A COMPARISON OF THE ORAL AND SILENT READING RATES AT THREE LEVELS OF DIFFICULTY OF FOURTH GRADE STUDENTS

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Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
DOCTOR OF EDUCATION
July, 1988

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ACKNOWLEDGMENTS

I wish to express my gratitude to Dr. Darrel D. Ray, Chairman of my Advisory Committee, for his constant guidance, support, and patience. His belief that I could complete this work helped to make its completion a reality.

I also with to express my appreciation to the members of the Advisory Committee: Dr. Michael Warner, Dr. Ronald Gamble, and Dr. Carolyn Bauer, for the time and assistance they gave to this research project.

I would like to thank the principals, teachers, and students of Perkins Elementary, Harrison Elementary, and Sunnyside Elementary for their willingness to be a part of this study.

To Rebecca Swearingen and Dorothy Douglas I owe a very special thanks. We shared many good times and endured some trying ones. Thanks for being there.

Finally, I would like to thank my husband, Terry, and my sons, Tommy and Terry Dale. They deserve much of the credit for the completion of this study, for it could not have been done without their support and encouragement.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

PRESENTATION OF THE PROBLEM

Introduction

For a long time reading researchers and practitioners have attempted to define and quantify appropriate oral and silent reading rates for students at specific grade levels. However, in reviewing the literature on rate, few studies were found which clearly established a rate criterion for successful performance at any level.

Durrell (1955) presented a chart listing acceptable rates for specific grade levels in his manual for the Durrell Analysis of Reading Difficulty. These rates were based on work that Durrell had done with children at the Boston University Educational Clinic; however, the results of this work were not published other than in the test manual. Other researchers (Aulls, 1978; Samuels, 1979) have set criterion rates as components of fluency studies, but it is unclear on what research these rates were based.

Reading researchers do agree that rate, along with comprehension and word recognition, is an integral part of fluent reading. La Berge and Samuels' (1974) automaticity theory indicated

that the relationship among rate, word recognition, and comprehension was a dependent one. A reader must be able to decode words automatically to achieve an adequate rate. Improved rate with less attention to word recognition leads to improved comprehension. Although researchers generally agree on the importance of rate, they do not agree on what constitutes adequate reading rates for specific grade level students.

As early as 1916, King's research indicated that good readers were not necessarily the fastest readers. This was reconfirmed by Daves' (1986) research with fourth and sixth grade readers. She found that some able readers do have poor reading rates even though their word recognition and comprehension skills were good. Since many of the present day reading tests and achievement tests are conducted within strict time limits, many good readers may not score as well as their reading ability would indicate.

Need for the Study

Research on reading rate has focused on many facets of rate, such as effects of difficulty, improvement of rate, and relation to comprehension. Little research has focused specifically on appropriate rates for specific levels of students when the relative difficulty is held constant. This present study focused on examining both oral and silent reading rates at three levels of relative difficulty.

Statement of the Problem

The purpose of this study was to describe the oral and silent reading behaviors of fourth grade students. Reading rates (oral and silent) for all levels of readers in the fourth grade were compared at three levels of relative difficulty. Rates were analyzed to determine if differences existed between oral and silent reading rates and to determine how rate was affected by changing levels of difficulty in the materials. Finally, by examining the rates, appropriate ranges of oral and silent reading rates at three levels of difficulty were presented.

Specifically, the study addressed the following questions.

1. Is there a difference in the oral reading rate at three levels of difficulty (Difficulty 1, Difficulty 2, Difficulty 3)?

2. Is there a difference in the silent reading rate at three levels of difficulty (Difficulty 1, Difficulty 2, Difficulty 3)?

3. Is there a difference between the oral reading rate and the silent reading rate at each of the three difficulty levels (Difficulty 1, Difficulty 2, Difficulty 3)?

4. What are the ranges of oral and silent reading rates at three difficulty levels (Difficulty 1, Difficulty 2, Difficulty 3)?

Hypotheses

Each of the following hypotheses was tested at the .05 level of significance. Each is presented in the null form.

1. There is no significant difference between the oral rate of reading a passage at Difficulty 1 and the oral rate of reading a passage at Difficulty 2 for fourth grade students.

2. There is no significant difference between the oral rate of reading a passage at Difficulty 1 and the oral rate of reading a passage at Difficulty 3 for fourth grade students.

3. There is no significant difference between the oral rate of reading a passage at Difficulty 2 and the oral rate of reading a passage at Difficulty 3 for fourth grade students.

4. There is no significant difference between the silent rate of reading a passage at Difficulty 1 and the silent rate of reading a passage at Difficulty 2 for fourth grade students.

5. There is no significant difference between the silent rate of reading a passage at Difficulty 1 and the silent rate of reading a passage at Difficulty 3 for fourth grade students.

6. There is no significant difference between the silent rate of reading a passage at Difficulty 2 and the silent rate of reading a passage at Difficulty 3 for fourth grade students.

7. There is no significant difference between the oral and silent rates of reading a passage at Difficulty 1.

8. There is no significant difference between the oral and silent rates of reading a passage at Difficulty 2.

9. There is no significant difference between the oral and silent rates of reading a passage at Difficulty 3.

Definition of Terms

Difficulty 1 refers to the reading level at which the reader has 95% word recognition and 71% comprehension.

Difficulty 2 refers to the reading level at which the reader has 91% to 94% word recognition and 60% to 70% comprehension.

Difficulty 3 refers to the reading level at which the reader has less than 91% word recognition and less than 60% comprehension.

Reading rate refers to the number of words read per minute.

Delimitations

Scope of the Study

This study included a description of the reading rates of seventy-two fourth grade students at three levels of difficulty and for both oral and silent reading. Third grade Total Reading scores on the Metropolitan Achievement Test (1986) were used as the screening instrument for entry level into the reading passages.

Each child was asked to read two passages (200-250 words) at each of three levels (Difficulty 1, Difficulty 2, Difficulty 3). One passage at each of the levels was read orally, and the other passage was read silently. Measures of rate, word recognition, and comprehension were collected on the oral passage. Only the measures of rate and comprehension could be collected on the silent passage.

Limitations of the Study

This study was limited to fourth grade students from schools in central Oklahoma who received parental permission (Appendix A) to participate in this study.

The results of this study are generalizable only to readers who are similar to those readers in this study.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Rate of reading has been investigated by a number of researchers. Studies have focused on a variety of issues related to rate of reading: the relationship of material difficulty and rate; the differences between oral reading rate and silent reading rate; definitions of rate; the role of flexibility in rate development; methodology to improve rate; and the relationship between the level of achievement of the reader and rate of reading.

This study examined the differences in rate of reading orally and silently at three levels of relative difficulty and investigated appropriate rates for fourth graders. Therefore, the review of the literature was focused on the relationship of material difficulty and rate, the relationship between oral reading rate and silent reading rate, and on definitions of rate by the use of criterion rates.

The Relationship Between Reading Rate and the Difficulty of the Reading Material

Many researchers have examined the relationship between material difficulty and reading rate. Difficulty has generally been measured by approximate grade level of student with level of material; in most cases all students, regardless of ability, read all selections.

The studies also differed in age level of readers, measurement of rate, and measurement of comprehension. These factors make it difficult to make generalizations across studies.

Tinker (1939) defined speed of reading as the rate of comprehension in each of the tests he used. These tests included Chapman-Cook Speed of Reading Test, Forms A and B; Minnesota Speed of Reading Test; Iowa Silent Reading Test, Part 1, Paragraph Meaning; Ohio State University Psychological Test, Part 5, Reading Comprehension Test; Minnesota Reading Examination; and Reading Scales in Educational Psychology. The tests were administered in the order listed, and ranged from easy to difficult.

The subjects of this study were 616 university students. The majority of these students were sophomores.

All of the tests except for the Chapman-Cook Speed of Reading Test were administered individually. A standard time limit was predetermined for each test. At the end of the standard time limit, the student was instructed to indicate the item he was on and, then, to continue the test. Three measures were collected: (1) number of

correctly completed items in standard time; (2) number of items attempted in standard time; and (3) total amount of time for the entire test.

For each test two correlations were calculated. The first correlation was between comprehension scores and total time. The second correlation was between comprehension scores and number of items attempted. Analysis of the correlations indicated that as the material became more difficult, the correlation became lower. This indicated to Tinker that the rate of work became less consistent. The correlations exhibited the sharpest decline for the Minnesota Reading Examination and Reading Skills in Educational Psychology. The decline might be attributed to the need for special background knowledge required to understand that particular material.

In a study to develop a test for measuring rate, Blommers and Lindquist (1944) examined the effects of material difficulty on the reading rates of high school juniors and seniors. The sample for this study was comprised of 672 students from four high schools. No information was provided as to number of males and females or to reading achievement levels represented.

All of the students took two forms of a researcher-developed comprehension and rate test. Both forms were administered in one sitting and required two hours and forty minutes of total reading time. The test was composed of paragraphs which varied in content and difficulty. The students were directed to complete each selection by the following procedure.

1. Write down the beginning time.

2. Read the purpose setting questions.

3. Read the paragraph to find the answer to the question.

4. Choose from four possibilities the statement that best answered the question.

5. Write down the ending time.

Eight types of rate scores were obtained from the test. These were all reported as McCall T-scores. An unadjusted rate score was derived from the raw time scores from all of the paragraphs read correctly by the student. Adjusted rate scores allowed the researchers to make the subscores for the more difficult passages comparable to the rate scores for the easier passages. S-rate scores were individual mean rates for successful passages. F-rate scores were individual mean rates for passages the student failed to correctly complete. A-rate scores were individual mean rates for all passages completed by each student. A Time-Limit Comprehension (TLC) score was determined by the number of correctly completed passages done in twenty minutes. A student's Working-Time (WT) score was the amount of time required to complete the entire test. Lastly, a Time-Limit Amount (TLA) score was determined by counting the number of words read in twenty minutes.

Relative to the relationship of material difficulty to rate of reading, Blommers and Lindquist drew two conclusions from their study. First, individual students tend to remain at the same rank in rate in a group regardless of the difficulty of the material

being read. Secondly, good comprehenders tend to slow down as the material becomes more difficult; poor comprehenders maintain the same rate in spite of increased difficulty.

Carlson (1949) examined the speed of reading for 330 fifth grade students as they read passages of varying difficulties. Initially, the students were administered The California Test of Mental Maturity, Elementary Series to determine a general level of intelligence. They were subsequently divided into three groups: upper level of intelligence, middle level of intelligence, and lower level of intelligence.

The students then took the Gates Silent Reading Tests, 3-8 in which their rate of reading for different purposes was assessed. These purposes were reading for general significance, reading to predict outcomes, reading to follow directions, and reading to note details. The results of these tests allowed Carlson to divide the students into fast readers and slow readers.

To examine the effects of passage difficulty on the students' speed of reading, Carlson developed three types of reading selections. Type I reading selections were at two levels of difficulty (intermediate grade and upper grade level) and were followed by fifteen comprehension questions. Type II reading selections were written at the third, fifth, and seventh grade levels. The fifteen comprehension questions were inserted at varying places in the selections so that students would have the freedom to use the reading material to locate answers to the

questions. Type III reading selections were patterned after traditional reading tests in that short reading passages were followed by comprehension questions. As with the Type II selections, those written for Type III were written at the third, fifth, and seventh grade levels. The speed of reading measure for all three types included the amount of time required to read the selections and to answer the questions.

The results of this study indicated that the difficulty of reading material determined the effectiveness of both fast and slow readers. When level of intelligence and level of difficulty were correlated, the results for middle and lower levels of intelligence were significant. There was little relationship between the increasing difficulty of the selections and the upper level of intelligence.

Carlson concluded that speed of reading was a very complex facet of reading and should be determined for each student on an individual basis so that consideration could be given to the difficulty of the material, the purpose for reading, type of material, and general intellectual ability of the student.

McCracken (1961) examined the reading behavior of thirty-six second grade students. Each student was asked to read each of four graded paragraphs orally. The paragraphs were taken from the Sheldon Basic Reader diagnostic tests. Paragraphs were from the primer, 2-1, 2-2, and 3-1 levels. Oral reading errors were marked for each reading, and rate was calculated in words per minute.

Comprehension was assessed by asking each child to retell the story he had read.

The classroom teacher identified which of the students were good readers, average readers, and poor readers. Using oral reading errors as the criteria, McCracken also identified good, average, and poor readers. Actual independent, instructional, and frustration levels were not reported. McCracken's grouping matched the teacher's except for one student who was ultimately placed with the good readers. Comparisons for this study were made among nine good readers, seventeen average readers, and ten poor readers.

Three areas of reading behavior were examined: speed, comprehension, and oral reading errors. The good readers performed better in all three areas than both the average and the poor readers. The average readers performed better than the poor readers in speed and errors.

Average words per minute were calculated for each group at each level of difficulty. The mean rate for the good readers was higher than the mean rate for the average and the poor readers, and the mean rate for the average readers was higher than the mean rate for the poor readers. Generally, for all readers, as the difficulty of the material increased, the rate decreased. The exception to this was the difference in rate between the 2-1 paragraph and the 2-2 paragraph. For all groups the rate increased on the 2-2 passage, although McCracken does not provide statistical evidence of a significant increase.

In 1967, Levin conducted a study to determine if the reading rate of good and poor readers changed as the difficulty of the reading material changed. One hundred ninth grade students from an all-girls college-preparatory high school were chosen for this study. These students were given The Cooperative English Test: Reading Comprehension, Form 2A. Those readers scoring between the 95th and the 99th percentiles were determined to be the good readers. The second group, labeled poor readers, scored between the 47th and the 53rd percentiles.

An author-developed rate flexibility test was administered to all subjects. The first two subtests (A+B) tested rate flexibility according to material difficulty. The last two subtests (C+D) tested rate of flexibility according to purpose for reading. Subtest A was written at the 5th to 6th grade level; subtest B was written at the 11th to 12th grade level. Subtests C and D were both written at the 9th to 10th grade level. Each subtest was approximately 500 words long. Rate was measured in words per minute, and comprehension was scored as percentage of correct answers.

Levin's study indicated that while the difficulty of material influenced rate for both good and poor readers, the ability to adjust rate according to material difficulty did not necessarily accompany good reading. For poor readers, material difficulty had more influence on rate flexibility than did purpose for reading.

Burge (1982) investigated the effects of passage difficulty on the oral and silent reading rates of low-achieving fourth grade students. Eighteen students who scored below the 50th percentile on the Total Reading subtest of the SRA Achievement Test were selected for this study. The mean percentile rank on the achievement test was 34.

Levels 2, 3, and 4 from Forms A and B of the Analytical Reading Inventory were administered to the students. Level 2 corresponded to the students' approximate independent reading level, Level 3 to their approximate instructional level, and Level 4 to their expected reading level. No attempt was made to match each child's individual levels to the material; all children read the same selections. The subtests from Form A were read orally, and the subtests from Form B were read silently. Rate (words per minute) and comprehension (percentage of correct responses) were measured for each of the six subtests.

A t-test for paired samples was used to analyze the data. At all levels of difficulty the students read faster silently than orally. The only significant difference, however, was on the third level passage. Comprehension levels were significantly higher for oral reading than for silent reading at levels three and four. It is important to note that at level three, the students had the slowest oral reading rate and the highest oral comprehension level. Burge could not determine if the comprehension was higher at Level 3 because the students' rate of reading was slower, or if the rate was

slower because the students were trying to comprehend better. Cause and effect were impossible to determine.

Carver's (1983) study of reading rate experimented with a different type of rate measurement. Rather than using the standard words per minute measurement, Carver measured rate in standard length words per minute. (A standard length word is six character spaces which include spaces between words and punctuation.)

The sample for Carver's study was composed of 435 students in grades 4 through college. The reading ability range for these students, as determined by the National Reading Standards reading test, was from first grade through college.

Each student read twenty-four 100-word passages. Carver used his Rauding Scale of Prose Difficulty to determine the level of difficulty of each passage. The final set of selections contained four passages at grades 1, 4, 7, 10, 13, and 16.

Before the students began reading they were told that they would not be asked any questions; that the material varied in difficulty; that they were to read at a normal rate for one minute; and that they should circle the last word they read when told to stop. Rate was initially measured in words per minute and standard length words per minute; however, the analyses of the data were reported in standard length words per minute.

The first analysis of the data involved the median rate of each ability group between levels of material difficulty. Students at ability levels 13-15 slowed their rate somewhat as the material

became more difficulty, although the difficulty of the material did not surpass their ability level.

The second analysis looked at the percent of change in individual rates as opposed to median group rates. Results of this analysis indicated that readers did not significantly change their rate when encountering more difficult material as long as the material was not above their ability level.

Daves (1986) examined the oral and silent reading rates of able and disabled readers at two levels of difficulty. The sample included students who obtained a word recognition score $\geq$ 95% and a comprehension score $\geq$ 70% on the Grade 4 or the Grade 6 passage of the Standard Reading Inventory. In addition, each student in the sample obtained a full scale intelligence quotient of 89 or above on the Wechsler Intelligence Scale for Children--Revised. The final sample included eighteen able and eighteen disabled readers.

Reading passages, edited by the author to guarantee specific readability levels, were used to measure rate of reading. Each student read two passages at each of two levels of difficulty. (Difficulty 1 = $\geq$ 95%, $\geq$ 70%; Difficulty 2 = $<$ 90%, $<$ 70%.) One passage at each difficulty level was read orally; the other was read silently. Substitutions, mispronunciations, and words aided were recorded for the oral passages. Comprehension was measured by a retelling of the story and ten questions about the story.

Data were analyzed using a 2x2x2x2 mixed model analysis of variance for repeated measures. Independent variables were group

(able, disabled), level of reading achievement (Grade 4, Grade 6), method (oral, silent), and level of relative difficulty (Difficulty 1, Difficulty 2).

Daves drew the following conclusions from her analysis of the data.

1. Grade 4 readers read faster orally than Grade 6 readers at both levels of difficulty.

2. Grade 6 readers read faster silently than Grade 4 readers at Difficulty 1.

3. Grade 4 readers read faster silently than Grade 6 readers at Difficulty 2.

4. Disabled readers read faster orally and silently than able readers at both levels of difficulty.

This section reviewed the literature relating reading rate and level of material difficulty. Little attempt was made by the researchers to examine the relationship in regards to relative difficulty of the material for individual students. Students for these studies ranged from third grade to college level. Generalizations were difficult to make because of differences in levels and methods of measurement. A summary of this research is reported in Table 1.

Table 1

Summary of the Research Related to the Relationship Between Reading Rate and the Difficulty of the Reading Material

Study	Grouping Criteria	N	Rate Measure	Comprehension	Results
Tinker (1939)	None	616 University Sophomores	1. No. of items attempted 2. Total amount of time	1. No. of items correctly completed	As difficulty of material increased, correlations between rate and comprehension decreased.
Blommer and Lindquist (1944)	None	672 High School Juniors and Seniors	1. Unadjusted rate scores from raw times 2. Adjusted rate scores 3. S-rate scores 4. F-rate scores 5. A-rate scores 6. TLC scores 7. WT scores 8. TLA scores	1. No. of items correctly completed--multiple-choice format	1. Individual students remain at same relative rank in rate regardless of material. 2. Good comprehenders slow down as material increases in difficulty. 3. Poor comprehenders maintain same rate regardless of material difficulty.
Carlson (1949)	Upper, middle and lower levels of intelligence (CTMM)	330 Fifth graders	Amount of time required to to read plus answer questions.	1. Type I--15 questions following selections 2. Type II--15 questions interspersed in narrative 3. Type III--Questions following short passages	1. Significant correlation between level of intelligence and difficulty for middle and lower levels of IQ. 2. Little correlation between difficulty and upper levels of IQ. 3. Speed of reading very complex facet of reading.
McCracken (1961)	Good readers, average readers, poor readers (teacher identification and IRI)	36 Second graders	wpm	Unaided recall	1. M rate for good readers better than average or poor readers. 2. M rate for average readers better than poor readers. 3. Generally, rate decreased as difficulty increased.

Table 1 (continued)

Study	Grouping Criteria	N	Rate Measure	Comprehension	Results
Levin (1967)	Good readers, poor readers (Cooperative English Test: Reading Comprehension)	100 Ninth graders	wpm	% of correct responses	The ability to adjust rate for material difficulty does not necessarily accompany good reading.
Burge (1982)	Low-achieving readers (SRA)	18 Fourth graders	wpm	% of correct responses	Faster silent reading than oral reading at all difficulties.
Carver (1983)	5 groups of reading ability: First grade-College (NRS)	435 students, Grade 4-College	Standard length words per minute	None	Readers do not change rate as material increases in difficulty.
Daves (1986)	$\geq$95% $\geq$70% at Grade 4 or Grade 6 (SRI)	36 Fourth, Fifth, Sixth, and Seventh graders	wpm	Unaided recall plus 10 questions	1. Grade 4 readers faster than 6 readers orally at both difficulties. 2. Disabled readers read faster than able readers at both difficulties.

The Relationship Between Oral Reading Rate and Silent Reading Rate

Researchers have generally agreed that silent rate is faster than oral rate. Little research has provided conclusive evidence of the differences in oral and silent rates when the difficulty of the material is matched to the reading ability of the reader.

Most of the studies reviewed in this section focused on fourth grade students. Most students should have mastered the skills necessary for fluent reading by fourth grade; therefore, the differences between oral and silent reading rates should be evident at this level.

Pitner (1913) devised a study to determine if silent reading was superior to oral in the areas of rate and comprehension. His subjects were twenty-three students from one fourth grade classroom.

Stories for the study were taken from a supplementary fourth-grade level reader. No attempt was made to determine actual readability of the selections, but Pitner felt that all stories were within the comprehension level of the students. Eight stories were selected for oral reading, and eight were selected for silent reading. The students were instructed to read as much of each story as possible in a two minute limit. Silent readings were completed by the entire sample at one time. Oral readings were done on an individual basis with the teacher. After each reading, the children were asked to write down as much as they could remember about the story. Comprehension scores were equal to the number of correct

points remembered from the story. Rate was measured by the number of lines read in the two-minute limit.

The results (Table II) indicated what Pitner had hypothesized, that silent reading was faster with better comprehension. The range for rate on oral passages was from 9 to 31 lines with the class average at 20. Comprehension scores for the oral passages were 5 to 29 points remembered; the class average was 15. Silent reading scores were higher with rate ranging from 10 to 89 lines and a class average of 28 lines. Comprehension scores ranged from a low of 6 to a high of 30 with a class average of 18. Significance of the differences was not reported.

Hatch and Sheldon (1950) examined the oral and silent reading behaviors of thirty-seven fourth graders from four schools. Using achievement test scores and their own judgment of a student's reading ability, teachers identified which of the students were good readers and which were poor readers. The sample was composed of eighteen good readers and nineteen poor readers.

Each student's reading behavior was analyzed by the use of the Durrell Analysis of Reading Difficulty. Hatch and Sheldon examined the reading errors of each reader as well as compared the oral and silent reading rates. Of interest to this study was the examination of rates. Thirteen of the eighteen good readers read faster silently than orally; nine of the nineteen poor readers read faster silently. The authors did not give actual rates, nor did they give any significant statistical information.

Table 2

Summary of the Literature on the Relationship Between Oral Reading Rate and Silent Reading Rate

Study	N	Level of Students	Rate Determined by	Conclusions
Pinter (1913)	23	4th grade	Eight oral reading stories. Eight silent reading stories. All stories at grade level.	Silent rate faster than oral rate.
Hatch & Sheldon (1950)	37	4th grade	Durrell Analysis of Reading Difficulty	Silent rate faster than oral rate for 22 of the 37 students.
Burge (1982)	18	Low achieving 4th grade (SRA achievement)	Analytical Reading Inventory	Silent rate faster than oral rate--significant difference at level 3.
Daves (1986)	36	4th, 5th, 6th, and 7th grade reading at Grade 4 or Grade 6 (SRI)	Author developed rate passages.	Able and disabled readers read faster silently than orally.

Two studies (Burge, 1982; Daves, 1986) reviewed in the previous section also have relevance to the topic of the relationship between oral and silent reading rates. Burge (1982) observed the oral and silent reading rates of poor readers in the fourth grade. The subjects read passages at each of three levels of difficulty. At all levels of difficulty the students read faster silently than orally. However, only at the third grade level of difficulty was the difference significant.

Daves' (1986) study of able and disabled readers examined the differences between their oral and silent reading rates at two levels of difficulty. As indicated in Table II, both groups of readers read faster silently than orally at both difficulties. There were some differences between the groups. Grade 4 readers read faster orally than the Grade 6 readers at both difficulties. Grade 4 readers read faster silently than the Grade 6 readers at Difficulty 1. Perhaps the most interesting result was that disabled readers read faster orally and silently at both levels of difficulty than did able readers.

This section reviewed the literature in regards to the relationship of oral and silent reading rates. Researchers generally agree that silent rate is faster than oral rate. Further study is clearly needed to statistically substantiate the differences between oral and silent reading rates at various difficulty levels.

The Literature Relating to Criterion Rates for Specific Levels of Readers

Reading researchers and practitioners have for a long time attempted to define and quantify appropriate oral and silent reading rates for students at specific grade levels. However, in reviewing the literature on rate, few studies were found that clearly established the criteria for successful performance at any level. Most of the studies that did attempt to establish rates, generally did not establish ranges of rates dependent on the differences in difficulty of the material.

Stroud and Henderson (1943) analyzed the reading rates of 625 fifth grade students in ten schools. No effort was made to determine actual reading ability of each student.

Four reading selections from social science textbooks were chosen for the students. Two passages were taken from fifth grade texts, one passage was taken from a second grade text, and the last passage was taken from a ninth grade text. All passages were read silently in a group setting.

Each reading selection was followed by a fifteen-item multiple choice test. Students did not have access to the reading material while answering the questions.

The students were ranked by percentiles according to the rate scores on the second fifth-grade passage. Average rates (wpm) for each percentile rank were then established for each level of reading selection (see Table III).

Table 3

Summary of the Literature Relating to Criterion Rates for Specific Levels of Readers

Stroud & Henderson (1943) — N: 625 — Level of Students: 5th grade

Established rates

Percentiles	Selections: 5th grade	5th grade	2nd grade	9th grade
99	539	491	794	554
90	338	320	379	361
75	247	230	272	240
50	185	181	206	185
25	149	133	154	143
10	120	105	123	111
1	80	63	69	63

Durrell (1955) — N: Not Known — Level of Students: 1st - 6th Grades

Established rates

Rate in Words Per Minute

Grade	1	2	3	4	5	6
Oral Reading	45	80	110	135	150	170
Silent Reading	45	78	125	156	180	210

Taylor (1965) — N: 12,143 — Level of Students: 1st grade - College

Established rates

Grade level	1	2	3	4	5	6
Rate with Comprehension (words per minute)	80	115	138	168	173	195

Grade level	7	8	9	10	11	12
Rate with Comprehension (words per minute)	204	214	224	237	250	280

Table 3 (continued)

Study	N	Level of Students	Established rates				
					Performance Rating		
Gilmore and Gilmore (1968)	4,455	1st - 8th Grades	Grade	Form	Slow	Average	Fast
			1.8	C	Below 30	30-54	Above 54
				D	Below 31	31-54	Above 54
			2.8	C	Below 67	67-103	Above 103
				D	Below 66	66-104	Above 104
			3.8	C	Below 86	86-108	Above 118
				D	Below 88	88-124	Above 124
			4.8	C	Below 95	95-128	Above 128
				D	Below 96	96-130	Above 130
			5.8	C	Below 109	109-140	Above 140
				D	Below 108	108-139	Above 139
			6.8	C	Below 113	113-145	Above 155
				D	Below 112	112-145	Above 145
			7.8	C	Below 124	124-155	Above 155
				D	Below 122	122-155	Above 155
			8.8	C	Below 136	136-167	Above 167
				D	Below 137	137-167	Above 167

Stroud and Henderson assumed that the slowest readers were the poorest readers in their interpretation of the average rates. There was no attempt to rank these students in percentile ranks according to reading achievement.

Durrell (1955) presented a chart listing acceptable oral and silent reading rates for specific grade levels in his manual for the Durrell Analysis of Reading Difficulty (Table II). These rates were based on the work that Durrell had done with children at the Boston University Educational Clinic; however, the results of these studies were not reported in the manual or the literature.

The rates established by Durrell are reported as one acceptable rate for each grade level. Ranges of rates for each grade level or for varying difficulty are not reported.

In 1965, Taylor established silent reading norms by observing eye movements of readers. His study involved 12,143 students in grades one through college. There were at least 1,000 students at each level.

Eye movements were photographed by the Reading Eye camera as the students read the selections. Readability of the selections was approximately at the mid-year point of the child's grade placement. For example, if the child was in second grade, his reading selection would have had a readability level of approximately 2.5. Comprehension was 70% or above for those students in this study.

Only silent reading rates were established as shown in Table III. Each child read a selection at his grade placement level; no

effort was made to determine the relative difficulty of each passage for the student.

Gilmore and Gilmore (1968) tested 4,455 students in the standardization population for the Gilmore Oral Reading Test to establish norms for oral reading rate. These norms are reported in Table III. Standardization was conducted in school systems in six states. A total of eighteen schools were involved. The number of students tested at each grade level follow (Form C, Form D): first grade--291, 294; second grade--285, 292; third grade--319, 289; fourth grade--278, 286; fifth grade--279, 277; sixth grade--247, 252; seventh grade--263, 266; and eighth grade--244, 243.

Ranges of rates are provided at each grade level for two forms of the test. These ranges are categorized for slow, average, and fast readers.

While this study does offer ranges of rates, it is limited in two ways. First, since the test administered was an oral reading test, only oral reading rates could be reported. Secondly, as in past studies, relative difficulty for students was not determined.

This section reviewed the literature relating to criterion rates for specific levels of readers. Only a few studies have been conducted in an attempt to establish such rates. No studies have been completed in the past twenty years. None of the studies attempted to determine rates at various difficulty levels.

Summary

This study was concerned with the differences in oral and silent rates of reading for fourth grade students at three levels. Only those studies relevant to the concerns of the present study were included in the review of the literature. The survey of the literature focused on three areas: (1) the relationship between reading rate and the difficulty of reading material; (2) the relationship between oral reading rate and silent reading rate; and (3) criterion rates for specific levels of readers.

Results from studies on the effect of passage difficulty were mixed. Some researchers found that rate decreased as difficulty increased (Tinker, 1939; McCracken, 1961). In some studies (Blommers & Lindquist, 1944; Levin, 1967; Carver, 1983) rate remained relatively constant when the difficulty of the material changed.

The literature suggested that silent rates were faster than oral rates (Pinter, 1913; Hatch & Shelton, 1950; Burge, 1982; Daves, 1986). However, little research examined the differences in oral and silent rates as difficulty increased.

Few studies were located in the literature that definitely established criterion rates. Durrell (1955) and Gilmore and Gilmore (1968) presented tables of rates used in their reading tests. Taylor (1965) established silent reading norms by photographing eye movements.

In each of the areas of the literature more research is needed. Many of the studies were completed twenty or more years ago. Current research is needed to examine oral and silent reading rates when the difficulty of the material is closely matched to the readers' abilities. Ranges of appropriate reading rates at varying difficulty levels would help teachers determine when practice or instruction in rate improvement was required.

CHAPTER III

DESIGN AND METHODOLOGY

Description of the Sample

The sample for this study included fourth grade students from six classrooms in three public schools. The schools used in this study were Perkins Elementary in Perkins, Oklahoma; Harrison Elementary in Cushing, Oklahoma; and Sunnyside Elementary in Cushing, Oklahoma.

The final sample was composed of those fourth grade students who had parental permission to participate and who had taken the Metropolitan Achievement Test, Sixth Edition Elementary Level in third grade. No special education students were included. A total of seventy-two students, 27 male and 45 female, were included in the study (Table 4). Mean chronological age was 10 years 2 months.

The range of Total Reading scores from the MAT-6 was 1.9 to 12.5. The mean score was 5.2 which was more than one year above the students' grade placement at the time of the testing. In averaging the readability levels of the passages read at each difficulty the following mean readability levels were determined: Difficulty 1, 4.2; Difficulty 2, 5.2; and Difficulty 3, 4.5.

Table 4

Demographic Distribution of the Sample

Student	Gender	Total Reading (MAT-6)	Chronological Age
1	M	4.5	10.3
2	F	6.7	10.9
3	F	3.4	10.4
4	F	3.0	10.5
5	M	6.1	10.1
6	F	5.9	10.3
7	F	8.8	10.4
8	F	4.2	10.2
9	M	4.5	10.3
10	F	3.3	10.5
11	M	5.4	10.3
12	M	3.3	10.6
13	F	6.7	10.4
14	F	4.1	9.8
15	F	7.2	10.3
16	F	8.8	9.11
17	F	4.8	9.10
18	F	4.2	9.10
19	M	7.7	9.8
20	F	2.6	10.2
21	M	4.4	9.9
22	M	2.8	10.7
23	F	8.1	10.5
24	F	6.8	10.8
25	M	4.4	11.6
26	M	5.4	10.2
27	F	6.0	10.5
28	F	7.7	10.6
29	M	5.8	10.2
30	M	3.0	10.9
31	F	3.0	10.9
32	F	6.1	9.11
33	M	3.7	9.8
34	M	4.6	9.10
35	F	5.7	10.2
36	M	1.6	10.0
37	M	5.2	9.7
38	F	6.1	10.0
39	F	5.7	10.3
40	F	5.7	10.4

Table 4 (continued)

Student	Gender	Total Reading (MAT-6)	Chronological Age
41	F	7.0	9.11
42	M	2.7	10.6
43	F	6.0	10.1
44	F	2.3	11.0
45	F	6.0	10.0
46	M	7.2	10.2
47	F	3.1	11.2
48	F	2.5	10.11
49	F	4.6	9.9
50	F	2.9	9.8
51	F	5.4	10.4
52	F	5.7	9.8
53	M	7.0	10.3
54	M	2.8	10.3
55	M	2.5	11.1
56	F	4.2	10.4
57	F	7.0	9.9
58	M	7.0	9.9
59	F	4.5	11.2
60	M	3.6	10.5
61	M	6.8	10.1
62	F	5.1	10.5
63	F	12.5	10.0
64	F	3.2	9.8
65	F	3.5	9.9
66	F	3.2	9.8
67	M	5.7	10.7
68	M	1.9	11.3
69	F	7.2	9.6
70	M	7.7	10.2
71	F	4.5	10.8
72	F	12.5	10.6

Testing Procedure

All of the tests were administered during March and April. The testing areas were within the schools and were as free of distractions as possible. Each child was tested individually, and all testing was conducted by the researcher.

Each child's third grade Total Reading score from the Metropolitan Achievement Test, Sixth Edition Elementary Level (MAT-6) (1986) was obtained from his file. These grade equivalent scores were used to determine the entry point into the Rate Passages (Daves, 1986).

Rate of reading (in words per minute) was collected for each child on oral passages and silent passages. Only actual reading time was recorded. The time required to respond to comprehension questions was not included in the rate measurement. The oral reading rate was measured with a stopwatch at the time of the testing. Each oral reading was audiotaped, so rate could be re-checked. The silent reading rate was only measured with a stopwatch at the time of the testing.

The testing session was introduced to each child in the following manner:

> I want you to read some stories for me. Some of them you will read out loud, and others you will read to yourself. After each story, I will ask you questions about the story, so read as carefully as you can.

The following introduction was given for each oral passage:

> Read this story, (Title of Story), out loud as well as you can.

Silent passages were introduced in a similar way:

> Read this story, (Title of Story), to yourself as well as you can.

The rate passages were entered at the readability level closest to the grade equivalent from the MAT-6. The first passage was read orally. The researcher timed each reading and marked the word recognition errors. The word recognition errors marked were substitutions of whole words, mispronunciations, insertions of whole words, omissions of whole words, and words pronounced by the researcher. Following the reading, the child was asked to respond to ten comprehension questions, and his/her responses were recorded on the test form. The child was not allowed to refer to the passage during the questioning. The session was audio-taped, which allowed the researcher to recheck time, word recognition errors, and responses to questions.

Following the oral passage, the child was asked to read a silent passage which was at the same readability level as the oral one. The child's reading time (wpm) was recorded. As with the oral passage, the child responded to ten comprehension questions.

The criteria utilized to determine Difficulty 1 ($\geq$ 95%, $\geq$ 71%) and Difficulty 2 (91% to 94%, 60% to 70%) were established in Daves' (1986) study. Difficulty 3 was established when the child's word

recognition and comprehension fell below the criteria for the first two difficulty levels. The criteria for Difficulty 1 established a passage that was easy for the study to read. A passage at Difficulty 2 presented some word recognition and comprehension problems, but was still within the student's ability to read.

If the entry passage was at Difficulty 2 (91% to 94%, 60% to 70%) or Difficulty 3 (< 91%, < 60%), the child was asked to read passages that decreased in difficulty until an oral passage was read that corresponded with Difficulty 1 ($\geq$ 95%, $\geq$ 71%) criteria. If the entry passage was at Difficulty 1 ($\geq$ 95%, $\geq$ 71%) or Difficulty 2 (91% to 94%, 60% to 70%), the child was asked to read passages increasing in difficulty until an oral passage was read that corresponded to Difficulty 3 (< 91%, < 60%) criteria. Testing was continued until the child obtained a passage at each difficulty level or until all possible passages had been read. The passages ranged in readability from 1.88 to 6.48, and there were two passages at each of the levels. For some students there were not passages of a low enough readability to obtain Difficulty 1 criteria. Likewise, for some students the passages did not offer a high enough readability to obtain Difficulty 3. Therefore, some children do not have a rate score for some of the difficulty levels.

Description of the Testing Instruments

Metropolitan Achievement Test, Sixth Edition Elementary Level (1986)

The Metropolitan Achievement Test is a nationally standardized achievement test. In Oklahoma, all schools are required to administer the test in grades three, five, seven, and ten. The Elementary Level is given to third graders, and, therefore was the level used for this study. The Total Reading score is the composite of three subtest scores: Reading Comprehension, Vocabulary, and Word Recognition Skills.

The manual for the MAT-6 reports a Kuder-Richardson Formula #20 reliability coefficient of .96, which reflects a high level of internal consistency. No validity coefficients are provided. It is suggested in the manual that each school district determine an individual content validity coefficient.

The Total Reading grade equivalency score was used as the initial screening tool to determine entry into the reading rate passages.

Rate Passages (Daves, 1986)

The passages used in this study to measure oral and silent reading rates were developed by Daves (1986) to use in her study of the reading rates of able and disabled readers. Passages are between 200 and 250 words long. Readability was established using

the Spache Readability Formula (levels 1.88 to 3.5) and the Dale-Chall Readability Formula (levels 4.66 to 6.48). There were two passages at each readability level.

Daves established the validity of her passages by requesting that a panel of six experts evaluate the passages for content, developmental appropriateness, and cognitive demands. Daves reports equivalent forms reliability coefficients ranging from .64 to .96.

Statistical Techniques Used in the Treatment of the Data

Paired samples t-tests were employed to determine if statistically significant rate differences existed between levels of difficulty and between methods of reading (oral and silent). Computations for the t-tests were done using the STATS Module for Systat (Wilkinson, 1987).

The alpha level was set at .05. If the probability for t was greater than .05, the study failed to reject the null hypothesis. If the probability for t was less than .05, the null hypothesis was rejected.

To analyze the strength of the relationship eta squared was computed for each significant t-test. The following formula was used to calculate eta squared:

$$Eta^2 = \frac{t^2}{t^2 + df}$$

CHAPTER IV

TREATMENT OF DATA AND ANALYSIS OF RESULTS

The purpose of this study was to examine the oral and silent reading rates of one group of fourth grade students. Those students who had taken the Metropolitan Achievement Test, Sixth Edition Elementary Level in third grade read two passages at three levels of relative difficulty. Measures of rate (words per minute) on passages at Difficulty 1 ($\geq$ 95%, $\geq$ 71%), Difficulty 2 (91% to 94%, 60% to 70%), and Difficulty 3 ($\leq$ 91%, $<$ 60%) formed the bases for the comparisons. One passage at each difficulty level was read orally, and one was read silently.

Means and standard deviations were computed for each level of difficulty (i.e., Difficulty 1, Difficulty 2, and Difficulty 3) for both oral and silent reading. These data are presented in Table 5.

The hypotheses concerning differences in reading rate at three levels of relative difficulty when reading is done orally are examined first. Secondly, the hypotheses related to the differences in reading rate at three levels of relative difficulty when reading is done silently will be examined. The hypotheses related to the differences in oral and silent reading rate when relative level of difficulty is held constant for both passages will be examined last.

Table 5

Means and Standard Deviations of the Sample

Level of Relative Difficulty	N	Oral		Silent	
		M	SD	M	SD
Difficulty 1	66	115.379	26.604	132.394	37.894
Difficulty 2	42	101.286	26.938	123.786	37.896
Difficulty 3	34	87.559	31.121	120.029	52.974

Tests of the Hypotheses

Hypothesis 1: There is no significant difference between the oral rate of reading a passage at Difficulty 1 and the oral rate of reading a passage at Difficulty 2 for fourth grade students. This hypothesis was rejected.

Hypothesis 2: There is no significant difference between the oral rate of reading a passage at Difficulty 1 and the oral rate of reading a passage at Difficulty 3 for fourth grade students. This hypothesis was rejected.

Hypothesis 3: There is no significant difference between the oral rate of reading a passage at Difficulty 2 and the oral rate of reading a passage at Difficulty 3 for fourth grade students. This hypothesis was rejected.

To test these hypotheses paired samples t-tests were performed comparing the rates of pairs of students at each difficulty level. As can be seen from Table 6, the t-values were significant for each comparison. The students in this study read significantly slower as the relative difficulty of the passages increased when the reading was done orally. Thus, the hypotheses stating that no significant differences in rate existed between Difficulty 1 and Difficulty 2, between Difficulty 1 and Difficulty 3, and between Difficulty 2 and Difficulty 3 can be rejected.

To determine the strength of the association for each t-test, eta squared was computed. Eta squared values for the relationships presented in Hypothesis 1, Hypothesis 2, and Hypothesis 3 were .22, .55, and .36 respectively.

Table 6

t-Values of the Differences in Rate by Difficulty Levels for Oral Reading Passages

Levels	N	t-Value	df	p
D1, D2	39	3.263	38	.002*
D1, D3	30	5.919	29	.000*
D2, D3	23	3.510	22	.002*

*Significant, $p < .05$.

Hypothesis 4: There is no significant difference between the silent rate of reading a passage at Difficulty 1 and the silent rate of reading a passage at Difficulty 2 for fourth grade students. This hypothesis was rejected.

Hypothesis 5: There is no significant difference between the silent rate of reading a passage at Difficulty 1 and the silent rate of reading a passage at Difficulty 3 for fourth grade students. This hypothesis failed to be rejected.

Hypothesis 6: There is no significant difference between the silent rate of reading a passage at Difficulty 2 and the silent rate of reading a passage at Difficulty 3 for fourth grade students. This hypothesis failed to be rejected.

Paired samples t-tests were performed for pairs of students at each relative level of difficulty. For Hypothesis 4, the t-value obtained was significant (Table 7). The t-values for Hypotheses 5 and 6 were non-significant. Students read significantly slower on Difficulty 2 than on Difficulty 1; however, significant changes in rate did not occur between Difficulty 1 and Difficulty 3 or between Difficulty 2 and Difficulty 3. Therefore, Hypothesis 4 can be rejected based on these results. Hypotheses 5 and 6 fail to be rejected.

Since the t-test for Hypothesis 4 was significant, eta squared was computed to determine the strength of the association. Eta squared was .13, which indicated that 13% of the variance in rate could be contributed to the difference in difficulty levels. While

the relationship is a significant one, it is not a very strong relationship.

Table 7

t-Values of the Differences in Rate by Difficulty Levels for Silent Reading Passages

Levels	N	t-Value	df	p
D1, D2	39	2.388	38	.022*
D1, D3	30	.266	29	.792
D2, D3	23	1.794	22	.087

*Significant, $p < .05$.

Hypothesis 7: There is no significant difference between the oral and silent rates of reading a passage at Difficulty 1. This hypothesis was rejected.

Hypothesis 8: There is no significant difference between the oral and silent rates of reading a passage at Difficulty 2. This hypothesis was rejected.

Hypothesis 9: There is no significant difference between the oral and silent rates of reading a passage at Difficulty 3. This hypothesis was rejected.

These hypotheses were tested using paired samples t-tests to compare the differences between oral and silent reading rates at specific levels of difficulty (i.e., Difficulty 1, Difficulty 2, Difficulty 3). Table 8 presents the results of these tests. For all t-tests, the t-values were highly significant. The fourth grade students in this study read significantly faster when reading silently than when reading orally at all three levels of difficulty. Hypotheses 7, 8, and 9, which stated that no significant differences between oral and silent reading rates could be expected, can be rejected.

Eta squared was calculated for each t-test. The eta squared value for the t-test for Hypothesis 7 was .26; the eta squared value for Hypothesis 8 was .38; and the eta squared value for Hypothesis 9 was .35.

Table 8

t-Values of the Differences in Rate for Oral and Silent Reading at Three Levels of Difficulty

Levels	N	t-Value	df	p
Difficulty 1	66	4.723	65	.000*
Difficulty 2	42	5.062	41	.000*
Difficulty 3	34	4.175	33	.000*

*Significant, $p < .05$.

Using the mean rates and standard deviations for oral and silent reading, expected ranges of rates were determined for Difficulty 1 ($\geq$ 95%, $\geq$ 71%), Difficulty 2 (91% to 94%, 60% to 70%), and Difficulty 3 ($\leq$ 91%, < 60%). One standard deviation below the mean and one standard deviation above the mean were included to incorporate approximately 68% of the expected rates (Table 9).

Table 9

Ranges of Oral and Silent Reading Rates for Three Levels of Difficulty

Level	Oral	Silent
Difficulty 1 ($\geq$ 95%, $\geq$ 71%)	88.775 to 141.419	94.5 to 170.288
Difficulty 2 (91% to 94%, 60% to 70%)	74.348 to 128.224	85.89 to 161.682
Difficulty 3 (< 91%, < 60%)	56.438 to 118.68	67.055 to 173.003

*Reported in words per minute.

Figure 1 graphically illustrates the relationship between the oral and silent rates. It also illustrates the overlapping nature of the rates at each difficulty level.

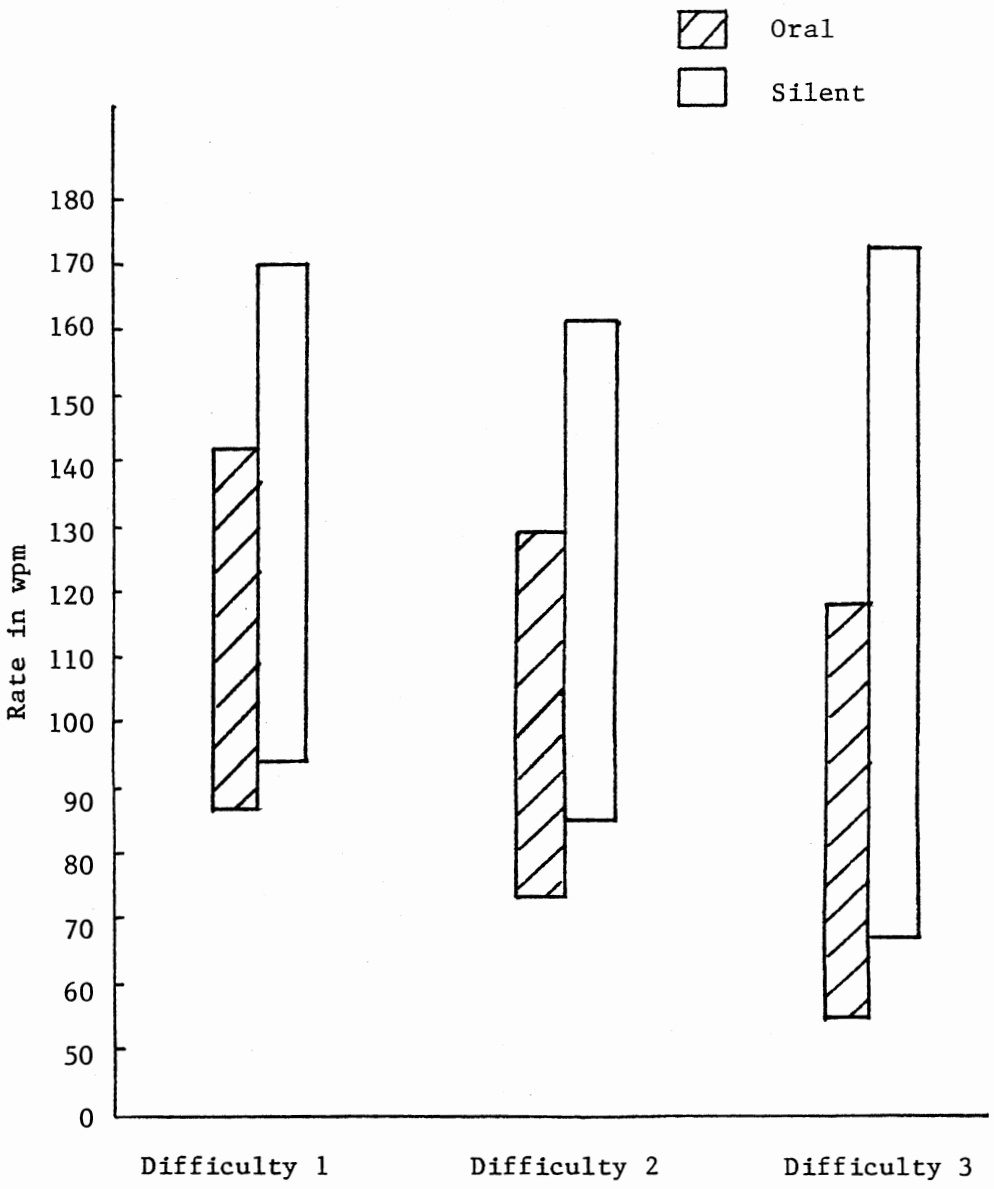

Figure 1. Ranges of Oral and Silent Reading Rates for Difficulty 1 ($\geq$ 95%, $\geq$ 71%), Difficulty 2 (91% to 94%, 60% to 70%), Difficulty 3 ($<$ 91%, $<$ 60%)

Summary

This chapter included a detailed account of the treatment of the data. Paired samples t-tests were used to determine if significant differences existed in reading rates at three levels of difficulty and between oral and silent reading.

The differences in oral rate of reading between Difficulty 1 and Difficulty 2, between Difficulty 1 and Difficulty 3, and between Difficulty 2 and Difficulty 3 were significant. Reading rate became significantly slower as difficulty of the reading increased.

The differences in silent rate of reading between Difficulty 1 and Difficulty 2 were significant. Students reading silently read a passage at Difficulty 2 significantly slower than a passage at Difficulty 1. The differences in silent rate of reading between Difficulty 1 and Difficulty 3 and between Difficulty 2 and Difficulty 3 were not significant.

Oral and silent reading rates differed significantly at all three levels of difficulty. Silent reading was significantly faster than oral reading at each of the difficulty levels.

CHAPTER V

SUMMARY AND CONCLUSIONS

General Summary of the Investigation

This study was concerned with the oral and silent reading rates of fourth grade students. Six measures of rate (in words per minute) formed the basic comparisons. Three of the measures were based on oral reading, and three were based on silent reading. Students read one oral passage and one silent passage at each of three difficulty levels: Difficulty 1 ($\geq$ 95%, $\geq$ 71%), Difficulty 2 (91% to 94%, 60% to 70%), and Difficulty 3 ($<$ 91%, $<$ 60%). These passages were 200 to 250 words in length and had controlled readability levels established by the Spache Readability Formula or the Dale-Chall Readability Formula.

The sample consisted of seventy-two fourth grade students from three central Oklahoma schools. All of the students had taken the Metropolitan Achievement Test, Sixth Edition Elementary Level in third grade. The Total Reading score from the MAT-6 was used as the entry level into the rate passages. None of these students was identified as a special education student.

Paired samples t-tests were employed to test nine hypotheses relating rate of reading to level of difficulty (Difficulty 1, Difficulty 2, Difficulty 3) and method of reading (oral or silent). Eta squared was computed to determine the strength of significant relationships.

Conclusions

The results of this study indicate that some significant differences in rate of reading occurred with changes in the relative difficulty of passages read and with changes in method (i.e., oral or silent) of reading. However, these differences were not consistent between all levels of difficulty.

For the rate passages read orally, significant differences in reading rate were evident between Difficulty 1 ($\geq$ 95%, $\geq$ 71%) and Difficulty 2 (91% to 94%, 60% to 70%), between Difficulty 1 ($\geq$ 95%, $\geq$ 71%) and Difficulty 3 ($<$ 91%, $<$ 60%), and between Difficulty 2 (91% to 94%, 60% to 70%), and Difficulty 3 ($<$ 91%, $<$ 60%). Level of difficulty accounted for the largest share of the variance in rate (55%) between Difficulty 1 ($\geq$ 95%, $\geq$ 71%) and Difficulty 3 ($<$ 91%, $<$ 60%). For the students in this study, reading rate decreased significantly as the difficulty of the reading passages increased when the reading was done orally.

The results of rate passages that were read silently did not indicate consistent significant differences. Only the comparison of differences in reading rate between Difficulty 1 ($\geq$ 95%, $\geq$ 71%) and

Difficulty 2 (91% to 94%, 60% to 70%) was significant. The strength of association test indicated that the relationship between levels of difficulty and rate was not very strong (eta squared = .13). There were no significant changes in rate between Difficulty 1 ($\geq$ 95%, $\geq$ 71%) and Difficulty 3 ($<$ 91%, $<$ 60%) or between Difficulty 2 (91% to 94%, 60% to 70%), and Difficulty 3 ($<$ 91%, $<$ 60%). Generally, when the students in this study read silently, they did not significantly change their rate of reading when the material became more difficult.

The findings of this study regarding changes in oral reading rate at various difficulty levels are consistent with McCracken's (1961) study. In this study and McCracken's study oral reading rate decreased as material became more difficult.

The results of this study also agree with previous research (Blommers & Lindquist, 1944; Levin, 1967) that indicate that students who are reading silently tend to maintain the same rate regardless of material difficulty. In previous research this was particularly true of poor readers; in the present study lack of flexibility in rate was true for all students. This study, therefore, does not support Tinker's (1939) study which indicated that readers slow down when they encounter difficult material.

One must question why there is such a difference in oral and silent reading behaviors. Why are students more flexible when reading orally than when reading silently? Burge (1982) offered one possibility. Students who are reading orally are more accountable

for reading each word correctly than students reading silently. When they are reading silently, students may skip words they do not immediately recognize, or they may not focus on the material as consciously as they are required to do in oral reading. In fact, there is no way to determine if this student is actually reading the material. This study indicates that students need instruction to learn how to adjust their silent reading rate when material becomes more difficult.

This study also supports previous research (Pinter, 1913; Hatch & Sheldon, 1950; Burge, 1982; Daves, 1986) concerning the differences in rate between oral and silent reading. As in the previous research, this study concluded that silent reading was significantly faster than oral reading regardless of the level of difficulty of the material. Such significant differences between oral and silent reading rates suggest further investigation into the reasons for the differences and increased instruction in the development of rate flexibility, especially for silent reading.

In examining the mean oral reading rates in this study, the following mean rates were determined: Difficulty 1 ($\geq$ 95%, $\geq$ 71%) = 115.379 wpm; Difficulty 2 (91% to 94%, 60% to 70%) = 101.286 wpm; Difficulty 3 ($\leq$ 91%, $<$ 60%) = 87.559 wpm. Mean silent rates were also established: Difficulty 1 = 132.394 wpm; Difficulty 2 = 123.786 wpm; Difficulty 3 = 120.029 wpm (Figure 2).

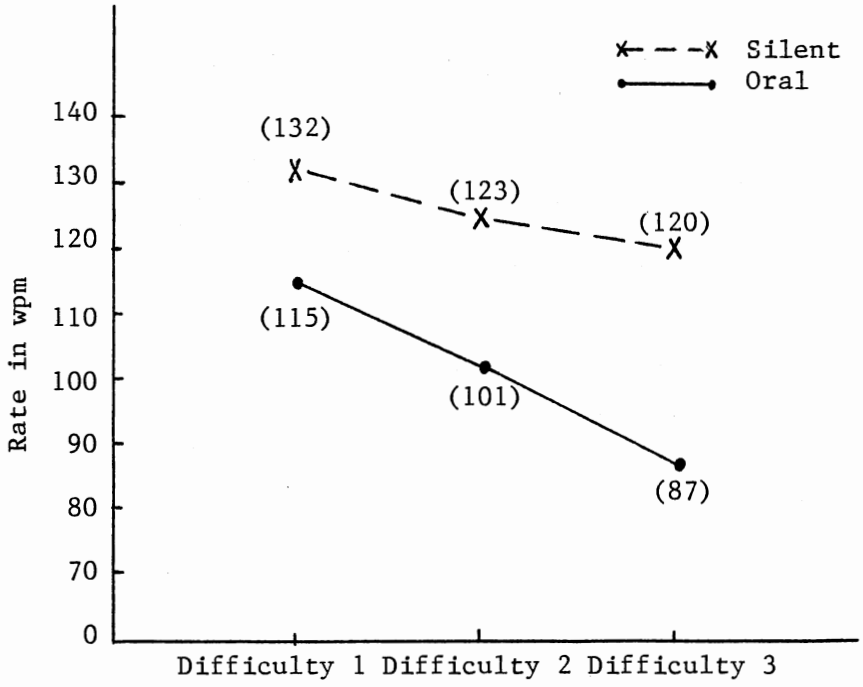

Figure 2. Mean Oral and Silent Reading Rates for Difficulty 1 ($\geq$ 95%, $\geq$ 71%), Difficulty 2 (91% to 94%, 60% to 70%), Difficulty 3 ($<$ 91%, $<$ 60%)

Comparisons of these rates with mean rates established in previous studies (Durrell, 1955; Taylor, 1961; Gilmore & Gilmore, 1968) indicate serious inconsistencies. Durrell (1955), in establishing norms for his diagnostic reading test, listed a mean of 135 wpm for oral reading and a mean of 156 wpm for silent reading at the fourth grade level. Both of these means are higher than either of the mean rates for the easiest oral or silent passage from this study. Gilmore and Gilmore (1968) established a range of oral reading norms (95 wpm - 130 wpm) for fourth grade readers who took their reading test. This range of rates also exceeds the means established in this study for oral reading (87 wpm - 115 wpm). Taylor (1961) in establishing his rate norms also controlled for comprehension. Since he required at least 70% comprehension, his mean silent rate (158 wpm) should correspond to the mean silent rate at Difficulty 1 (132 wpm) in this study. However, Taylor's mean rate is twenty-six words per minute faster than the mean rate in this study.

The large differences in rates are cause for concern in two areas. In two studies (Durrell, 1955; Gilmore & Gilmore, 1968) the rate norms are used as criteria to determine success on a reading test. If the reader does not complete the test within the rate norms for his grade level, he/she is penalized. The present study would indicate that rate should not be considered as a factor in word recognition and comprehension tests but should be measured as a separate component of the reading process.

The oral and silent reading rates obtained in this study indicate a decrease in the rate of reading in the past twenty years. Even when the relative difficulty of the material was held constant, the students in this study read slower than students in previous studies (Durrell, 1955; Taylor, 1961; Gilmore & Gilmore, 1968). This confirms Daves' (1986) finding that the mean rate for the students in her study was lower than the rates established by Taylor (1961). Results from the present study suggest that rate should be considered a separate facet of the reading process. As such, instructional time should be specifically directed to the improvement of rate and the development of flexibility in rate for materials of various difficulty levels.

Recommendations for Further Research

1. It is recommended that this study be replicated for grades three, five, and six to establish appropriate ranges of oral and silent reading rates for those levels.

2. It is recommended that this study be replicated for grades three, five, and six to determine if the same pattern of differences between oral and silent reading rates exist at other levels.

3. It is recommended that a similar study be conducted with a control for the type of text structure used in the test passages.

4. It is recommended that a study of rate be conducted in which students are matched on the variables of IQ and gender.

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APPENDICES

APPENDIX A

PARENT PERMISSION FORM LETTERS

OSU

Oklahoma State University

DEPARTMENT OF CURRICULUM AND INSTRUCTION
COLLEGE OF EDUCATION

STILLWATER, OKLAHOMA 74078-0146
GUNDERSEN HALL 302
(405) 624-7125

March 22, 1988

Dear Parents:

I am a doctoral student in Curriculum and Instruction/Reading Education at Oklahoma State University. I have been granted permission by Mr. Hrencher and your child's teacher to conduct my dissertation research at Perkins Elementary School in your child's classroom.

The research will involve individual assessment of your child's reading rate, word recognition skills and comprehension abilities. Each child will be asked to read several stories, some silently and some orally. The information gained from this study will be provided to your child's teacher to aid her in planning instruction.

All information gathered on your child will remain confidential. Your child's name and test results will not be reported individually. If you are willing for your child to be a part of this important research, please complete the permission slip below and return it to your child's teacher as soon as possible.

If you have any questions or concerns regarding this project, please feel free to call me any evening at 547-2123. Thank you very much for your consideration of this matter.

Sincerely,

Diane Allen

Please check one and return it to your child's teacher as soon as possible.

____ I would like for _____ to participate in this research project.
(child's name)

____ I would not like for _____ to participate in this research project.
(child's name)

_____
(parent's signature)

CENTENNIAL
1890 • 1990

Celebrating the Past . . . Preparing for the Future

OSU

Oklahoma State University

DEPARTMENT OF CURRICULUM AND INSTRUCTION
COLLEGE OF EDUCATION

STILLWATER, OKLAHOMA 74078-0146
GUNDERSEN HALL
(405) 624-7125

March 22, 1988

Dear Parents:

I am a doctoral student in Curriculum and Instruction/Reading Education at Oklahoma State University. I have been granted permission by Mr. Evers and your child's teacher to conduct my dissertation research at Harrison Elementary School in your child's classroom.

The research will involve individual assessment of your child's reading rate, word recognition skills and comprehension abilities. Each child will be asked to read several stories, some silently and some orally. The information gained from this study will be provided to your child's teacher to aid her in planning instruction.

All information gathered on your child will remain confidential. Your child's name and test results will not be reported individually. If you are willing for your child to be a part of this important research, please complete the permission slip below and return it to your child's teacher as soon as possible.

If you have any questions or concerns regarding this project, please feel free to call me any evening at 547-2123. Thank you very much for your consideration of this matter.

Sincerely,

Diane Allen

Please check one and return it to your child's teacher as soon as possible.

_____ I would like for _____ to participate in this research project.
(child's name)

_____ I would not like for _____ to participate in this research project.
(child's name)

_____
(parent's signature)

CENTENNIAL DECADE 1980 • 1990

OSU

Oklahoma State University

DEPARTMENT OF CURRICULUM AND INSTRUCTION
COLLEGE OF EDUCATION

STILLWATER, OKLAHOMA 74078-0146
GUNDERSEN HALL 302
(405) 624-7125

March 22, 1988

Dear Parents:

I am a doctoral student in Curriculum and Instruction/Reading Education at Oklahoma State University. I have been granted permission by Mr. West and your child's teacher to conduct my dissertation research at Sunnyside Elementary School in your child's classroom.

The research will involve individual assessment of your child's reading rate, word recognition skills and comprehension abilities. Each child will be asked to read several stories, some silently and some orally. The information gained from this study will be provided to your child's teacher to aid her in planning instruction.

All information gathered on your child will remain confidential. Your child's name and test results will not be reported individually. If you are willing for your child to be a part of this important research, please complete the permission slip below and return it to your child's teacher as soon as possible.

If you have any questions or concerns regarding this project, please feel free to call me any evening at 547-2123. Thank you very much for your consideration of this matter.

Sincerely,

Diane Allen

Please check one and return it to your child's teacher as soon as possible.

____ I would like for _____ to participate in this research project.
(child's name)

____ I would not like for _____ to participate in this research project.
(child's name)

_____
(parent's signature)

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APPENDIX B

SAMPLE DATA

Table 10

Sample Data of Oral and Silent Reading Rates at Difficulty 1

Student	Oral			Silent	
	W.R. (%)	Comp. (%)	Rate (wpm)	Comp. (%)	Rate (wpm)
1	100	96	119	90	143
2	99	90	87	90	99
3	99	100	138	80	156
4	99	80	99	50	68
5	96	90	81	60	135
6	98	80	122	100	149
7	--	--	--	--	--
8	99	90	101	70	104
9	95	80	94	50	130
10	97	100	83	80	103
11	98	80	95	40	164
12	99	90	94	90	95
13	--	--	--	--	--
14	97	100	160	90	194
15	95	80	115	70	137
16	95	90	145	50	185
17	96	100	87	60	140
18	97	100	87	60	140
19	99	90	119	70	140
20	99	90	100	100	104
21	98	100	131	40	104
22	98	80	82	60	80
23	99	90	159	70	188
24	97	100	109	80	195
25	97	80	109	60	108
26	96	90	120	70	188
27	99	90	141	0	141
28	98	80	132	60	137
29	97	90	141	80	189
30	97	100	84	80	101
31	96	80	103	50	223
32	97	90	109	50	122
33	97	80	81	100	92
34	98	80	104	60	102
35	98	80	161	30	125
36	--	--	--	--	--
37	98	80	118	80	126
38	96	90	145	60	179
39	99	90	66	20	100
40	95	80	128	80	189

Table 10 (continued)

Student	Oral			Silent	
	W.R. (%)	Comp. (%)	Rate (wpm)	Comp. (%)	Rate (wpm)
41	97	80	125	60	95
42	96	90	89	80	87
43	99	80	176	40	163
44	97	90	136	70	177
45	97	80	133	70	176
46	95	100	115	80	139
47	99	90	146	60	163
48	--	--	--	--	--
49	98	80	92	80	104
50	99	90	116	70	116
51	98	90	159	90	200
52	98	90	115	50	161
53	98	80	103	50	130
54	96	90	97	30	128
55	96	90	103	60	91
56	96	90	127	80	169
57	97	100	114	90	159
58	98	80	98	100	127
59	100	90	95	60	104
60	98	90	132	100	124
61	96	90	84	60	86
62	97	80	117	40	104
63	98	80	113	90	116
64	96	80	64	50	33
65	98	80	103	80	136
66	96	110	140	90	154
67	95	80	70	60	76
68	--	--	--	--	--
69	99	80	154	50	164
70	99	100	111	90	119
71	100	80	145	80	103
72	98	80	127	90	130

Table 11

Sample Data of Oral and Silent Reading Rates at Difficulty 2

Student	Oral			Silent	
	W.R. (%)	Comp. (%)	Rate (wpm)	Comp. (%)	Rate (wpm)
1	94	60	111	40	111
2	--	--	--	--	--
3	94	80	82	40	101
4	97	60	81	50	66
5	94	80	84	40	127
6	--	--	--	--	--
7	97	60	137	50	161
8	97	60	105	80	94
9	93	80	96	100	130
10	94	100	94	90	84
11	97	70	97	50	158
12	96	60	68	30	68
13	96	70	113	60	118
14	94	80	116	0	189
15	--	--	--	--	--
16	97	70	141	50	192
17	--	--	--	--	--
18	94	80	85	40	121
19	--	--	--	--	--
20	97	60	79	30	67
21	98	80	124	80	120
22	95	70	65	30	73
23	--	--	--	--	--
24	--	--	--	--	--
25	--	--	--	--	--
26	94	80	118	60	175
27	98	78	133	60	145
28	--	--	--	--	--
29	--	--	--	--	--
30	95	70	72	50	96
31	94	70	101	10	214
32	--	--	--	--	--
33	--	--	--	--	--
34	96	60	103	40	91
35	97	70	110	80	132
36	--	--	--	--	--
37	--	--	--	--	--
38	--	--	--	--	--
39	99	70	102	50	109
40	91	80	87	70	163

Table 11 (continued)

Student	Oral			Silent	
	W.R. (%)	Comp. (%)	Rate (wpm)	Comp. (%)	Rate (wpm)
41	97	70	100	40	161
42	95	70	61	40	76
43	97	70	140	70	153
44	--	--	--	--	--
45	94	90	115	70	137
46	93	80	159	50	140
47	--	--	--	--	--
48	91	80	65	30	91
49	94	90	95	80	118
50	--	--	--	--	--
51	99	60	169	60	175
52	92	90	116	60	170
53	--	--	--	--	--
54	92	90	69	30	103
55	--	--	--	--	--
56	92	90	84	90	113
57	--	--	--	--	--
58	96	70	90	30	128
59	90	70	106	80	115
60	--	--	--	--	--
61	--	--	--	--	--
62	--	--	--	--	--
63	--	--	--	--	--
64	93	70	40	70	51
65	99	60	104	50	124
66	92	80	103	70	130
67	--	--	--	--	--
68	--	--	--	--	--
69	--	--	--	--	--
70	--	--	--	--	--
71	99	70	134	50	109
72	--	--	--	--	--

Table 12

Sample Data of Oral and Silent Reading Rates at Difficulty 3

Student	Oral			Silent	
	W.R. (%)	Comp. (%)	Rate (wpm)	Comp. (%)	Rate (wpm)
1	90	80	94	70	132
2	--	--	--	--	--
3	96	40	88	20	94
4	96	30	65	10	156
5	--	--	--	--	--
6	--	--	--	--	--
7	--	--	--	--	--
8	98	50	105	10	84
9	--	--	--	--	--
10	90	90	64	80	92
11	--	--	--	--	--
12	--	--	--	--	--
13	--	--	--	--	--
14	90	50	128	30	221
15	--	--	--	--	--
16	--	--	--	--	--
17	--	--	--	--	--
18	96	50	74	20	113
19	--	--	--	--	--
20	91	40	56	20	79
21	98	40	114	20	105
22	88	70	56	60	67
23	--	--	--	--	--
24	--	--	--	--	--
25	99	30	105	10	140
26	--	--	--	--	--
27	--	--	--	--	--
28	--	--	--	--	--
29	--	--	--	--	--
30	90	80	71	40	78
31	89	60	68	0	250
32	--	--	--	--	--
33	--	--	--	--	--
34	94	40	88	30	107
35	--	--	--	--	--
36	87	80	26	80	19
37	99	40	133	40	106
38	--	--	--	--	--
39	--	--	--	--	--
40	89	100	92	50	154

Table 12 (continued)

Student	Oral			Silent	
	W.R. (%)	Comp. (%)	Rate (wpm)	Comp. (%)	Rate (wpm)
41	--	--	--	--	--
42	90	90	57	60	78
43	--	--	--	--	--
44	94	30	126	50	188
45	--	--	--	--	--
46	--	--	--	--	--
47	97	50	133	70	175
48	80	0	48	30	99
49	--	--	--	--	--
50	92	50	99	70	123
51	98	50	128	40	205
52	--	--	--	--	--
53	--	--	--	--	--
54	85	70	58	20	130
55	87	90	67	90	92
56	--	--	--	--	--
57	--	--	--	--	--
58	--	--	--	--	--
59	98	50	105	50	92
60	98	50	122	60	103
61	--	--	--	--	--
62	99	30	107	10	158
63	--	--	--	--	--
64	90	80	34	30	32
65	98	20	97	10	109
66	90	70	84	20	217
67	--	--	--	--	--
68	96	50	49	100	54
69	--	--	--	--	--
70	--	--	--	--	--
71	99	50	149	20	130
72	--	--	--	--	--

VITA

Diane Davis Allen

Candidate for the Degree of

Doctor of Education

Thesis: A COMPARISON OF THE ORAL AND SILENT READING RATES AT THREE LEVELS OF DIFFICULTY OF FOURTH GRADE STUDENTS

Major Field: Curriculum and Instruction

Biographical:

Personal Data: Born in Memphis, Tennessee, January 26, 1951, the daughter of Daniel L. and Ruby Davis.

Education: Graduated from Oakhaven High School, Memphis, Tennessee, in May, 1969; received Bachelor of Arts degree from Memphis State University, Memphis, Tennessee, in May, 1973; received Master of Science degree from Oklahoma State University, Stillwater, Oklahoma, in December, 1977; completed the requirements for the Doctor of Education degree at Oklahoma State University, Stillwater, Oklahoma, in July, 1988.

Professional Experience: Taught reading/language arts for grades ten through twelve in Fayetteville, North Carolina, 1973-1974; served as reading specialist for grades six through eight in Drumright, Oklahoma, 1977-1980; taught high school English, language arts, and history in Carney, Oklahoma, 1980-1983; served as reading specialist for grades kindergarten through six in Yale, Oklahoma, 1983-1986; served as graduate assistant and reading clinician, Department of Curriculum and Instruction, Oklahoma State University, 1986-1988.