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THE LONG-TERM EFFECT OF WHOLE-LANGUAGE INSTRUCTION ON KINDERGARTEN STUDENTS' READING COMPREHENSION AFTER A TWO-YEAR PERIOD, AS MEASURED BY STANDARDIZED READING COMPREHENSION SCORES

By

Karen L. Dornbos

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ABSTRACT

THE LONG-TERM EFFECT OF WHOLE-LANGUAGE INSTRUCTION ON KINDERGARTEN STUDENTS' READING COMPREHENSION AFTER A TWO-YEAR PERIOD, AS MEASURED BY STANDARDIZED READING COMPREHENSION SCORES

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The purpose of this study was to examine the effect of whole-language instruction during kindergarten on student achievement in reading comprehension, as measured by a standardized, norm-referenced test at the end of second grade. The researcher examined the Stanford Achievement Test reading comprehension scores of second-grade students who began their kindergarten experience in either a whole-language or a non-whole-language classroom.

The teacher in the whole-language (experimental) classroom selected books with a literature base. The teacher in the non-whole-language (control) classroom used the Holt, Rinehart, Winston (1978) basal reading textbook with a controlled vocabulary.

Following the initial kindergarten year, all students received two years of instruction in the Holt, Rinehart, Winston basal reading series. Instructional format

consisted of introduction of vocabulary, silent reading, group discussion, and skill instruction followed by workbook and worksheet practice.

Analysis of the data at the end of second grade indicated that there was no significant difference between the average mean scores of the experimental group (whole-language), and the control group (non-whole-language).

However, further investigation indicated a significant difference between male and female students within each group. Males in non-whole-language kindergarten programs scored significantly higher than males in whole-language kindergarten programs. Females in whole-language kindergarten classrooms scored significantly higher than females in non-whole-language classrooms. Based on these findings, it was concluded that there may be a residual effect of initial reading instruction, with males benefiting more from non-whole-language instruction and females benefiting more from whole-language instruction during the kindergarten year.

This dissertation is dedicated to my husband, Steve, for his love, patience, and ongoing support. Thank you.

To my daughter Emily, for her support and patience. I love you.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

This research on the effect of early reading activities during kindergarten was generated because of two pressures that are new and presently functioning in the public schools in Michigan. The first pressure affecting reading instruction is the desire to institute initial formal reading instruction as early as possible. The demand of society as a whole has been to institute formal instruction as soon as possible.

According to Shepard and Smith (1986), the kindergarten curriculum of today resembles the first-grade curriculum of a few years ago. The focus of instruction in kindergarten since the 1950s has been toward skill development, stressing formal reading instruction as early as possible (Appleton, 1966; Bacci, 1961; Keislar & McNeil, 1968; Kelley & Chen, 1967; Shapiro & Willford, 1969; Sutton, 1964). Many educators and parents believe that students' ability to read is a determinate measure of success in school. Reading ability of students is often perceived by teachers as an indicator of the student's

ability to learn all other parts of the curriculum and has become more skill oriented at an earlier stage in their formal education. Both parents and educators have promoted the early teaching of reading skills ("Bringing Up Superbaby," 1983; Elkind, 1981; Spodek, 1986). This "sooner is better" syndrome has caused teachers and parents to institute a more academic curriculum into the kindergarten year.

The philosophy of earlier skill teaching has put many children in the position where they are expected to master objectives that they may not neurologically or cognitively be ready to master. This is evidenced in the high numbers of children who fail kindergarten and first grade. Some districts in Michigan experience a retention rate as high as 30% to 40% (Cummings, 1988). Such an early academic emphasis, according to Friesen (1984), can be a significant cause of failure in school. He mentioned "the possibility that much of the failure in our schools is the result of overplacement. We might reduce the rate of failure by finding a better match between a youngster's grade assignment and his or her developmental age" (p. 14).

Piaget (1970) contended that two- to seven-year-old children establish relationships between experiences and actions; they need a learning environment that deals with the concrete and allows for investigation of new ideas

over time through interactions with the environment and through play. A strong skill-oriented academic environment may not allow these interactions. Piaget also indicated that many kindergarten children are preoperational learners who have not yet progressed from concrete to abstract thinking. Many researchers believe that attempting to pressure the learning of specific academic material or to develop specific skills may produce a negative attitude toward learning, with long-term effects evidenced in increased dropout rates (Elkind, 1982; Harris, 1986).

The second pressure affecting reading instruction is the philosophical desire of many educators to move toward a reading program that embraces a whole-language philosophy. Michigan has been a leader in this area, as evidenced by the State Department of Education guidelines that define reading as "the process of constructing meaning through the dynamic interaction among the reader's existing knowledge, the information suggested by the written language, and the context of the reading situation." With the definition has come a philosophical push toward whole-language instructional methods and away from an emphasis on the teaching of reading skills. It is suggested that whole-language reading practices are more

developmentally appropriate for beginning readers than are traditional skill and phonetic instruction.

In this study, the writer investigated the residual effect of whole-language and non-whole-language reading instruction during kindergarten to determine the longitudinal effectiveness of these beginning reading approaches.

History of Kindergarten Pressures

The forces prevalent in today's kindergarten programs can be traced historically. This historical perspective can be reviewed by looking at the pressure put on the curriculum over the years and the effects of different strategies and methodologies in reading instruction.

Curriculum Pressures

The traditional nineteenth-century kindergarten created in Germany by Friedrich Froebel was a place where children were to have the opportunity to grow, cooperate, live together, and learn how to learn. His founding of the kindergarten was the result of his concern for quality education for young children. The name alone, which literally translates to "a garden for children," indicates Froebel's understanding that, like the plants in a garden, children need careful nurturing in order to grow healthy and strong.

Those kindergartens that were first established in the United States during the nineteenth century were primarily a social service rather than an educational function (Hill, 1987). They were operated mostly by philanthropic organizations, which were attempting to meet the needs of massive immigration and city slum children. These earliest kindergartens served the purpose of aiding the acculturation of children of newly arrived immigrants (Moyer, 1987).

From the 1920s through the 1950s, kindergartens tended to be privately operated and were primarily attended by middle-class and upper-class children. Kindergarten was seen as an opportunity for children to attend a comfortable, child-centered group experience outside of the home (Connell, 1987). Kindergarten's major purpose was to provide a year of transition from family life to social life.

Soon after the Soviet Union's October 4, 1957, launch of Sputnik I, parents, educators, and the public, already concerned about the quality of instruction in American schools (Bestor, 1953), were urging schools to teach more and teach it sooner in an effort to catch up with the Soviet Union (Benton, 1958; "Crisis in Education," 1958). This began the push down of the curriculum with the introduction of more advanced skills earlier in an effort to prepare children for first grade. According to

Bartolini and Wasem (1985), the curriculum began to shift from a developmental focus to an academic focus. The transitional role of kindergarten had been replaced with an emphasis on reading, writing, and arithmetic (Elkind, 1986).

Although some students did well, many did not. Therefore, in 1964, the establishment of Head Start was a result of the concern for improving disadvantaged children's intellectual skills, fostering their social and emotional development, and helping meet their health and nutritional needs (Helmich, 1985). The belief was that early intervention of disadvantaged children would provide experiences that would help these children be successful throughout their school experience (Burrueta-Clement, Schweinhart, Barnett, Epstein, & Weikart, 1984).

Today, public kindergartens are available in every state, with nearly 95% of all five year olds enrolled (Sava, 1987). Most kindergartens are now a part of the public school system and serve children from all socioeconomic backgrounds.

Hill (1987) suggested that kindergarten serves three important functions. They are:

1. To minister to the nature and needs of five year olds (abilities, developmental level, learning styles, and interests).

2. To lay the foundation for a good start in school subjects and activities by establishing the motivation and skills for success in school.

3. To provide comprehensive assistance with children's medical, nutritional, and psychological needs.

Whole-Language Pressures

A second pressure affecting reading instruction has been the move by many educators to promote a whole-language philosophy toward reading instruction. This philosophy has developed from many early childhood educators who have an understanding of child development and have been urging that young children be allowed to learn first from life and then from books (Rudolph & Cohen, 1984). They are attempting to restructure initial reading instruction so it is less skill oriented. As Tyler (1950) stated,

> Learning experience refers to the interaction between the learner and the external conditions in the environment to which he can react. Learning takes place through the active behavior of the student; it is what he does that he learns, not what the teacher does. (p. 41)

Therefore, many teachers are attempting to create an involved, active curriculum. According to Weaver (1987), isolated skill development and phonetic emphasis are not a major focus of reading instruction. Instead, teachers are focusing reading instruction on large units of meaning. These large units of meaning are provided by students

experiencing and responding to literature selections as a whole, and then looking at specific sentences, words, and letters. These practices are in alignment with what is becoming known as a whole-language philosophy.

According to Goodman (1986), whole-language is a philosophy of learning and teaching that is holistic and child centered. It is learned from the whole to the part (Goodman, 1979). Farr (1988) defined whole-language as "a philosophy that suggests that a variety of real language experiences and materials should form the basis of instruction" (p. 86). Rather than taking parts of language (letters, words, skills), whole-language teachers, according to Goodman (1986), try to keep language whole and in the context of its thoughtful use in real situations. It involves the instruction where students are encouraged to participate in choral reading, writing their own stories based on their experiences, and having students retell stories either orally or in writing. The child focuses on combining the written and oral text with his/her own experiences to assist comprehension.

It is argued that a whole-language philosophy and the strategies teachers use to implement the philosophy are in closer alignment with a developmentally appropriate curriculum for young children. This can be supported by

the position statement in Appropriate Education in the Primary Grades, from the National Association for the Education of Young Children (1988), which stated:

> The goals of the language and literacy program are for children to expand their ability to communicate verbally and through reading and writing, and to enjoy these activities. Technical skills or subskills are taught as needed to accomplish the larger goals, not as the goal itself. Teachers provide generous amounts of time and a variety of interesting activities for children to develop language, writing, spelling, and reading ability such as looking through, reading, or being read high quality children's literature and nonfiction for pleasure and information; drawing, dictation, and writing about their activities or fantasies; planning and implementing projects that involve research at suitable levels of difficulty; creating teacher-made or child-written lists of steps to follow to accomplish a project; discussing what they read; preparing a weekly class newspaper; interviewing various people to obtain information for projects; making books of various kinds (riddle books, what-if books, books about pets); listening to recordings or viewing high quality films of children's books; being read at least one high quality book or part of a book each day by adults or older children; using the school library and the library area of the classroom regularly. Some children read aloud daily to the teacher, another child, or a small group of children, while others do so weekly. Subskills such as learning letters, phonics, and word recognition are taught as needed to individual children and small groups through enjoyable games and activities. Teachers use the teacher's edition of the basal reader series as a guide to plan projects and hands-on activities relevant to what is read and to structure learning situations. Teachers accept children's invented spelling with minimal reliance on teacher-prescribed spelling lists. Teachers also teach literacy as the need arises when working on science, social studies, and other content areas.

Effect of First Learning

The research on the powerful and dramatic effect of first learning is important to the current study, in which the effect of initial reading instruction during kindergarten was investigated. This instruction has the potential to influence later learning and reading success.

In a summary of longitudinal studies, Bloom (1964) concluded that the most rapid period for the development of intelligence is the first five years of life, thereby stressing the importance of a child's early environment. For many children the first five years of life include their first introduction to formal education and, of course, a study called kindergarten.

Longitudinal research on the lasting effect of the first learning of children during these preschool years, which includes the kindergarten experience, has indicated that what happens during these years influences the students' school achievement, verbal achievement, and social competence (Burrueta-Clement et al., 1984; Lazar, 1978, 1979).

In a longitudinal study, Creech (1982) looked at reading achievement of first- through fifth-grade students with and without preschool (kindergarten) experience. This research showed that, except for the first-grade test results, all children who were given a kindergarten experience were more successful in reading in grades 2

through 5 than were those students who did not have a kindergarten experience.

Research like Creech's has supported the assumption made in the current study--that children who are given a specific treatment during their kindergarten year are influenced by the residual effect of that treatment in later years.

The Problem

Given the importance of first learning, what is the most appropriate instructional method to use with kindergarten children? When students are initially instructed using a whole-language approach, do they become better readers than when a non-whole-language approach is used? What is the most appropriate instructional course to use when teaching reading initially?

Curriculum and Whole-Language

The debate over the most effective method to teach reading is not exclusive to this decade. There has been much debate in the past regarding beginning reading instruction, whether it is the skills-phonics approach or the more recent whole-language approach. The additional emphasis on providing a developmentally appropriate curriculum for young children, with appropriate methods of beginning reading instruction, has called for an

investigation of the most effective reading methods to use with beginning readers.

Non-whole-language activities stressing abstract concepts such as numbers, letters, and words, taught to all the students at the same time in the same way with heavy use of prepared materials such as workbooks and dittos, is not considered by many to be appropriate for a developmental curriculum (Bartolini & Wasem, 1985). In contrast, the whole-language approach is being promoted as a reading program that will better meet the needs of all children and stay in alignment with a developmentally appropriate curriculum. The focus on whole-language has caused many educators to look at their curriculum and implementation strategies.

In this study, the researcher attempted to determine whether the whole-language approach has something to offer to the kindergarten experience, and whether one can justify paying attention to the kinds of things done with children during their kindergarten year that relate to reading instruction.

Purpose of the Study

The researcher's purpose in this study was to examine the longitudinal effect of two different reading approaches that were used with two groups of beginning readers during their kindergarten year. The study was

designed to measure the longitudinal effect of initial learning. The writer examined the test scores of two separate groups of second graders who used different instructional strategies during their initial kindergarten reading instruction. One group was instructed using the whole-language approach, and the second group was instructed using the traditional reading instruction approach. Also under investigation was the effect of the two different beginning reading approaches on the reading-comprehension achievement of males and females two years after the treatment.

The researcher investigated whether whole-language instructional methods or non-whole-language instructional methods influenced success in reading after two years had elapsed. The researcher attempted to determine the long-term effect of initial formal instruction by looking at the results of the reading comprehension subtest of the Stanford Achievement Test.

Importance of the Study

This study was undertaken to provide longitudinal data on the reading-comprehension achievement of students initially instructed with whole-language and non-whole-language techniques. The research findings are important for the following reasons:

First, the power of first learning needs to be understood so that appropriate curriculum decisions can be instituted for beginning learning.

Second, emphasis recently has been placed on the use of whole-language methods of instruction, and verification of the long-term effect of these methods is needed.

Third, if whole-language or non-whole-language methods are more effective with males or females, educators should be aware of the effect so that appropriate instructional methods can be used with the particular learner.

Fourth, if whole-language methods are more effective than or as effective as non-whole-language methods in influencing reading success as currently measured with standardized testing, educators should be aware of these findings so that valid decisions regarding curriculum, materials, and inservice needs can be made.

Research Questions

Three questions were addressed in this study. They are as follows:

1. In kindergarten reading instruction, do the whole-language instructional philosophy and practices or the traditional skill philosophy and practices influence future success in learning to read?

2. Are there individual student differences in who benefits from the whole-language and non-whole-language instructional philosophies and practices?

3. Does what is done in reading instruction in kindergarten under the rubric of formal learning actually affect later learning in reading or in the ability to read effectively?

Hypotheses

It was hypothesized that:

Hypothesis 1: There is no significant difference between the mean reading comprehension test scores of second-grade students who were initially instructed during their kindergarten year with whole-language techniques or non-whole-language techniques, when measured at the end of their second-grade year with a norm-referenced test.

Hypothesis 2: There is no significant difference between the mean reading-comprehension test scores of male and female second-grade students who were instructed with whole-language techniques or non-whole-language techniques during kindergarten, when measured at the end of their second grade year with a norm-referenced test.

Assumptions and Limitations

1. Because the pupils involved in the study were from kindergarten classrooms that contained nonminority students who were about the same in ability, age, and gender distribution, the findings may hold true for other groups that are the same and are instructed in whole-language and non-whole-language methods.

2. If whole-language techniques are proven valid and effective, there is no reason to believe that whole-language instruction is effective only for kindergarten students. Rather, it may appropriately be used with any learner population.

This study was not designed to provide educators with the best and only method to use when giving students initial reading instruction. The study findings are intended to help educators make appropriate curriculum decisions.

Definition of Terms

Big books. Books with enlarged print and illustrations so they can be shared with a group of children in the classroom in the same way as a parent and child interact with text during lap reading or a bedtime story.

Cuing systems. Any one area cannot exist in isolation from the others, and effective readers use these cue systems interdependently. Types of cues include:

Graphophonic cues: Letter-sound relationships, visual knowledge.

Semantic cues: What is happening, meaning through text and illustrations.

Syntactic cues: Using knowledge of language patterns, grammatical structure.

Digraph. A combination of two letters (vowels or consonants) that, when pronounced, result in one speech sound. This sound is neither a blend of the two letters nor the characteristic sound of either. Some digraphs have more than one sound (ch).

Diphthong. Two adjacent vowels, each of which is sounded as the ou in house, oi in oil, oy in boy, ow in how (but not the ow in blow, where the sound is long o).

Experience chart. A story produced cooperatively by the teacher and the class.

Language experience. A reading approach that uses children's oral language and experiences to create personal reading materials.

Literacy. The ability to read and write functionally. An individual who expresses active literacy is one who reads and writes thoughtfully and does so for meaningful and self-chosen purposes in the real world (Routman, 1988).

Literature. Includes picture books, folk tales, fables, myths, fantasy, science fiction, poetry, realistic fiction, historical fiction, nonfiction, informational text, and biographies. According to Huck (1987), the experience of literature is always two dimensional because it involves both the book and the reader.

Metacognition. Knowing what you know and how you know it.

Miscues. Unexpected responses in oral reading that demonstrate the reader's strengths and weaknesses.

Phoneme. The smallest unit of sound in a language. When the word "man" is pronounced, three phonemes are used: /m/ae/n/.

Phonics. Concentrates on the most common sounds in our language and on the letters or combinations of letters most often used to record them. This includes the sounds of long and short vowels, hard and soft consonants, sound of blends, diphthongs, digraphs, and syllabication (Durkin, 1965).

Practice time for reading and writing. Time given during the school day, in which children have an opportunity to use the new skills they are acquiring in reading and writing.

Prior knowledge. All the information and all the experiences a reader has in memory that come into play during reading and writing.

Reading aloud. When the teacher reads aloud to children good pieces of literature, modeling what good reading sounds like and that it needs to make sense.

Shared reading. Uses text with enlarged print so a large group of children can view a big book, chart, or projected visual at one time and share the pleasure of the

selection. The material is worthy of repetition and focuses on the whole rather than the parts.

Skills. Learned procedures.

Stages of reading:

a. **Early emergent reading.** The first stage of reading, in which children

* after hearing a story use their memory to "read" the book.

* use picture cues when "reading" the book.

* know how to make sense and use language cues when "reading."

b. **Emergent reading.** The second stage of reading, in which

* memory is a major cue to reading books.

* students know the same story is found in the same book and the same part of a story is found on a certain page. Key words are recalled.

* Pictures provide major cues.

* Students realize the story is in the text and may point to words, find key words, and attempt to match spoken words with words in the text.

c. **Early reading.** The third stage of reading development, in which children are becoming readers with voice-eye-finger match and oral rather than silent reading characteristics with

* precise and deliberate matching of words on the page.

* self-corrections in an effort to make sense.

* picture cues less important.

d. **Fluent reading.** The fourth stage of reading development, in which reading becomes automatic until a difficult or unexpected word is met. When this happens, children use cues to assist. In this stage,

* children need a wider range of materials.

* children need lots of time to practice reading independently.

* children are reading with deeper understanding.

Strategies. The thoughtful plans or operations readers use while involved in the reading process; these plans are activated, adjusted, and modified for each new reading situation; high-level thinking, integration, and self-direction (Routman, 1988).

Structural analysis. Recognition of new words by noting known roots, inflectional endings to root words (s, ed, ing), words combined to produce a different word (compound words), and prefixes and suffixes added to root words (derivatives).

Syllabication. Breaking polysyllabic words into syllables.

Syllable. A vowel, or group of letters containing a vowel, which is pronounced as a unit.

Whole language. A reading approach in which all language activity is in a meaningful context. It is learning to read and write by reading and writing real literature.

Writing. Integrating writing with reading as teachers help children make the connection between oral speech and written language.

Summary

A historical perspective of kindergarten was presented in this chapter. Many influences and pressures have played an important role in the development of today's kindergarten program. Two pressures in particular have shaped the kindergarten curriculum. One pressure has been the demand for earlier formal reading instruction. The second pressure has been the move by many educators toward a more developmental approach.

The kindergarten curriculum began with Friedrich Froebel's original kindergarten, which emphasized opportunities for young children to investigate the world in their own special way. Soon after the launching of Sputnik I, there was a shift toward more academics in the kindergarten. In an effort to improve academic performance, reading-skill acquisition was stressed and a methodology that supported acquiring those skills was adopted.

The whole-language pressures were then discussed. Currently, many early childhood educators, psychologists, and reading specialists are encouraging a more developmental approach to early learning (NAEYC, 1986). However, many educators, psychologists, and reading specialists are cautioning the complete restructuring of skill-oriented beginning reading programs.

In today's society, reading is a highly valued ability and is especially valued in school. Therefore, different methodologies need to be studied so that appropriate techniques are used with beginning readers during their kindergarten year. Although many well-known researchers such as Baker, Birnbaum, Brown, Burke, Calkins, Clay, Graves, Harste, Halliday, and Woodward have published findings on reading, writing, language development, learning styles, and language acquisition that support whole-language theory, there has been limited longitudinal research on reading comprehension of students initially instructed with whole-language methods and strategies.

Whole-language, as defined by Goodman (1987), is a philosophy of learning and teaching that is holistic and child centered. Manning, Manning, Long, and Wolfson (1987) described the following beliefs of whole-language teachers:

1. Reading and writing should be a natural outgrowth of oral language development.

2. Children construct their own knowledge from within rather than having it imposed on them from outside sources.

3. Reading is comprehension--that is, creating meaning from text.

4. Communication is the main aim of writing.

5. Learning to read and write is a social process.

6. Risk taking and making mistakes are critical to reading.

Next, the research on the effect of first learning was reviewed. The power of the first learning during this important beginning learning period was established.

The primary purpose of this study was to determine whether initial teaching of reading in kindergarten using either a whole-language or non-whole-language approach made a difference in reading comprehension after two years of non-whole-language instruction in first and second grade. Also investigated was the effect of initial kindergarten instruction on the reading comprehension of males and females at the end of second grade, after they had had non-whole-language instruction during their first- and second-grade years. This determination was made, using students' scores on the reading comprehension

subtest of the Stanford Achievement Test, a norm-referenced, standardized instrument given in the spring of their second-grade year.

Definitions of terms used in the dissertation were given to help reduce ambiguity. Assumptions and limitations of the study were discussed.

In the next chapter, a review of the theoretical and empirical literature regarding topics of concern in this study is provided.

CHAPTER II

REVIEW OF LITERATURE

Introduction

As children begin their kindergarten experience, parents and the public generally think that they will have their first opportunity to learn how to read. In fact, that is what many parents tell their children: "When you go to school you will learn how to read." The questions for the teacher then are: "How do I teach them? What is the most effective method to use to assure children's future reading achievement? What is the research to support my choice?"

Evidence exists in both the theoretical and empirical literature to suggest that different philosophies of reading instruction will have different effects on students' learning. This review of the literature includes a historical and current perspective on kindergarten philosophies and practices, males' and females' brain development, and a description of the two major reading theories along with teacher practices associated with each.

Kindergarten Development

History of Kindergarten

The historical background of kindergarten begins with the history of early childhood education. Beginning with Plato's ancient Greece, the child remained at home from infancy through age six and received informal training from parents in social habits and good health (Bosnaquet, 1908). Plato believed that children learned from the modeling of those closest to them and that children's initial learning was the most important.

In about the fifteenth century, Erasmus (1466-1536) was the first to expound on the idea that the family could not accomplish everything. He wanted a nonreligious educational system with teachers to assist in the education of children (Phillips, 1949).

About that same time, the Reformation was taking place, with its religious alignment. One of the main reforms supported by leaders such as Martin Luther and John Calvin was that people needed to learn to read so that they would be able to interpret the Bible. They believed the ability to read was a necessity for all people, and they encouraged the state to provide education for all students, with continuing support for the morals that were begun in the home. This was the flavor of the first schools in America, which came with the colonists.

When the Puritans, who espoused the beliefs of Calvin, arrived in America in 1628, they brought with them their belief that all people should learn to read. The church elders were the first instructors, but by 1647 it was established that every township with more than 50 households must appoint one person to teach the children how to read and write. The practice took place on a horn book, on which children wrote their ABCs and scripture, which they memorized by the rote method; that is, they wrote it, memorized it, and then recited it.

From the late 1600s through the 1800s, theories developed by such Europeans as John Locke (1632-1704), Jean-Jacques Rousseau (1712-1778), and Johann H. Pestalozzi (1746-1827) had varying influences on the education of young children. Locke's theory of the mind was that it was a blank slate and that the teacher was responsible for choosing the appropriate knowledge to be written on it. He believed that, from the age of three, children of working parents should attend schools in which they would be taught morality and a trade.

Rousseau advocated the belief that children must be children before they are adults because they see, think, and feel differently during childhood and that problem solving should take place in a natural way. He formed the theory of a child-centered curriculum, in which an environment is created that allows for the child to make

discoveries and conduct investigations that are facilitated by the teacher. Pestalozzi was influenced by Rousseau's writings and advocated that teachers must use language and models such as physical objects, diagrams, and illustrations appropriate to the child's stage of development. Together, Rousseau's child-centered concept and Pestalozzi's stage-of-development concept form the basis of early childhood education.

Friedrich Froebel, a student of Pestalozzi, is credited with being the father of the kindergarten (Hewes, 1985), which literally translates to "children's garden." Froebel was a nineteenth-century German philosopher and educator. He combined his two interests with his religious beliefs into a philosophy of education that focused on young children; he opened his first kindergarten in Prussia in 1837. Froebel was one of the first to express the belief that man is innately good.

Three basic beliefs are associated with Froebel's philosophy of kindergarten and are still used today. He believed that social relationships are important in the child's attaining self-development and self-realization. He believed that children can learn in a pleasant, fear-free environment within a community of mutual love through educative activity such as building, drawing, modeling, and singing, and that play is the way young children

learn. His approach to teaching children was to help them understand the complex world by playing with concrete objects through exploration (Ransbury, 1982). Aesthetic elements were an important part of the kindergarten environment, and he respected the individuality of the child. By the 1850s, Froebel's concept of kindergarten had taken hold throughout Europe and had spread to the United States.

A student of Froebel's, Margaretha Schurz, using Froebelian methods, opened the first German-speaking kindergarten in the United States in Watertown, Wisconsin, in 1856 (Lawler, 1988). In 1860, the first English-speaking kindergarten was started in Boston, Massachusetts (Snyder, 1986).

Another important figure in early childhood education was Maria Montessori (1870-1952). She was an Italian who was the first woman to graduate in Medicine from the University of Rome. Montessori first studied the educational problems of handicapped children and was successful in teaching these children to read and write. She concluded that similar methods might also be applied successfully to younger children. The most important focus of the Montessori method is self-development (Evans, 1975), in which children learn through interaction with self-correcting materials (Berk, 1988).

The principles of the Montessori method include the belief that each child has the capacity for his/her own development, that repetition is important, that there is joy in work, that there is the need for a prepared environment for learning, and that social development is important. The beginning of learning stations might be attributed to Montessori as the Montessori environment has four prepared instructional areas that children have available throughout the day. They are the practical-life area, where children are taught the skills of life; the sensorial area, as nothing comes to the intellect that is not first in the senses; a language area; and a mathematics area. There are also other extended areas for working with nature and music (Montessori, 1966).

Implicit in the research is the support of early education for young children. There is the belief that this first exposure to learning, especially during kindergarten, is vitally important and influences future learning. What we are doing to children at age five, as they are being introduced to formal classroom instruction, has a lasting and significant effect on their ability to learn. This initial instruction is taking place during an important time in the lives of these learners. Many researchers have proven that initial instruction can cause success or failure in future academic ventures. It is this belief about initial instruction at this age that

supports the adage: As the twig is bent, so grows the tree.

All of the pioneers mentioned above have influenced the kindergarten program to varying degrees. Their work, along with research about the appropriate environment for the young child, has influenced the current thinking about early childhood education.

Current Developmental Emphasis

Many changes in kindergartens over the last 130 years have been the result of societal influence. When kindergartens were first established in the United States, they primarily served as a social service (Hill, 1987) as they were operated by philanthropic organizations that were trying to help enculturate immigrants and to educate children in city slums. From the 1920s to the 1950s, kindergartens were mostly a social experience for middle- and upper-class children (Connell, 1987). The "push-down" phenomenon began after the Russians launched Sputnik on October 4, 1957, as a result of the repercussions in the United States over the launching by a foreign power. This is when the curriculum of the first grade was placed in the kindergarten in order to get a jump on the learning of American children.

Recently, researchers, child psychologists, and educators have begun questioning the appropriateness of

this academic kindergarten curriculum and have started to emphasize an age-appropriate developmental curriculum as originally advocated by Rousseau and Pestalozzi and supported by Piaget and Vygotsky.

The research of Jean Piaget into the developmental stages and characteristics of children's cognitive processes, along with his emphasis on the importance of dynamic interaction between the child and his environment and the significance of play as a medium for learning, has had a significant influence on the educational environment and curriculum of young children. In describing the educational implications of Piaget's views on play, Day and Parker (1977) said that:

> Children should be encouraged to use their initiative and intelligence in actively manipulating that environment because it is only by dealing directly with reality that the basic biological capacity for intelligence develops. Children's spontaneous play should be the primary context in which teachers encourage the use of intelligence and initiative. (p. 372)

Children's intelligence, as conceived by Piaget, develops gradually over a long period and shows growth by the different ways problems are solved (Fruth, 1970). According to Piaget, acquiring knowledge is not just adding new information to old information, but involves incorporating that new information in developing a schemata. How that new information relates to prior

knowledge depends on the child's stage of cognitive development (Piaget, 1962).

Kindergarten-age children are in what Piaget (1962) described as the preoperational-thought stage (two to seven years old). They establish relationships between experiences and actions. They begin to imitate adults and internalize activities, which become the basis for imagery and language development. Relationships are made based on some perceived features in common; for example, things are grouped together because "Mommy uses them in the kitchen," not because they are all red or made of plastic. Egocentricity will not allow children of this age to take another's point of view, and conservation has not been developed. In other words, they cannot deal with a slightly changed situation without thinking it is a new situation (Ginsburg & Opper, 1969). In the words of Piaget (1962):

> We need pupils who are active, who learn early to find out by themselves, partly by their own spontaneous activity and partly through material we set up for them; who learn early to tell what is verifiable and what is simply the first ideas to come to them. (p. 6)

If the ideas of Piaget are a part of the curriculum for the child in this stage of development, it is important to have reading activities that are "carried out in social situations where children are working together, sharing information, and learning to take into account

another person's point of view" (Raven & Sulzer, 1971, p. 636).

In contrast to Piaget's developmental levels, Vygotsky's (1978) levels of development include the actual developmental level and the zone of proximal development. The actual level of development is where the child is developmentally, and the zone of proximal development is the difference between the independent level and the potential level. Placing this in the context of reading, Vygotsky believed that a word gets its meaning from the context in which it is found and that learning occurs "only when the child is interacting with people in his environment and in cooperation with his peers" (p. 90).

The whole-language philosophy seems to be in congruence with the developmental models suggested in the work of Piaget and Vygotsky. The use of whole-language practices during this first exposure to reading instruction is suggested as being a better fit to the cognitive, developmental, and emotional needs of this age group. Rather than focusing on the traditional readiness activities that stress individual letters and sounds, the whole-language activities focus first on understanding the concept of reading. This is done through exposure to books, where children listen to stories read by the teacher, take part in the rereadings, express their

understanding of and reactions to books through drawing, and spend time looking at and listening to stories.

Gender Differences

Along with the research on developmental levels there has been a growing body of research relevant to cognition and different genders. Recent brain research has added new information about developmental stages of brain growth and their effect on learning. By the time a child is two years old, the brain has acquired 75% of its adult weight; by the age of five years, the brain is 90% of its adult weight (Zigler & Finn-Stevenson, 1987). The increases in size during the prenatal and infancy periods are due to an increase in the number of neurons. The increase in weight after that time is due to myelination of the nerve cells, which is the process by which nerve fibers become coated with a myelin sheath, which increases the nerves' ability to send and receive impulses (Zigler & Finn-Stevenson, 1987). This "myelination occurs with use" and affects language and motor development (Cherry, Godwin, & Staples, 1989, p. 34).

Although language and motor development follow similar patterns in boys and girls, there are differences in performance in these areas. Boys are usually better than girls in gross motor skills, and girls are usually better than boys in fine motor skills (Tanner, 1978).

Brierley (1976) found that girls age four had a more developed left hemisphere in the area of the brain responsible for speech, and showed superiority in this area. The left hemisphere of the brain is responsible for receiving, processing, and producing language. In Brierley's research, boys had a more developed right hemisphere in the area of the brain responsible for spatial skills. As a result, boys perform better in tasks of geometric and mechanical skills and visual-spatial imagery (Soderman & Phillips, 1986).

The importance of knowing both Piaget's and Vygotsky's theories and the research on brain development is that all agree that development affects learning and that the way children learn will change as they mature. Therefore, teaching strategies and initial instruction may influence initial learning and long-term retention.

According to the position statement of the National Association for the Education of Young Children (NAEYC, 1986), appropriate curriculum stimulates children in all developmental areas: physical, social, emotional, and cognitive. It also responds to the individual differences in children's ability, interests, development, and learning styles. Appropriate programs offer children selection of many activities that provide active exploration, interaction with adults and children, and

opportunities to work individually and in small groups most of the time.

Knowing that developmental needs may vary according to the child being instructed is crucial to appropriate reading instruction. If, indeed, boys and girls assimilate and process information differently at different stages, instruction should vary to meet their needs. Whole-language instruction, which goes from whole to part, would certainly be a more appropriate initial instructional strategy for some children. On the other hand, it may be equally important for some students to have reading instruction that is more linear, sequential, and spatial.

Reading Instruction

In the last decade, there have been major advances in knowledge concerning the basic processes involved in reading, teaching, and learning. A study done by the National Assessment of Educational Progress (1985) revealed that:

> There has been a conceptual shift in the way many researchers and teachers think about reading, which gives students a much more active role in the learning and reading comprehension process. This shift is reflected in changes from packaged reading programs to experience with books and from concentration on isolated skills to practical reading and writing activities. (p. 8)

Part of this conceptual shift has been a result of the work at the Center for the Study of Reading, which has

been funded since 1976 by the National Institute of Education. These researchers combined the research from education, linguistics, cognitive psychology, and other disciplines to provide a more complete view of the process of reading. The Center published Becoming a Nation of Readers in 1985 to "summarize the knowledge acquired from research and to draw implications for reading instruction" (Anderson, Hiebert, Scott, & Wilkinson, 1985). As a result of this research, educators now have the knowledge to improve learning for students. In Becoming a Nation of Readers, the authors outlined ten steps to follow to improve beginning reading success:

1. Parents reading aloud to children and discussing stories play an important role in laying the foundation for learning to read.

2. Oral language, writing, and beginning steps in reading should be emphasized for beginning readers.

3. Phonics instruction improves the ability to identify words.

4. Beginning reading material should be interesting.

5. Oral and silent reading are important for beginning readers, with silent reading always preceding oral reading.

6. Understanding and appreciation are the focus of a selection, with emphasis on motivating children's higher-level thinking.

7. Comprehension strategies need to be taught directly.

8. Independent reading time is a priority.

9. A literate environment is important.

10. Whole-group instruction and/or flexible grouping are more beneficial to low-ability students than is ability grouping (Anderson et al., 1985).

Cullinan (1986) found that American youngsters spent 70% of a typical reading period filling in worksheets and an average of seven minutes per day reading from books. Implementation of the above recommendations might help change these classroom reading statistics.

In comparing whole-language classrooms with non-whole-language classrooms, different assumptions about learning to read form the conceptual base and actual classroom practices. In non-whole-language classrooms, the learner is to be a receiver of information because learning to read requires direct instruction by the teacher (Weaver, 1988). It is thought that reading knowledge is built from the bottom up, with the smallest parts first, so phonics and skills are emphasized.

This non-whole-language view of reading, according to the Commission on Reading of the National Council of Teachers of English (1987), was described as follows:

> In this view, learning is the result of teaching, piece by piece, item by item. The whole, reading, is the sum of the parts, words and skills. The learners are passive and controlled. (p. 59)

In whole-language classrooms it is believed that young children acquire language and social and academic skills developmentally (Holdaway, 1986). Children learn to read in much the same way as they learn to talk (Harste, Woodward, & Burke, 1984; Holdaway, 1979; Teale & Sulzby, 1986)--that is, from whole to part. They listen to the story and look at the pictures, then they use the pictures to tell the story, and next they memorize the story and recite it. They learn to recognize words in known text and begin to make a connection between letters and the sounds they make. Activities related to reading are meaningful to the children and have them actively involved in their learning (Marek et al., 1984).

In the development of reading instruction, two major theories have dominated reading-program frameworks. A theory is a system of assumptions through which experiences are organized and acted upon. In cognitive psychology (Anderson, Spiro, & Anderson, 1977), a theoretical orientation is best thought of as a cognitive structure or generalized schemata that governs behavior.

In reading instruction, the theoretical orientation is a particular knowledge and belief system held toward reading, which establishes expectancies and influences

teacher and student decisions relative to reading (Harste, 1977). Singer and Ruddell (1976) identified nine reading models in their book Theoretical Models and Processes of Reading. In this study, two distinct theoretical orientations to the teaching of reading were explored and investigated. They are the skills/decoding model and the whole-language model. Each of these orientations and related research is discussed in the following paragraphs.

The Skills/Decoding Model

The skills/decoding model of reading, according to Harste (1977), holds the view that "language is perceived as a pyramid, the base of which is the sound/symbol relationships, the capstone of which is meaning" (p. 8). (See Figure 1.) This is best known as the "sound it out" and skills-hierarchies model of reading. Initial reading instruction is viewed primarily as decoding skills, sight-word attainment, then development of structural-analysis skills (prefixes, suffixes, contractions, compound words), and, eventually, comprehension of the message (McCraken & Walcutt, 1963). "Reading means getting meaning from certain combinations of letters. Teach the child what each letter stands for and he can read" (Flesch, 1955). Syntax and meaning are components of the phonics-skills model, but not the foundation on which the attainment of reading is based.

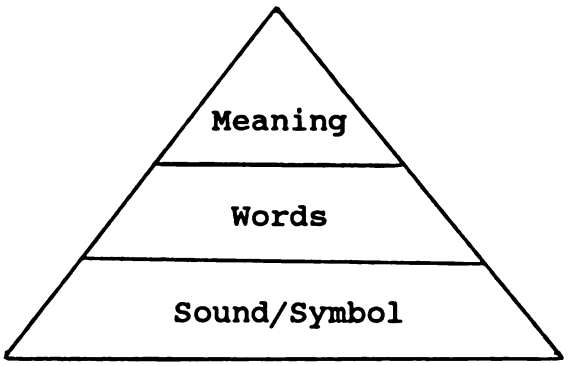

Figure 1: The skills-decoding model of reading.

The skills/decoding model focuses on word decoding, and its instruction consists of first introducing letters, then combinations of letters, and then short words that follow specific sound-letter relationships. Student material consists of examples of the pattern being taught and sight words. The emphasis is on the phoneme-grapheme relationships, with sentences and stories becoming progressively more complex as students' ability increases. Phonics instruction is a part of each reading lesson, and eventually comprehension is taught in the form of cause/effect, compare/contrast, and sequence (Matteoni, Lane, Sucher, & Burns, 1980). This model has also been called the bottom-up model (Gough, 1976; Laberge & Samuels, 1976).

One of the major sources of effective reading techniques is the book Becoming a Nation of Readers (Anderson et al., 1985). With regard to phonics, the

authors stated that "the issue is no longer, as it was several decades ago, whether children should be taught phonics. The issues now are specific ones of just how it should be done" (p. 36).

Another major publication, What Works, Research About Teaching and Learning (U.S. Department of Education, 1986), summarizing research on phonics stated that:

> Children get a better start in reading if they are taught phonics. Learning phonics helps them to understand the relationship between letters and sounds and to "Break the code" that links the words they hear with the words they see in print. (p. 21)

Probably the best known work on phonics is that of Chall (1967, 1983). Chall's book The Great Debate (1967), according to Carbo (1988), "has probably been the most influential book in reading instruction of the past two decades." After summarizing and evaluating research on reading, Chall (1983) stated, "A code emphasis tends to produce better overall reading achievement by the beginning of fourth grade than a meaning emphasis" (p. 137).

Research by Ohnmacht (1969), Bradley and Bryant (1983), Stanovich (1986), and Adams (1989) suggested that the phonemic awareness of children upon entering school may be the single most powerful determinant of the success they will experience in learning to read. Adams suggested that direct instruction in vocabulary, spelling, using context to infer the meaning of new words, and knowledge

of word roots and affixes all assist the act of reading. In addition, recognition of frequent words and spelling patterns is necessary. Adams stated that, especially for low-readiness readers, word-analysis skills will be developed only if they are explicitly taught.

This skills/decoding model sees teachers instructing children in auditory discrimination of sound values at different positions in words, consonant sounds, and other skills. This model says that if one learns the pieces, the whole will come.

Researchers have cautioned educators about the overuse of the drilling of skills as research results have shown that some students lose interest in reading and show no improvement in reading scores (Alderman, 1926; Miles, 1926).

The Whole-Language Model

According to Harste (1977), the language-based model is always focused on comprehension and

> . . . views reading as one of four ways in which the abstract concept of language is realized. This orientation assumes not only that the systems of language are shared, but that they are interdependent and interactive aspects of a process. When aspects of language are focused upon for instructional purposes, the sphere is penetrated and all three systems are extracted simultaneously. (p. 9)

(See Figure 2.)

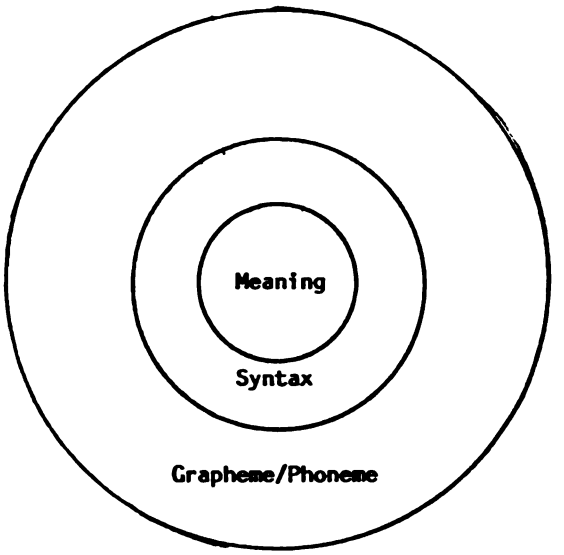

Figure 2: The whole-language model of reading.

This model is viewed as an extension of language, in which readers make use of their background of experiences in conjunction with their knowledge of language to develop their own strategies for dealing with print (Moss, 1980). Learning to read is combining what the child brings from his/her own background with the print, in order to obtain meaning. What is being read needs to make sense, and it needs to sound like language.

According to Fagan (1987), whole-language is a perception of how language is learned. It is an orientation, a belief system, an attitude, or a philosophy.

Moss (1980) described the language-based model of reading as instructional activities used by teachers that

do not fragment language into words or letters but keep the language whole and include such practices as (a) language-experience stories, (b) reading aloud, (c) using trade books, and (d) silent reading time.

Goodman (1979) described the major components of whole-language in his beliefs that:

1. Reading and writing are natural extensions of oral language development and can be learned.

2. Children begin developing literacy before they enter school.

3. Children learn that print represents meaning in situational contexts, and they develop an awareness of the form of print.

Goodman (1968) emphasized those components as the foundation upon which schools need to focus instruction. What is happening naturally in the child's environment needs to be extended into the schools, with teachers providing a literate environment using real text.

The characteristics of whole-language instruction, according to Rich (1986), are that:

1. Reading material has a literature base, is of interest to students, and builds on their background.

2. Decoding skills are taught or learned within the text being read and not in isolation, with stories made up of controlled vocabulary and artificial syntax.

3. Beginning reading and writing are integrated.

4. Talking is taking place between the teacher and students.

5. Many language activities are taking place.

6. Parents' involvement in their children's learning is encouraged.

Much research has been done in an attempt to determine the best reading approach and the practices that are most beneficial for beginning readers. The following research has supported the reading practices that were a part of the whole-language instruction in this research project.

The practices that are described below--shared reading, reading aloud, writing, and time to practice--are the things that whole-language offers. In a kindergarten curriculum, these practices are at the readiness level and are not seen in the purest form as we are seeing the beginning stages of each of these practices. Children cannot read, but when they hear the teacher read aloud, it is the beginning step of learning to read. Children cannot write, but they can draw pictures and perhaps write a letter to represent a word they are thinking. Children cannot practice real reading and writing, but they can look at books, handle books, tell a story from the pictures, and have experience with paper and pencil to represent their thoughts. In the whole-language

classrooms in this study, one would expect to see evidences at the readiness level of these activities. Reading is seen as books, not a workbook with blanks.

Shared reading. Research in the South Pacific, New Zealand, and Australia showed that, when shared reading was used with beginning readers, they made greater than expected gains in reading and listening (Cutting, 1983; Elley & Mangubhi, 1980).

As children are encouraged to participate actively during shared reading, they are acquiring oral language, developing comprehension, and gaining a sense of story (Blank & Sheldon, 1971; Bower, 1975; Fitzgerald, 1989; Gordon, 1989; Holdaway, 1986).

Reading aloud. Wells (1986) found that the most powerful and significant predictor of school achievement was the frequency with which parents read to and discussed stories with their children during the preschool years. Research on children who were successful readers before they went to school confirmed that they were read to frequently at home (Clark, 1976, 1984; Durkin, 1966, 1974a; Mason & Blanton, 1971; Morrow, 1983; Sutton, 1964; Teale, 1978; Walker & Kuerbitz, 1979; Wells, 1986). Thorndike (1973) studied reading in 15 countries and found that the best readers came from homes in which reading was respected and children were read to from an early age.

Early reading-aloud experiences have been associated with children's language development (Burroughs, 1972; Butler, 1980; Chomsky, 1972; Irwin, 1960; Templin, 1957; Thorndike, 1973). Children to whom stories are frequently read know how to handle books, know the appropriate direction for reading print, and can tell where to begin reading a book (Baghban, 1984; Doakes, 1981; Hoffman, 1982; Rhodes, 1979). Research by Cohen (1968) with second graders and replicated by Cullinan, Jaggar, and Strickland (1974) with children in kindergarten through third grade suggested that if children have not been exposed to stories at home, it is not too late to do so during their schooling.

Children who had been read to daily over a long period of time scored better on vocabulary, comprehension, and decoding ability than children in classrooms where reading aloud did not take place (Cohen, 1968; Feitelson, Kita, & Goldstein, 1986). Researchers have shown that, when teachers read aloud to the class, their reading style had an effect on children's comprehension of the text (Dunning & Mason, 1984; Green & Harker, 1982; Petermann, Dunning, & Mason, 1985).

Writing. A strong interrelationship exists among reading, writing, speaking, and listening as revealed in the research of Lehr (1981), Pearson and Tierney (1984), Stotsky (1984), and Wilson (1981). By receiving combined

instruction in both reading and writing, children become more proficient in both as each positively influences the other (Stotsky, 1984).

As children come to school, they bring with them knowledge about our system of writing (Ferreiro & Teberosky, 1982; Kontos, 1986). That first writing is often just squiggles and scribbles (Clay, 1979; Vygotsky, 1978). From this first idea of writing, children begin to represent their thoughts, moving from the whole to greater skill in mastering the parts in their efforts to express their thoughts and eventually to communicate to others.

Independent practice time. Sulzby (1985) concluded that an important part of the reading process is the child's selection of material to read and an opportunity for sustained silent reading. Research by Clark (1976) provided evidence that growth in reading is affected by the amount of reading children do. Research by Alington (1977) and Weaver and Shonkoff (1978) supported the belief that practicing reading is one of the best ways to improve instruction.

Other terms that have been given to the language-based model are the analysis-by-synthesis model (Gibson & Levin, 1975), the psycholinguistic approach (Weaver, 1986), the natural approach (Jewel & Zintz, 1986), the whole-language approach (Itzkoff, 1986), the whole-to-part

approach (Weaver, 1988), and the language-experience approach.

A teacher who teaches reading using the whole-language model says that children should first view reading not as a series of interlocking pieces, but as a whole. The wholeness of language is focused on first.

Summary

This chapter began with a historical review of kindergarten and the education of young children. Rousseau's child-centered environment and Pestalozzi's support of learning that is appropriate to the child's stage of development were the foundation on which Froebel founded the first kindergarten. Others followed his work, and soon kindergarten had taken hold and had begun to spread in the United States.

Researchers such as Piaget and Vygotsky continued to promote a kindergarten curriculum that focused on hands-on activities and put children in social situations to learn appropriate skills and to learn by sharing and experimenting with their environment. Research in the 1970s and 1980s on brain development supported the belief that the learning of young children should be based on their developmental level. In addition, this research emphasized that brain development may occur differently in males and females.

Finally, two major reading theories were explained. The first theory was identified as the skills/decoding model. This model emphasizes the sound-symbol relationship and views reading as learning a set of discrete skills. The second theory was identified as the whole-language model. This model focuses first on comprehension, with instruction based on the simultaneous interaction of meaning, syntax, and graphemes.

The whole-language philosophy and accompanying practices are relatively new in the United States. Many teachers, parents, and administrators are eager to see evidence that all children, both males and females, learn to read as well in classrooms using whole-language instructional practices as in non-whole-language classrooms. This researcher investigated the differences in learning within and between these two types of classrooms.

CHAPTER III

DESIGN OF THE STUDY

Introduction

This chapter includes a description of the research design, the population from which the sample was derived, and the data-collection procedures. The ethical considerations of the study are addressed, the testable hypotheses are stated, and the statistical procedures that were used to analyze the data are described. This study was designed to examine the effect of whole-language instruction in kindergarten on students' achievement in reading comprehension, as measured by a norm-referenced test at the end of second grade after two years of non-whole-language instruction during first and second grades. Also examined was the effect of the whole-language and non-whole-language instruction on males and females in each of the groups.

The researcher focused on two groups of second-grade students, who had initial reading instruction either with whole-language or non-whole-language practices in kindergarten. The kindergarten classes were selected to

meet criteria of teaching philosophy with the accompanying methodology.

The whole-language and non-whole-language methods were used exclusively for the kindergarten year with the students in each classroom. The students in each kindergarten classroom were developmentally similar, as evidenced by a districtwide screening assessment.

After the kindergarten year, both groups went to traditional non-whole-language classrooms for both their first- and second-grade years. During these years the Holt (1980) basal reading series was used for all the students' reading instruction.

Design

A quasi-experimental design was used in this study, measuring the long-term effect on reading comprehension when two different instructional practices were used with children during their kindergarten year. The kindergarten students in this study were taught with either whole-language or non-whole-language instructional practices during kindergarten and then were instructed with non-whole-language practices during first and second grade.

At the end of second grade, reading comprehension subtest scores from the Stanford Achievement Test (SAT) were used to compare program effect on comprehension and gender differences in comprehension.

The participants in this study were in kindergarten during the 1987-88 school year. The control group and the experimental group had approximately the same half-day schedule, which consisted of two and one-half instructional hours. In addition, both the control group and the experimental group met districtwide entrance standards and objectives. The level of parent involvement, socioeconomic status of the students in each of the schools, the school size, and the ethnic composition were similar in nature for both groups.

Care was taken in selecting the two groups of kindergarten students who would be taking part in this research so that both the whole-language and non-whole-language groups were as similar as possible in their developmental level and socioeconomic status. The experimental group had whole-language instructional practices, as defined in Chapter II, provided by the teacher during the kindergarten year. The control group had non-whole-language instructional practices, as defined in Chapter II, provided by the teacher during the kindergarten year.

Experimental Group

The experimental group or **whole-language** group comprised 36 students who were instructed in kindergarten with whole-language practices. The experimental group had the following composition:

	Number	Age Range
Males	18	7.7 to 8.7
Females	18	7.7 to 8.7

The classroom teacher was well experienced and trained to work with the whole-language group. She was a seasoned educator with 16 years of teaching experience. Her master's degree was in early childhood education. In addition, she had received an early childhood endorsement from the State Department of Education. With this specialized training she had a good command of the growth and development needs of preprimary and primary students. She had developed what she called a whole-language approach to beginning reading instruction that matched the students' developmental level. Through monthly observations and conversations with the teacher, it was recorded that approximately an hour and a half per day was spent on reading activities.

From the philosophical positions described in Chapter II, this teacher was observed during monthly visits using the following whole-language activities: shared reading, reading aloud, writing, and independent practice time for both reading and writing. These whole-language activities are crucial in a whole-language classroom. They are the readiness procedures and the very base of initial reading instruction. Students need to know reading is for meaning

and that letters make sounds and words and when put together they produce text that has meaning.

The following is a description of the whole-language activities seen in the whole-language kindergarten during those observations.

Shared reading. The texts used for instruction were a variety of real stories and expository books. Materials did not include vocabulary-controlled stories found in basal textbooks. The teacher engaged the children before reading the stories, while reading the stories, and after reading the stories with an assortment of activities.

The teacher agreed with Johnston (1983) that prior knowledge is an effective predictor of reading comprehension. Prior knowledge is all the information and all the experiences a reader has in memory that are activated during reading. Bruce (1981) contended that, to understand a piece of literature, children must activate what they know about people and their relationships. If there is little prior knowledge, the reader tends to rely heavily on the text and picture clues to build meaning. When there is an over-reliance on text, efficient reading is inhibited (Spiro & Taylor, 1980).

Because of her belief that comprehension is assisted by activating prior knowledge, the teacher would assess the group's prior knowledge by asking questions and finding out what information the children already knew.

She then helped the children build on that prior knowledge to help them understand stories.

During shared reading, the teacher orally shared stories with the children and pointed to the words. Children were on the floor near the teacher and a big book. (To accommodate the idea of sharing a book with the whole class, such as a parent and child might do at home, Don Holdaway of New Zealand helped develop the idea of using big books. Big books are larger than standard-size books, with enlarged print and illustrations.) As the teacher read the big book, the children were encouraged to predict what might come next, based on the visual evidence and their past experiences. The group read the story through several times all together, with everyone participating.

The teacher stated that she used shared reading to help children make the connection that the print represented words and that there was an association between the letters and sounds.

Activities that followed the readings were centered on the text, focusing on parts of words that were alike or different, the punctuation, beginning and ending sounds, story structure, and how the illustrations were related to the text. Discussion and teaching were done with these familiar texts through various encounters, and

comprehension instruction was an integral part of the classroom interactions.

An after-reading activity the teacher used to assist comprehension was retelling of stories read during shared reading. The children told what they remembered either orally or in writing, with pictures and some words or letter representation. At times, they also acted out the stories themselves or with puppets and props.

Language-experience activities were also a part of the activities accompanying shared reading. The children dictated a story of a shared activity, and the teacher recorded it on chart paper for all to see. The experiences were first talked about with the teacher and then written down together with the children in order to create reading materials that were then read and reread.

Reading aloud. The teacher read aloud to the class almost every day. This was done with the children on the floor around the teacher. The teacher used whole pieces of text that were enjoyed for their story line. Stories were not taken from a collection of stories or from a basal textbook. In addition to authentic established literature, the students read and worked with many stories they created.

Daily writing. A part of every day in the classroom was spent on journal writing. The teacher believed, as did Ferreiro and Teberoskey (1982) and Kontos (1986), that

children bring with them to school a knowledge about our system of writing, and she used that knowledge to integrate their reading and writing. Journal writing and other writing activities by the children were most often pictures conveying their ideas; some children eventually used letters and some words to express themselves. Sometimes the teacher wrote words on the pictures for the children.

Practice time. There was a writing center, a library area, a listening area, and a story activity center. Through these centers, the children were able to share, react, and experiment with print. Each day the teacher provided an opportunity for the children to use and practice the new skills they were learning. They were given time to read and write with ample books, paper and pencils, crayons, and markers available.

Learning centers were a part of the design of this classroom, with children at the reading area, writing area, listening area, and story activity area at least once each day.

Control Group

The control group or **non-whole-language** group comprised 41 students who were instructed in kindergarten with non-whole-language techniques. The control group had the following composition:

	Number	Age Range
Males	20	7.9 to 9.3
Females	21	7.4 to 8.8

The non-whole-language teacher had a traditional elementary teacher background. Her training was general in nature, and although she was an experienced teacher, her experience was grounded in the philosophy that reading instruction that followed the basal text's teaching suggestions was the most effective method for teaching reading. Her understanding of whole-language at the time of this study was that one taught English, spelling, and reading using only one textbook or workbook. The classroom teacher had 18 years of teaching experience. She had her master's degree and an additional ten hours of training. She had a background in upper-elementary classrooms and was experienced in basal reading instruction.

Through monthly observations and conversations with the teacher, it was recorded that approximately an hour and a half per day was spent on reading activities.

From the philosophical positions described in Chapter II, this teacher was observed during monthly visits using the following non-whole-language activities: reading a story aloud, engaging children in activities related to the "letter for the week," and Holt basal instruction with

accompanying workbook assignment. This non-whole-language instruction breaks reading instruction into isolated skill areas. Students learn reading by building one isolated skill into another isolated skill. Once the decoding component has been mastered, students are expected to integrate the individual skills and read with meaning.

The following is a description of the non-whole-language activities seen in the non-whole-language kindergarten during those observations.

Story reading. The teacher began each day with a story she read aloud to the children. The teacher stated that she read to the children because they liked hearing the stories and she thought they did not have stories read to them very much at home. These stories were read and enjoyed by the children. No additional activities were done after reading the stories.

Letter for the week. After hearing a story, the class talked about the letter that was the focus of the week and did an accompanying activity. The teacher helped the children memorize the alphabet, and they sang the alphabet song and pointed to the letters. They did activities to reinforce the letter sounds and names and focused on a different letter each week. The children were tested on the letters they were able to name and sound.

Holt basal instruction. During monthly observations, reading instruction was observed to be to the whole group. Through the basal program, reading was taught as the sum of parts, where individual skills were emphasized.

The teacher used the Holt (1980) basal reading materials adopted by the school district. This included a readiness workbook stressing letters and sounds. During basal instruction, the teacher tended to use the teacher's manual and followed the sequence of events prescribed by the manual. The learning-to-read activities focused on tasks such as workbook and worksheet pages for letter-sound correspondence, sight-word development, and beginning story reading. A beginning sight vocabulary was stressed. The teacher used flashcards, and the children read simple stories using the words.

A portion of the day was available for free play, when children could play in the house area, build with the blocks, paint at the easel, or experiment at the water and sand tables. Available during this time also were ample books and writing materials.

First-Grade Reading Instruction

After the kindergarten year, all the children in both groups went to first-grade classrooms with experienced teachers and were taught with the Holt basal reading series. This approach followed an extension of the

approach used with the non-whole-language children, where reading was recognition of the words in sentences and stories. Reading was taught as the sum of parts, where individual skills were emphasized and the traditional basal and accompanying workbook were used. The texts consisted of short stories with controlled vocabulary. There were story questions at the end of each selection and accompanying skill workbook pages and support skill ditto sheets. If students had difficulty, reteaching worksheets were available. Teachers reported that they generally followed the teaching sequence in the manual.

Students were placed in reading levels that matched their skill level, with as many as eight levels in the first grade and as many as six levels in the second grade in some classrooms. Students were taught in homogeneous groups with others in their reading level. Students were tested on the skills taught after each unit in the basal. Scores were reported to the principal and reading consultant at each building. Districtwide progress reports were made four times a year to monitor students' progress in the reading program.

Second-Grade Reading Instruction

During the second-grade year, the children were once again taught by experienced teachers who taught reading as the sum of parts, where individual skills were emphasized

and the traditional basal and accompanying workbook were used. Teachers reported that they generally followed the teaching sequence in the manual. The texts consisted of short stories with controlled vocabulary. There were story questions at the end of each selection and accompanying skill workbook pages. Students were placed in reading levels that matched their skill level. Children were taught in homogeneous groups with others in their reading level. They were tested on the skills taught after each unit in the basal. Scores were reported to the principal and reading consultant at each building. Districtwide progress reports were made four times a year to monitor progress in the reading program.

Districtwide testing with the Stanford Achievement Test (1982) was done in spring 1990. All second graders in the district were a part of the testing. The data used for this research were from the reading comprehension subtest of that instrument. Test data were collected from classroom summary results after being scored by the company and returned to the district. The data collected were in the form of normal curve equivalents (NCEs).

Research Design Basis

The design of this study involved looking at the longitudinal data to determine the effect on reading

comprehension of students who had an initial whole-language treatment and those who had an initial non-whole-language treatment during their first year in school. This study was modeled after other longitudinal studies that looked at initial instruction and first learning and the residual effects. These studies are of two types. One type looks at children who are given a treatment as compared to those who are not given a treatment. A second type of study looks at the use of two different treatments. Both types of studies support the effect of early learning on later achievement.

The first type of study looks at young children who are either given some kind of treatment or are not given a treatment--for example, looking at children who have attended kindergarten and/or preschool or have not attended kindergarten and/or preschool and determining what effect that treatment has had on their later learning. This treatment is so influential at this particular age that it affects success at a later point in their education.

An example of this type of study is the High Scope Foundation's Perry Preschool Study (Schweinhart, Wiekart, & Larner, 1986), an ongoing study that began in 1962. The purpose of the study has been to explore the longitudinal effect on the participants and nonparticipants in a high-quality preschool project. Data have been collected at

varying intervals on these youngsters since that initial treatment. The data have indicated the positive effect of preschool on students' later learning success.

Another example of this type of study is the longitudinal research by Creech (1982), who looked at the reading achievement of first- through fifth-grade students with and without kindergarten experience. Results showed that in grades 2 through 5 all children who were given a kindergarten experience were more successful in reading than those who did not attend kindergarten.

Howard (1987) investigated three groups of kindergarten-age students. She looked at the longitudinal effect on children who had no kindergarten, those who had private kindergarten, and those who had public school kindergarten. She found that students who attended kindergarten scored significantly higher on the California Achievement Test through the third grade than the students who did not attend kindergarten before first grade. This research confirmed the findings of Lazar and Darlington (1979) and Schweinhart and Wiekart (1980), who indicated that significant differences in achievement existed between students who had kindergarten and/or preschool attendance; these gains continued into later grades.

Lazar and Darlington (1982) looked at 12 original longitudinal studies to determine whether early experience

made a difference in school performance. They found that children who were enrolled in early childhood programs were more successful than the controls. They were less likely to be enrolled in special or remedial classes or to be retained in a grade. They were more likely to graduate from high school and to enroll in postsecondary education.

Based on these types of longitudinal studies, the researcher assumed that the treatment received by the children in this study during their kindergarten year had affected their subsequent reading performance at the end of second grade.

The second type of study is one that looks at young children who are given various types of treatments. Such studies investigate which treatment has the most effect on later learning. This research on the effects of type of program suggests a possible pattern of cause and effect that reaches from early childhood into later school success.

This type of longitudinal study was done by Miller and Bizzell (1984). They followed the progress of children who in 1968-69 attended four different programs: Bereiter-Engelmann's Direct Instruction, Susan Gray's DARCEE, Montessori, and traditional prekindergarten. There was also a control group, which received no program. Findings indicated that, indeed, the type of program received can affect later success. The authors also found

that the type of program affected performance of males and females differently.

Stahl and Miller (1988) conducted a review of research, in which they compared the effectiveness of two different types of beginning reading programs--basal and whole-language. They found that the type of program affected students' success in reading. This research summary suggested that whole-language is more effective in kindergarten when used as a readiness program and that basal readers may be more effective as a beginning reading program.

Design of the Current Study

On the basis of studies that looked at the effect of different types of instruction during beginning learning, the researcher designed the current study, in which she examined the effect that whole-language (experimental group) or non-whole-language (control group) instruction had on reading comprehension. Investigated was the effect of initial reading instruction during kindergarten on performance in reading comprehension at the end of second grade. Performance by gender was also investigated. After the initial reading treatment during kindergarten, all children received basal reading instruction with the Holt reading series during their first- and second-grade years.

The design of the current study was as follows:

1. Kindergarten sample identified.

2. During kindergarten:

   * Control group given whole-language instruction.

   * Experimental group given non-whole-language instruction.

3. During first grade, both groups given basal reading instruction.

4. During second grade, both groups given basal reading instruction.

5. Stanford Achievement Test given in spring of second-grade year.

6. Collection of data.

7. Analysis of data.

Population and Sample

The population for this study comprised students in a northern Michigan community with a total school district population of about 10,000 students. About 5,000 of those students attended the district's 15 elementary schools, which had a kindergarten through sixth-grade configuration.

All entering kindergartners in the district are screened for entrance with the Gesell test. This test instrument is used to evaluate a student's ability to perform designated tasks, and a developmental age is

assigned to the student. This age indicates the child's level of development, no matter what his/her chronological age. The age assigned is indicative of what the majority of children that age can do. It reflects what the child is able to do as compared to the majority of students at that chronological age. The final evaluative score is given in years and months and reflects the child's developmental level.

The district guidelines recommend that children who score 4.5 years old and above developmentally should attend kindergarten and that those who score below 4.5 years old developmentally should not attend the district's kindergarten program. Parents of those children who are not developmentally ready for kindergarten are encouraged to give their children another year before attending the public schools. That year might be spent in a private preschool program or at home. Therefore, the students in the two kindergarten classes in this study were at a 4.5-year-old developmental level and above.

The students were selected from two schools for this study. Schools A and B had many common characteristics, as is evidenced in the following descriptions.

School A--Control Group

At the time of the study, School A, which had the kindergarten teacher who used the non-whole-language

philosophy, had a full-time, experienced principal who had been in the district for 20 years. The school had a total enrollment of 337 students. The student-teacher ratio was within the 25:1 ratio defined by the school district. The materials budget was set by the district at $38 per pupil. There were 14 teachers on staff, with an average of 16 years of experience. The average degree was a bachelor's degree plus 22 hours.

Inservice opportunities were available to and taken advantage of by the staff. Eighty-five percent of the staff had had effective-teacher training, and 87% had had district-provided reading-instruction inservices.

The instructional program comprised districtwide objectives, which teachers used in their lesson planning. In addition to the district objectives, the basic skill areas of reading and math used a districtwide basal textbook and accompanying workbooks and practice sheets.

There was a high level of parental involvement, as evidenced by the large numbers of parents involved in the Parent-Teacher Association activities; 26% of the parents belonged to the Parent-Teacher Association. High parental involvement was also evidenced by the 96% attendance rate at parent-teacher conferences.

The socioeconomic level of School A was middle class, as evidenced by the average homes in the area selling for approximately $75,000. School A was not eligible for

Chapter I services. The district's free and reduced-cost lunch level, which determined eligibility for Chapter I services, was about 20%. Eight percent of the students at School A were eligible for free and reduced-cost lunches. This school would be considered to be a middle-income school; the other 14 schools in the district fell above or below it.

There were 41 Caucasian students in the experimental group; 20 were in the morning session, and 21 were in the afternoon session. Students were in a regular kindergarten program, which met five days a week for one-half of the day.

School B--Experimental Group

At the time of the study, School B, which had the kindergarten teacher who used the **whole-language** philosophy, had a full-time, experienced principal who had been in the district for 22 years. The school had a total enrollment of 326 students. The student-teacher ratio was within the 25:1 ratio defined by the school district. The materials budget was set by the district at $38 per pupil. There were 14 teachers on staff, with an average of 15 years of experience. The average degree was a bachelor's degree plus 25 hours.

Inservice opportunities were available to and taken advantage of by the staff. Ninety percent of the staff

had had effective-teacher training, and 85% had had district-provided reading-instruction inservices.

The instructional program comprised district objectives, which teachers used in their lesson planning. In addition to the district objectives, the basic skill areas of reading and math used a districtwide basal textbook and accompanying workbooks and practice sheets.

There was a high level of parental involvement, as evidenced by the large numbers of parents involved in the Parent-Teacher Association activities; 23% of the parents belonged to the Parent-Teacher Association. High parental involvement was also evidenced in the 98% attendance rate at parent-teacher conferences.

The socioeconomic level of School B was middle class, as evidenced by the average homes in the area selling for approximately $69,000. School B was not eligible for Chapter I services. The district's free and reduced-cost lunch level, which determined eligibility for Chapter I services, was about 20%. Seven percent of the students at School B were eligible for free and reduced-cost lunches. This school would be considered a middle-income school; the other 14 schools in the district fell above or below it.

There were 36 Caucasian students in the control group; 18 were in the morning session, and 18 were in the

afternoon session. Students were in a regular kindergarten program, which met five days a week for one-half of the day.

Data Collection

The comprehension subtest of the Stanford Achievement Test (1982) was used to measure the reading comprehension of students at the end of their second-grade year. The test had been administered to the identified students when they were tested as part of the school district's testing program. The researcher obtained the SAT scores from the children's classroom performance summary information sheets, which each teacher received when test results were returned. The Stanford Achievement Test level used was Primary 2 Form E, 1982.

Because the data needed for this study were from the results of district-administered tests, approval to use the test data was sought from the assistant superintendent for instruction. A letter of request was sent, and approval was given (see Appendix).

The Stanford Achievement Test is designed to reflect what is being taught throughout the United States. The test yields normative data that are descriptive of achievement in schools across the nation and has statistical reliability and validity. The SAT is a nationally norm-referenced achievement test whose scores

are derived from the raw scores and includes percentile ranks, stanines, grade equivalents, scaled scores, and content cluster ratings. Norm-referenced scores are used to compare a student's performance across subtests or to compare a student's performance with the national standardization sample. The data used for comparison were the National Normal Curve Equivalent (NCE) scores for the Reading Comprehension subtest. NCEs are derived from percentile rank. The NCE normalizes the percentile rank scale, making it possible to manipulate test data in various ways. There is a direct, fixed relationship between NCEs and percentile ranks. Because the data were going to be manipulated, NCEs were used in data collection.

Each spring the SAT is administered to all children in grades 2 through 6 throughout the district. The test is given as part of the district's standard testing program. Testing takes place within the normal classroom setting; the classroom teacher administers the test. Because the test is norm-referenced, it was administered in accordance with the directions accompanying the instrument. The tests were machine scored by the company, and data were returned to the district. The individual students' scores were then collected for further evaluation.

Ethical Considerations

Consideration was given to ensure that the study participants would be afforded treatment in accordance with the American Psychological Association's (1985) Ethical Principles in the Conduct of Research With Human Participants. The children involved in this study were at minimal risk. There was no threat of physical or mental discomfort. Information from tests was confidential.

Testable Hypotheses

The following hypotheses, stated in the null form, were addressed in this study:

> Hypothesis 1: There is no significant difference between the mean reading comprehension test scores of second-grade students who were initially instructed during their kindergarten year with whole-language techniques or non-whole-language techniques, when measured at the end of their second-grade year with a norm-referenced test.
>
> Hypothesis 2: There is no significant difference between the mean reading-comprehension test scores of male and female second-grade students who were instructed with whole-language techniques or non-whole-language techniques during kindergarten, when measured at the end of their second grade year with a norm-referenced test.

In addition to the two hypotheses, the study was designed to address the findings that related to the third research question mentioned in Chapter I. The third research questions dealt with the actual practices used in kindergarten and their effect on later learning. In other words, does what is done in kindergarten under the rubric

of formal learning actually affect later learning? On the basis of the answers given for the two null hypotheses, the researcher was able to answer the third research question.

Data Analysis

The hypotheses were tested using a two-way analysis of variance (ANOVA). The two factors were gender and program. This test was used to analyze population variance in order to make inferences about the population. An F-statistic was used for the significance test; the .05 alpha level was the criterion for significance. The two-way ANOVA was used because it is more efficient in studying two factors simultaneously rather than separately. Because the sample was small, this test gave a better understanding of the relationship.

Preliminary analyses included examination of means, standard deviations, and normal quartile plots. A prediction about the SAT scores was made, given the two factors--program and gender. The outcome (SAT score) was the Y variable, and the two factors (gender and program) were the X variables.

Summary

This chapter contained a discussion of the study design. Four kindergarten classrooms from two schools with two teachers using two different techniques were

analyzed, based on data gathered from a norm-referenced test that students took at the end of their second-grade year. The statistical-analysis technique used in testing the hypotheses was two-way ANOVA, which included the use of an F-test and p-values. Main effects of program and gender on SAT scores were assessed.

The results of the data analyses are reported in Chapter IV.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

This chapter contains an explanation of the data analyses in accordance with the research design outlined in Chapter III. A brief explanation of the statistical techniques that were used is followed by the findings of each data analysis and a related interpretation. First, the characteristics of the sample are discussed.

Characteristics of the Sample

The researcher examined four classes of kindergarten students who had remained together in school through the spring of their second-grade year. The original group consisted of 77 students. At the end of these students' second-grade year, data were available on 49 of the original 77 students. Of the original 36 children in the whole-language (experimental) group, scores were available for 20 students. Of the original 41 students in the non-whole-language (control) group, scores were available for 29 students.

Two of the four classes were from School A (control) and were instructed by the same teacher. The other two

classes were from School B (experimental) and were instructed by the same teacher. Students in School A were instructed with non-whole-language (control) methods during their kindergarten year, whereas students in School B were instructed with whole-language (experimental) methods during their kindergarten year. All children were screened for kindergarten with the Gesell School Readiness Test before entering school.

Both schools were in the same Northern Michigan school district, contained few minority students, were approximately the same size, and had about the same socioeconomic status as evidenced by property values.

Table 1 shows the distribution of males and females in both the whole-language and non-whole-language groups.

Table 1.--Distribution of whole-language and non-whole-language participants by gender.

	Whole-Language	Non-Whole-Language	Total
Male	10	16	26
Female	10	13	23
Total	20	29	49

Table 2 shows the average age of the participants in each group at the time of testing at the end of second grade. The whole-language group had an average age of

8.162 or 8 years 2 months. The average age of the non-whole-language group was 8.402 or 8 years 4 months.

Table 2.--Average age of whole-language and non-whole-language participants at time of testing in second grade.

Group	n	Mean Age	Std. Dev.	Std. Error
Whole-language	20	8.162	.386	.086
Non-whole-language	26	8.402	.484	.095

Analysis of Hypotheses

Hypothesis 1: There is no significant difference between the mean reading comprehension test scores of second-grade students who were initially instructed during their kindergarten year with whole-language techniques or non-whole-language techniques, when measured at the end of their second-grade year with a norm-referenced test.

This hypothesis was tested with a two-factor analysis of variance (ANOVA). The two factors were gender and program. The test statistics for program ($p = .7126$) and gender ($p = .2302$) were well above the alpha = .05 significance level. Table 3 shows these data.

The results indicated that neither program nor gender had an effect on the mean test scores of the experimental and control groups. Based on these results, the null hypothesis was not rejected. Therefore, it cannot be concluded that a statistically significant difference existed between the means of the two groups.

Table 3.--ANOVA table for the interaction between program and gender.

Source	df	Sum of Squares	Mean Square	F-Test	p-Value
Program	1	42.470	42.470	.137	.7126
Gender	1	457.271	457.271	1.480	.2302
Program*gender	1	4192.199	4192.199	13.564	.0006
Error	45	13908.014	309.067		

Hypothesis 2: There is no significant difference between the mean reading-comprehension test scores of male and female second-grade students who were instructed with whole-language techniques or non-whole-language techniques during kindergarten, when measured at the end of their second grade year with a norm-referenced test.

The interaction between program and gender indicated a very high level of significance, as can be seen in Table 3. The probability of being wrong--that there was not an interaction--was very low. Gender and program together had an effect on the mean of the scores.

When the data were disaggregated and males and females were studied in separate groups, there was evidence of a statistically significant difference.

Table 4 shows the means of males with whole-language instruction as compared to the means of males with non-whole-language instruction. It also shows the means of females with whole-language instruction as compared to the means of females with non-whole-language instruction. It

can be seen that the difference in means for males was about 17 and that the difference in means for females was about 20. It can also be seen that the high performance by each gender was in opposite programs; that is, females with whole-language instruction scored higher than their counterparts with non-whole-language instruction, and males with non-whole-language instruction scored higher than their counterparts with whole-language instruction.

Table 4.--Program-gender incidence table.

Program	Gender		Total
	Male	Female	
Whole-language	10	10	20
	44.300	69.390	56.845
Non-whole-language	16	13	29
	61.263	48.631	55.600
Total	26	23	49
	54.738	57.657	56.108

The opposite performance of males and females in each program is shown in Table 5.

Table 5.--Program and gender high and low performance grid.

Program	Gender		Total
	Male	Female	
Whole-language	Low	High	56.845
Non-whole-language	High	Low	55.600
Total	54.738	57.657	56.108

The differences in performance between females and males in the two programs, when viewed exclusively, led to the following analysis. A one-way ANOVA of the program means of females resulted in a p-value of .0063. These results showed a statistically significant difference. Analyzing the program means of males with a one-way ANOVA resulted in a p-value of .0335, which was statistically significant. Table 6 shows the results of this data analysis. Analysis by gender indicated a highly significant difference in means between females and males in the two programs.

This interaction between program and gender, with results showing significance, resulted in a rejection of the null hypothesis of no significance.

Upon investigating this interaction, an analysis of covariance (ANCOVA) was done to look at the interaction of age with type of program and gender. Table 7 indicates

that age was not significant. With age eliminated, program and gender still had an interaction.

Table 6.--Analysis by gender.

Source	df	Sum of Squares	Mean Square	F-Ratio	Prob.
Females					
Program	1	2435.78	2435.780	9.2098	.0063
Error	21	5554.02	264.477		
Total	22	7989.80			

Whole-language group	Non-whole-language group
n = 10	n = 13
Mean = 69.390	Mean = 48.631
Median = 71.100	Median = 44.700
Std. dev. = 19.336	Std. dev. = 13.506
Range = 58.200	Range = 52.800

Males					
Program	1	1770.62	1770.620	5.0868	.0335
Error	24	8354.00	348.083		
Total	25	10124.60			

Whole-language group	Non-whole-language group
n = 10	n = 16
Mean = 44.300	Mean = 61.263
Median = 40.450	Median = 57.650
Std. dev. = 16.652	Std. dev. = 19.762
Range = 50.700	Range = 63.400

Table 7.--Analysis of variance for interaction of program, gender, and age.

Source	df	Sum of Squares	Mean Square	F-Ratio	Prob.
Program	1	26.5616	26.5616	0.08976	.7660
Gender	1	176.2540	176.2540	0.59564	.4447
Program* gender	1	4638.4500	4638.4500	15.67500	.0003
Age	1	387.8810	387.8810	1.31080	.2589
Error	41	12132.1000	295.9050		
Total	45	17141.0000			

Summary

The purpose of this chapter was to analyze and report the data collected in this study. Characteristics of the sample were discussed. A two-factor ANOVA was used to determine whether gender or program was significant in determining means. The two-way ANOVA failed to provide the data necessary to reject Null Hypothesis 1--that the whole-language mean test score would equal the non-whole-language mean test score.

The p-value for the interaction between the two factors, gender and program, did show statistical significance. This led to a factor-by-factor analysis of the two factors: gender and program. The differences in program means for the males and females were analyzed exclusively and showed a significant difference in males' and females' performance depending on the program. The

non-whole-language program had high male and low female performance. The whole-language program had high female and low male performance. This caused Null Hypothesis 2 to be rejected as there was a significant difference between the mean reading-comprehension scores of males and females depending on the program in which they had instruction.

An ANCOVA was done to investigate the effect of age. No statistical significance was found.

Chapter V contains a summary of the study, conclusions based on the major findings, implications, and suggestions for further study.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND SUGGESTIONS FOR FURTHER STUDY

Summary

The purpose of this study was to determine whether students at the end of second grade who had been taught with whole-language reading instructional methods during their kindergarten year would have better reading-comprehension skills than those students taught with non-whole-language reading instructional methods during kindergarten. Also, the study was designed to look at the difference, if any, in the comprehension of males versus females at the end of second grade, depending on the initial instructional methods used in kindergarten.

Procedures

The original group of 77 kindergarten students were from two schools that were similar in composition. All of the kindergarten students enrolled in the two schools were included in the original study. The students were placed into one of two sections at each school on a random basis. At one of the schools, both of the kindergarten sections used a whole-language philosophy and strategies for the

initial readiness reading instruction. In the other school, the two sections used a traditional reading readiness program for their reading instruction. Following the year of kindergarten instruction in one of the two mentioned reading approaches, students attended traditional first- and second-grade classes and used identical reading programs for their reading instruction. At the end of their second-grade year, there were 49 of the original 77 students left to review. All of these students were tested in the spring of their second-grade year. Of the 49 students left, 20 had been instructed with whole-language methods, and 29 had been instructed with non-whole-language methods during their kindergarten year. Following their kindergarten experience, all students were placed in traditional first-grade and second-grade reading programs that used the district-provided basal reader to guide the instructional program.

Reading comprehension was measured by the nationally normed Stanford Achievement Test (SAT). This test was administered at the end of the second grade. The data for this study were from the reading comprehension subtest of the SAT.

The data were gathered near the end of the students' second-grade year in April 1990. All second- through sixth-grade students in the district are tested every year at this same time. This test was administered by the

classroom teacher, who followed the directions provided by the Psychological Company. The data were taken from the summary sheets provided by the Psychological Company and distributed to all teachers in the district.

Findings and Conclusions

The findings and conclusions are presented under two categories that deal with the results of this study. The first area focuses on the comparative results of students' reading scores within a whole-language classroom and a non-whole-language classroom. The second focuses on the differences in scores between genders within each kindergarten reading program.

Results of two-factor analysis of variance. A two-factor analysis of variance indicated that, in the students' second-grade year of school:

1. There was no statistically significant difference (at the .05 level) between Group A's and Group B's mean reading comprehension scores.

2. There was no statistically significant difference (at the .05 level) between the total female and total male mean reading comprehension scores.

The test data failed to reject the null hypothesis. The results indicated that there was no statistically significant difference between the mean standardized test

scores of kindergartners instructed with whole-language and non-whole-language approaches.

Discussion: When examining these results, it is important to remember that the children were being compared as a total group. Also important to note is that the students in both Group A and Group B were alike in developmental level. The children were screened before placement in kindergarten as 4.5 years old and above developmentally. The children also came from the same socioeconomic level and had the same school environment. After kindergarten, both groups of children had two years of basal reading instruction. Group A, the control group, had non-whole-language instructional methods during kindergarten, and Group B, the experimental group, had whole-language instructional methods during kindergarten.

The results did not show that there was any advantage to either a whole-language or a non-whole-language environment. The results are supported by the research of Devine (1989), who stated that it is impossible to say with any certainty that one approach is better than another approach.

However, the data from this study are refuted by a report published by the Florida Educational Research and Development Council (Karsten & Clarke, 1989), which reported that students who were taught using

whole-language methods outperformed their peers on meaningful aspects of reading by a substantial margin.

Differences in the results of these studies make many researchers and educators skeptical. Johnson and Baumann (1984) supported this skepticism and offered a note of caution to educators about the "best" method to use in initial reading instruction. After a thorough examination of research findings, Johnson and Baumann concluded that the amount and results of the research available do not emphatically prove either method to be superior. Mason (1984) supported their view and further stated that "teachers should take an eclectic attitude about materials, tasks, and procedures" (p. 537).

Many researchers and reading experts have evidence to support the various elements, processes, and strategies essential to beginning reading instruction. According to Chall (1967, 1983), phonics instruction produces better overall reading achievement than does a reading program that emphasizes reading. This is supported by the work of Johnson and Baumann (1984), Pflaum, Walberg, Karegianes, and Rasher (1980), and Williams (1985), which indicated that, on average, children who are taught phonics get off to a better start than those who are not taught phonics. As Anderson et al. (1985) stated, "Phonics facilitates word identification, and . . . fast, accurate word

identification is a necessary but not sufficient condition for comprehension" (pp. 37-38).

The recent synthesis done by Adams (1989) for the Reading Research and Education Center at the University of Illinois stated:

> Perhaps the most influential arguments for teaching phonics are based on studies comparing the relative effectiveness of different approaches to teaching beginning reading. Collectively, these studies suggest, with impressive consistency, that programs including systematic instruction on letter-to-sound correspondences lead to higher achievement in both word recognition and spelling, at least in the early grades, and especially for slower or economically disadvantaged students. (p. 1)

Researchers have only recently started to investigate specific activities and procedures in whole-language learning (Smith-Burke, 1987). There appears to be a need to look further at the difference between the meaning of whole-language and non-whole-language instruction, as the possibility exists that students who are showing meaningful gains in reading in whole-language are really being instructed in non-whole-language techniques (Anderson & Freebody, 1985).

Results of one-way ANOVA. Upon disaggregation of the data by gender, a statistically significant difference was found between the performance of males and females within each of the two programs. A one-way ANOVA indicated that there was a statistically significant difference between the performance of children depending on their gender and

the group in which they were instructed. This resulted in rejection of Null Hypothesis 2.

1. Group A (non-whole-language) males scored significantly higher (at the .05 level) than Group A females in reading comprehension.

2. Group B (whole-language) females scored significantly higher (at the .05 level) than Group B males in reading comprehension.

3. Group B females (whole-language) scored significantly higher (at the .05 level) than Group A females in reading comprehension.

4. Group A males (non-whole-language) scored significantly higher (at the .05 level) than Group B males in reading comprehension.

Table 8 displays the research findings.

Table 8.--Program performance.

Group A (Non-Whole-Language)		Group B (Whole-Language)	
Males:	High	Females:	High
Females:	Low	Males:	Low

To analyze further the program and gender interaction, an ANCOVA was done to consider the influence of age. The results indicated that, with age eliminated,

a statistically significant interaction existed (at the .05 level) between the type of instructional program used and gender of the students in that program.

Discussion: These data refute a substantial number of studies that indicated that girls as a group measured higher in reading achievement in the early grades than did boys (Heilman, 1961).

One of the first researchers to call attention to gender differences in school achievement was Ayres (1909). In his book he pointed out that boys repeated grades 13% more often than girls. Studies conducted by Wilson (1939), St. John (1932), and Strood and Lindqueist (1942) all showed that girls, on the whole, were superior to boys in reading comprehension.

Of particular relevance to this study, and in slight contradiction to earlier research, was Manning's (1966) study, which focused on three instructional approaches. All three approaches used a basal series for instruction; however, two of the approaches integrated an intensive skills program. The results of Manning's study showed that boys profited more from the treatments that used the intensive skills program along with the other components.

Evidence exists that supports that there are differences between males as a group and females as a group in learning to read in the primary grades (Manning, 1966; Preston, 1962; Robinson, 1955; Smith & Jenson,

1936). Researchers have investigated some of the factors that might influence performance. According to Hielman (1967), some factors that need to be considered when investigating the difference between males' and females' performance in reading are the intelligence of the students, their maturity level, the classroom environment, the emotional relationship with the teacher, the instructional methods and materials, and the level of motivation. The researcher did not measure these factors, but she does not deny that they may have come into play in influencing the reading comprehension results of this study on whole-language and non-whole-language instructional methods.

An additional factor that might have influenced the results of this study is based on recent brain research (Cherry et al., 1989; Zigler & Finn-Stevenson, 1987), which has suggested that, until they are about two years old, children tend to use the right hemisphere of their brain. The right hemisphere has the spatial information and visual imagery. Between two and four years of age, as children are developing their language skills, they begin to access the left hemisphere of their brain. At about four years old, children begin to use the left hemisphere in conjunction with the right hemisphere. The left hemisphere is responsible for receiving, processing, and producing language.

Some researchers have contended that entering kindergartners learn best through activities that engage the right hemisphere (Cherry et al., 1989). In the current study, girls performed better than boys in whole-language classrooms, where activities tend to engage the right hemisphere.

In kindergartens where academics are stressed, the children are being asked to access their left hemisphere. McNeil and Keislar (1963) found that, when beginning reading instruction relied exclusively on programmed materials, kindergarten boys' reading achievement was superior to that of girls. The current study seems to confirm this research as boys who were given reading instruction in the non-whole-language methods, which accessed their left hemisphere, performed better than girls who were given the same instruction.

The results of the present study seem to support the findings which contend that boys and girls learn differently. Although there are research findings which support that girls perform better than boys in the area of reading when using basal series and in almost all forms of instruction, the research of McNeil and Keislar (1963) and Manning (1966) showed that more progress in reading comprehension was made when males were instructed with programmed materials and skills instruction. Their

research, along with the findings of the current study, supported the use of the non-whole-language classroom environment as more effective for beginning male readers. Using whole-language methods, where discussion and oral language is the basis of reading instruction, may be more effective for females based on this research. The findings in the current study support the use of basal instruction for males and language-based instruction for females.

Third research question. Does what is done in kindergarten under the rubric of formal learning actually affect later learning? This question can also be addressed at this time, with the following conclusions being drawn:

1. Kindergarten should be taken very seriously because what is done in kindergarten can either work for or against the children in that classroom. What is done in that classroom during their kindergarten year can work either for or against children's future success in reading.

2. Decision makers in education, teachers, on the basis of this study, need to understand that individual differences override any kind of instructional design. Not all children learn from the same approaches, and perhaps the best instruction is to mix and match both the

whole-language and non-whole-language practices in order to meet the needs of all children.

Implications

In Chapter II the two main reading theories were defined. The skills/decoding model of reading, according to McCraken and Walcutt (1963) and Flesch (1955), focuses initially on the sound-symbol relationship (phonics), the skill-mastery process, and eventually on comprehension, with reading success based on recognition of sight words (Harste, 1977). The emphasis in the whole-language model of reading is on comprehension. According to Harste (1977), the whole-language model focuses on comprehension, while simultaneously accessing syntax and the sound-symbol relationship to assist meaning. The one common ingredient evident in both models is comprehension; the difference is the degree of focus on comprehension.

The findings in this study suggest that children learn to read in different ways. Some students might learn better with one method than another or with a combination of methods. For years, teachers' knowledge that different students learn in different ways has prompted the use of the multiple-media approach to learning (Dunn, 1990).

The results of this study challenge the method of using whole-language instruction exclusively for all

students. Although whole-language is an important theory of reading, it might not be the only or the best way to teach all children. Some children might learn better with an emphasis on the sound-symbol relationship and the learning of specific skills, as in the skills/decoding model. Others might learn best when the emphasis is on comprehension, as in the whole-language model. Some might need a combination of both theories in order to learn to read and comprehend.

For teachers to have the knowledge needed to provide appropriate reading instruction to students, inservice programs need to be provided for teachers on the different models of reading and on child development. The teacher would then have the knowledge necessary to select the appropriate reading practices to assure that all children can read and comprehend text. Teachers would also be able to vary their instruction to meet the needs of every child. This knowledge of reading, combined with the freedom to use whatever methods are needed, will result in children learning to comprehend text and enjoy reading.

Teachers currently are more likely to use non-whole-language methods because many textbooks contain sequential reading-skill instruction, with heavy reliance on convergent thinking and practice sheets. Many students in these programs learn to decode words and read at a literal level, but they experience difficulty with comprehension

at the inferential level. The addition of the whole-language focus on comprehension, with use of the components of reading aloud, using real text, sharing text together, and providing time to practice reading and writing, will add to the child's understanding and enjoyment of reading. Both the whole-language and non-whole-language approaches can be integrated to provide the necessary components of an effective reading program.

When teachers have knowledge of reading instruction, they can assess what students know and can be informed decision makers about what students need to know in order to be successful readers.

Recommendations

Recommendations for Practice

Based on the findings of this study and the conclusions reached as a result of the findings, the following recommendations are presented for consideration to those who are responsible for initial reading instruction:

1. Recent literature and research on the critical elements of effective reading instruction should be reviewed by teachers of beginning readers.

2. Teachers of reading should use whole-language methods along with non-whole-language methods to meet the

needs of males and females and their varied learning preferences.

3. Teachers should monitor students' progress so that they can effectively assess all students' reading gains and needs. Completing a book or doing an activity does not guarantee that learning has taken place.

4. Beginning reading programs should be examined, and philosophies and curriculum guidelines should be developed to meet the needs of children of varied abilities, learning preferences, and interests.

5. Classrooms should be staffed with teachers who have a strong reading background in both whole-language and non-whole-language methods and who can relate well with both male and female students in establishing a reading environment that meets their different emotional needs, interests, and learning styles.

Recommendations for Further Research

1. This study should be replicated with emphasis on assessment of gender differences of students instructed with whole-language and non-whole-language methods.

2. What occurs between the initial year of reading instruction and the succeeding years should be monitored and evaluated.

3. Comparison of students' cognitive developmental levels with instructional techniques used for beginning reading instruction would be helpful.

4. Future studies should include the factor of students' intelligence quotient.

5. Future studies should measure the emotional relationship with the teacher to determine whether that relationship influenced the difference in student performance.

6. Future studies should focus on the students' level of motivation. Females and males may be equally ready to read, but their success in reading may be based on their level of motivation.

7. Future studies should focus on the classroom environment and its effect on males and females. An environment that calls for students to access their left hemisphere as compared to their right hemisphere may have different effects on learning to read.

8. A follow-up study should be conducted with this same student sample when intelligence quotient can be added as a factor.

9. A follow-up study should be conducted with this same student sample at the end of sixth grade to determine whether the differences in reading performance between males and females were sustained.

APPENDIX

Learning Center
Central Elementary School
_____ Public Schools
May 1, 1990

Assistant Superintendent for Instruction
_____ Public Schools
_____
_____

Dear Mr. :

I am currently working on my doctorate and would like to use available data on some of our students for my research. These data will be kept in complete confidence and will be used for research information only.

Sincerely,

Karen L. Dornbos

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REFERENCES

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