the whole class score. I know that no one other than the two teachers, my child, and I will know his/her score. I realize participation is voluntary and that I may withdraw my child at any time with no penalty, prejudice, or loss of benefits.

Your signature

RETURN TO YOUR CHILD'S TEACHER IN THE ATTACHED ENVELOPE. Thank you.

Statement to First Graders for Assent

Good morning, boys and girls. I am here today to talk to you about some ways you can help me and how I might help you.

First of all, I will be asking you about things you are interested in, and I will make a list of your ideas. I will use the ideas from all the first graders to help me pick some things I think will help you in your reading and writing.

I will be coming into your room every week (adjust per class treatment). You will help me out by writing something every week. I will just expect you to try, even though it may not be just right. This will help all of us teachers learn how to help first graders get better at reading and writing. And, this will help me with my work at my school, the university.

I am going to keep track of how everyone is doing. I will also let your family know how you're each doing. I think it will be fun to come in and work with you. I hope you will enjoy it, too. How does that sound to you?

Letterhead

November 29, 1995

Dear Parent/Guardian(s),

Your child has been randomly selected to visit with me about his/her thoughts about the dictations and spelling. I would like to interview your child and record his/her responses. I will use these comments as I consider how this procedure could be improved and as I write about the results of this project. In my reports of this work there will be no identification made of individual children other than by their group. There will be no adverse effects if your child does or does not participate in these interviews; it would be helpful to me and the classroom teacher, however. If you have any questions, please contact me at the phone number listed above for (school).

If you agree to let your child visit with me about the spelling activities, please sign this form and return it in the stamped self-addressed envelope. Thank you.

I, _____, grant permission for my child,
_____, to be interviewed by Mrs. Frerichs at the end of the first semester of
the 1995-96 school year.

December 1, 1995

I hereby grant permission for Linda Frerichs to tape record interviews with me. I also grant permission for her to use the content of those interviews for publication with the agreement that I will not be identified or identifiable in any way other than teacher of Group One, Two, or Three. I understand that my participation is voluntary and that this information is in assistance to data collection to be used in her dissertation for the University of North Texas. I also understand that the tapes will be inaccessible to no one other than Linda or myself and that they will be kept in her desk at home until after the dissertation has been defended, after which they will be destroyed.

Signature of Classroom Teacher

APPENDIX C

STUDENT INTERVIEW

STUDENT INTERVIEW

[Note: These questions will be used to guide a discussion with students.]

1. How do you feel about the dictations we do on Fridays? Explain.
 2. Do you think you are getting to be a better speller? Tell me why you think that.
 3. How do you figure out how to spell a word if you don't know it already?
-

APPENDIX D

TEACHER INTERVIEW

TEACHER INTERVIEW

[Note: These are basic questions to use as a springboard for dialogue and should not be construed as the only questions which may be posed when interviewing teachers.]

1. Now that you are familiar with this dictation procedure to assess your students' level of phonemic awareness and spelling, what benefits do you see for your children?

 2. Have you noticed any problems using this procedure?

 3. Have you been able to use the results to help you in planning instruction? Please explain how or why not.

 4. Would you feel comfortable continuing to use this procedure or would you prefer to use some other way to assess spelling? If so, what would you use?

 5. Have you had any response for students or parents about the dictations? Explain.

 6. Have you discussed this project with the other first grade teachers? Explain.

 7. Do you have any additional comments you would like to make about the dictations?
-

APPENDIX E

PARENT QUESTIONNAIRE

PARENT QUESTIONNAIRE

My child's teacher is _____.

Please respond to each statement. At the end you may add any comments you would like. Your responses will be confidential.

Please circle your best choice.

5 = Strongly agree
 4 = Agree
 3 = No opinion
 2 = Disagree
 1 = Strongly disagree

	SA	A	NO	D	SD
1. I like this way of seeing what my child knows about letters and sounds.	5	4	3	2	1
2. I can see that my child is getting better at spelling.	5	4	3	2	1
3. I wish my child had a list of words to learn and a weekly spelling test instead of the dictation.	5	4	3	2	1
4. I think this method will keep my child from learning how to spell words correctly.	5	4	3	2	1
5. This method is fairer to children than having to spell the word correctly in every way.	5	4	3	2	1
6. The dictation papers that came home were hard for me to understand at first but now I do.	5	4	3	2	1
7. I still don't understand how the dictation papers are scored.	5	4	3	2	1
8. My child is a better speller now than at the beginning of the school year.	5	4	3	2	1

Comments:

APPENDIX F
WEEKLY RECORD FORM

APPENDIX G
RESOURCE LIST FOR WEEKLY TEXTS

RESOURCE LIST FOR WEEKLY TEXTS

Bagert, B. (1992). Under stepping stones. Let me be the boss. Honesdale, PA: Wordsong, Boyds Mills Press.

Barchas, S. E. (1986). I was walking down the road. In J. Baskwith (compiler), Whole language sourcebook. Ontario, Canada: Scholastic Tab Publications.

Falling star. (Source unknown).

Farjeon, E. (1986). There are big waves. In J. Baskwith (compiler), Whole language sourcebook. Ontario, Canada: Scholastic Tab Publications.

Greenfield, E. (1988). To catch a fish (adaptation). Under the Sunday tree. Mexico: Harper Collins.

Grimes, N. (1993). Time to play. In W. Hudson (compiler), Pass it on: African-American poetry for children. New York: Scholastic.

I'm a little piece of tin. (1991). In M. Sampson & M. M. Peek (Eds.), Literacy strategies. Commerce, TX: International Institute of Literacy Learning.

Moore, L. (1986). Until I saw the sea. In J. Baskwith (compiler), Whole language sourcebook. Ontario, Canada: Scholastic Tab Publications.

My bicycle. (Source unknown).

Orleans, I. (Unknown). I ride on a bus. (Source unknown).

Stars. (Source unknown). [Used with The falling star.]

Stevenson, R. L. (1991). A good play (adaptation). In M. Daniel (compiler), A child's treasury of seaside verse. New York: Dial Books for Young Readers.

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