

**THE EFFECT OF GENDER ON TEACHER WAIT-TIME DURING
SECOND AND THIRD GRADE READING INSTRUCTION**

PANSY B. STRAUB

THE EFFECT OF GENDER ON TEACHER WAIT-TIME DURING
SECOND AND THIRD GRADE READING INSTRUCTION

An Abstract

Presented to the
Graduate and Research Council of
Austin Peay State University

In Partial Fulfillment
of the Requirements for the Degree
Education Specialist

by
Pansy B. Straub

July 1992

ABSTRACT

The major purpose of this study was to determine teacher differential treatment of gender by documenting teacher wait-time during reading instruction. Reading classes for two participating teachers were video taped for a period of ten weeks resulting in 252 reading lessons. Forty-one second and third grade students were observed and wait-times recorded from ten minute segments of ninety lessons chosen by random sample. Wait-times were measured on academically posed teacher questions during the basal story or skill discussion portion of the lesson. The questions selected for measurement had to be clearly presented with the teacher calling on a student by name for a response. Gender related wait-time was measured during the period after the teacher's selection of a student for a response, until teacher probing, restatement or redirection of the question to another student. A t-test was applied to the mean wait-time differences between girls and boys for each teacher. The results of the t-test on wait-time showed girls received more academic wait-time during reading instruction. The t-test showed a significant difference for both teachers at the .05 level of confidence ($p < .05$).

THE EFFECT OF GENDER ON TEACHER WAIT-TIME DURING
SECOND AND THIRD GRADE READING INSTRUCTION

A Field Study

Presented to the
Graduate and Research Council of
Austin Peay State University

In Partial Fulfillment
of the Requirements for the Degree
Education Specialist

by

Pansy B. Straub

July 1992

To the Graduate and Research Council:

I am submitting herewith a Field Study written by Pansy B. Straub entitled "Will Teacher Wait-Time for Second and Third Graders be Significantly Different for Either Gender During Reading Instruction." I have examined the final copy of this paper for form and content, and I recommend that it be accepted in partial fulfillment of the requirements for the degree Education Specialist, with a major in Administration and Supervision.

Robert A. Gore
Major Professor

We have read this Field Study
and recommend its acceptance.

George M. Rawlins
Second Committee Member

Richard C. Yarbrow
Third Committee Member

Accepted for the Graduate
and Research Council:

William H. Eells
Dean of the Graduate School

ACKNOWLEDGMENTS

I wish to express sincere appreciation to Dr. Dolores Gore, Professor of Education at Austin Peay State University, for her guidance, time, and patience given during my entire study. My research was made possible with Dr. Gore's continued support and suggestions.

I would also like to thank my husband, John Straub, and children, Pamela, Mary Beth and John Jr., for their understanding and cooperation during this study. The typist, Ms. Ritzi Forren, did an outstanding job in the preparation of the completed paper.

Numerous other people were instrumental in assisting me with this research. I am forever grateful to my school system for providing this opportunity, to my principal for her encouragement, and to the two classroom teachers who so generously volunteered classrooms to help extend our knowledge base in educational research.

TABLE OF CONTENTS

	PAGE
LIST OF TABLES	viii
CHAPTER	
1. Introduction	1
Statement of the Problem	2
Statement of the Hypotheses	3
Purpose of the Study	3
Significance of the Study	3
Limitations of the Study	3
Definition of Terms	4
2. Review of the Literature	7
Wait-time Research	7
Gender Related Differences	14
Summary of the Literature Review	17
3. Methodology	19
Design	19
Subjects	19
Procedures	20
4. Results	23
Statistical Findings	23
Summary of the Results	28

	PAGE
5. Summary, Conclusions, and Implications	29
Summary	29
Conclusions	31
Implications	32
WORKS CITED	34
BIBLIOGRAPHY	37
APPENDICES	42
A. Letter	43
B. Informed Consent Statement	44

LIST OF TABLES

TABLE		PAGE
1.	Mean Wait-time for Each Gender Determined by Raters	24
2.	Mean Teacher Wait-time for Boys from Each Teacher and for Girls for Each Teacher: t-test for Significance of Difference	25
3.	Mean Teacher Wait-time Differences Between Teachers: t-test for Significance of Difference	26
4.	Difference in Incidence of Teacher-Call Between boys and Girls: Chi-square Analysis for Significance of Differences	27
5.	Summary of Number of Students, Total Number of Calls, and Average Number of Calls for Each Teacher	28

CHAPTER 1

Introduction

Wait-time has been studied as a factor in student achievement directly affecting student outcome. Wait-time has been defined as the period of time a teacher waits after selecting a student for a response until probing, restating or redirecting the question to another student. Pre-service teachers were taped teaching elementary students in order to increase wait-time to three seconds. Results indicated practice increased teachers wait-time significantly which produced longer student responses, more student questions and interaction. Teachers tend to pace instruction at a rapid rate. Once the student responds, the teacher intervenes, comments, or asks another question immediately (Deture 560). Wait-time, the period of time a teacher waits for a student to begin responding can be seen as a variable whose manipulation can improve teaching techniques or procedures (Rowe 270).

Row, in 1976, suggested question/answer exchanges between students and teachers occur too quickly. Teachers usually wait only one second after a posed question before calling on a student. When an answer was not received, the teacher often repeated the question or called on another student to respond (258). When teacher wait-time was increased to three seconds or longer, significant changes were noted. Students began to give fuller explanations and make better connections between inferences and evidence (259).

Tobin, in 1986, used a wait-time of three to five seconds and found math and language arts achievement improved (191). In a study by Brophy and Good, it was found that boys have more contacts with teachers than girls. These contacts included criticisms, misbehavior and academic contacts (227). Brophy and Good also indicated that boys were asked a higher percentage of abstract questions and were more willing to guess at an answer (228).

Gore and Roumagoux, in a 1983 study, examined sex-related differences during mathematics instruction using wait-time as a variable. An analysis of variance showed no significant difference for either girls or boys on academic achievement levels. However, the results from the t-test indicated teachers gave significantly more wait-time to boys than to girls during mathematics instruction (273). The following outlines the theoretical assumptions and hypotheses used for this study on teacher wait-time.

Statement of the Problem

This research assessed the different wait-times given to boys and girls during reading instruction. The following research questions served as the foundation for the null hypotheses:

1. Will the wait-time given differentiate the gender variable? Specifically, will teacher wait-time be significantly greater for one gender than for the other?
2. Will there be a significant difference in mean wait-time between teachers?

3. Will the teacher call on a boy during reading instruction to answer a question more often than a girl?

Statement of the Hypotheses

1. There will be no significant difference between the average teacher wait-time for boys than the average teacher wait-time for girls.
2. There will be no significant difference in average teacher wait-times between teachers.
3. There will be no significant difference in the number of boys called on to respond in relation to the number of girls called on to respond.

Purpose of the Study

The purpose of this study was to determine teacher differential treatment of the genders by documenting teacher wait-time during reading instruction. Other purposes within this study included measuring the frequency of boys being called on in comparison to girls as well as overall average teacher wait-time.

Significance of the Study

Wait-time was reviewed and studied in the classroom setting in order to determine if more wait-time was given to boys or girls during reading instruction. The results may show an indication for increasing wait-time, a factor which might affect either gender's academic reading achievement.

Limitations of the Study

1. This study was restricted to an elementary school in a low socio-economic area in the South.

2. The student participants were limited to members of the second and third grade.
3. Teachers in the study included only those who taught second and third grade children.
4. Observations were confined to routine reading instruction periods.

Definition of Terms

The following are specific definitions of terms based on usage within this study. The terminology used may not be consistent with other theoretical definitions.

1. Attrition: Attrition is the loss of subjects due to the mobility of the subjects or due to the students testing into another group.
2. Basal Reader: Basal readers are preplanned, sequentially organized, detailed materials and methods used to teach developmental reading skills systematically. These graded reading textbooks serve as the core of a reading program. Basal readers usually have reading readiness workbooks as well as other supplementary teaching materials.
3. Classroom Reading Instruction: Classroom reading instruction involves vocabulary introduction and development as well as usage in the reading lesson.
4. Directed Reading Lesson: The directed reading lesson is a method of classroom reading instruction which involves skills in word attack, vocabulary, and comprehension. Steps may include preparation or readiness, guided reading (oral, silent, and discussion), skill development, and enrichment (Wilson and Hall 58).

5. Discourse: The term discourse refers to any teacher and student verbal interchange (Tobin 787).
6. Fate Control: Fate control is the students belief that reinforcement (rewards and punishments) are contingent upon one's own behavior (Rowe 300).
7. Homogeneous Grouping: Students grouped according to reading group, capability, or academic need are grouped homogeneously.
8. Interobserver Agreement: Interobserver agreement refers to comparisons of observations from two or more independent observers. A percentage of agreement is determined using the interobserver process (Gay 217).
9. Pausing Principle: The pausing principle is a form of wait-time which allows the student in a lecture class to formulate notes and interpretations during the lecture (Rowe 258).
10. Reading Groups: Reading groups are constructed according to individual pupil skills. Teaching is centered on individual pupil skills and the attainment of personalized reading goals.
11. Scriptal: Scriptal refers to questions which do not have answers on the student's page and require the reader to use experience to find the answer (Gambrell 78).
12. Teacher Call(s): Teacher calls are the frequency indication of the number of times a student is called on to respond.
13. Text-Based: Text-based refers to a question which has an obvious answer on the student's page (Gambrell 78).

14. Wait-time: Wait-time is the period of time the teacher waits for a student to begin responding after a teacher-posed question. Wait-time is measured after the teacher selects a student for a response, until the question is probed, restated or redirected to another student. Specifically, wait-time will be used to determine the variable or differential thinking time allowed between genders. Only the initial gender related wait-time after the posed question will be reviewed, not any subsequent elaboration-time/wait-time which may follow during discussion.

CHAPTER 2

Review of the Literature

Teacher wait-time has been studied as a factor in student achievement which might affect a student's academic growth. Gender related wait-time has been examined as a variable that might affect the academic achievement of boys and girls. Relevant research into wait-time and gender related wait-time are as follows.

Wait-time Research

Wait-time refers to the period of time between the selection of a student for a teacher-posed academic question and the teacher's probing, restatement or redirection of the question. Experimental studies (Riley 335) in teaching science showed achievement scores directly related to teacher wait-time, as well as the cognitive questioning level. Results indicated that wait-time of about three seconds suggested knowledge achievement in science, as well as positive results in influencing the students' classroom behavior (341).

Row, in 1974, identified wait-time in two categories with the first wait-time occurring after a question presentation and the second wait-time occurring after the response (265). Rowe, in a second 1974 study, addressed fate control in relation to wait-time (292).

It was proposed that short wait-times coupled with a strong sanctioning pattern will tend to induce a low sense of fate control on the part of the student. This low sense of fate control will in turn express itself in particular detectable behaviors such as low task persistence,

low risk taking, low interest in experimental outcomes, limited planning and projection ahead in time, disinterest in interpreting experimental outcomes (292).

Rowe, in 1986, stated that a wait time above 2.7 seconds produced marked consequences for both teachers and students (43).

If a teacher can increase the average length of the pauses at both points, namely, after a question (wait-time 1), even more important, after student response (wait-time 2) to 3 seconds or more, there are pronounced changes (usually regarded as improvements) in student use of language and logic as well as in student and teacher attitudes and expectations (43).

The second wait-time allows time for the student to elaborate and extend the answer. Rowe further expressed the difficulty in getting an average wait-time of 3 seconds or more, which allows time for the student to think (43). Gooding, in a 1985 published report, concluded a wait-time of 3 seconds between student and teacher interactions resulted in higher cognitive levels of discourse (3). In 1983, Gambrell investigated think time for third graders in relation to the types of questions answered. Findings showed that more time for thinking was allowed for text-based questions as opposed to scriptal questions (78).

While attention has been focused at the elementary level, wait-time has also been studied with high school and college students. Boeck (3) reviewed wait-time in relation to the cognitive level of the question and length of the response. This study was accomplished with college juniors enrolled in an educational psychology class. Boeck found wait-time related to the length of the student

response. With a fast schedule, of questions without wait-time, student responses tended to be short phrases without any explanation (8).

Bozsik, in a descriptive study with pre-service and in-service teachers, measured wait-time during pre-story and post-story portions of reading comprehension lessons. Various ability groups were viewed and little differences were found in wait-time between pre-service and in-service teachers (3). Casteel found wait-time strategies to be learned through microsimulation and microteaching.

It appears likely that students who can employ structuring, conditional, wait-time and inductive moves in lecture-reaction, recitation, and value clarification modes could also use these skills in order to facilitate other patterns of classroom discourse (28).

Deture and Miller developed and validated a protocol model to help educators improve wait-time (8). Teachers were instructed to record, transcribe, and calculate wait-time using audio tape recordings. When the taped lessons were reviewed, teachers found wait-time could be significantly increased in two sessions, as well as reaching the wait-time criteria of three seconds (9).

Wait-time was measured on inner city elementary students and junior high students by Fowler. The results indicated the following:

Teachers can be taught a technique whereby they can increase the amount of student-to-student interactions in small groups during science inquiry and can bring about an increase in the frequency in which students spontaneously make verbal contributions to the group (1).

Goodwin, Sharp, Cloutier, Diamond, and Dalgaard, in 1983, published the following guidelines to help teachers improve teaching and questioning skills.

One factor which can have powerful effects on student participation is the amount of time an instructor pauses between asking a question and doing something else (calling on a student or rewording the question). Research on classroom questioning and information processing indicate that students need at least three seconds to comprehend a question, consider the available information, formulate an answer, and begin to respond. In contrast, the same research established that on the average a classroom teacher allows less than one second of wait-time (13).

Instructors using wait-time make fewer teaching errors by responding illogically or inappropriately to student comments. In contrast, allowing too much wait-time can be detrimental to student interaction, if the student does not have a feasible answer. Students who do not have an answer, yet are allowed ample wait-time may perceive the extra time as punishment (Goodwin, et al. 13).

Swift, Swift, and Gooding, in 1984, investigated the effects of increasing teachers' wait-time during questioning with an emphasis on teacher strengths and successes. Wait-time was found to facilitate interaction among students with the process being called supportive intervention. The teachers asked greater numbers of divergent and evaluative types of questions indicative of higher levels of cognitive discourse. When teachers extended wait-times to three seconds, an increase in student-student interaction as well as length of student response increased (Swift, et al. 7).

Oral language behaviors and questioning strategies used were studied in relation to wait-time (Hassler 1). Teachers who were trained in wait-time techniques had students with longer responses, higher level questions and more unsolicited appropriate responses (Hassler 4).

A study of wait-time in college science classes (Moriber 322), reviewed teacher wait-time as well as skillful questioning techniques. It was noted that a wait-time of under four seconds leads to incorrect student responses. Upon receiving the incorrect response, the teacher would then reword the question, believing the first one was unclear, leaving the students with a second related question to answer (326).

Rice completed a study on wait-time in relation to thought-provoking and inquiry-type questions. The areas examined were wait-time, number of questions asked per minute and the cognitive level of the question (353). The results of this study suggested, pre-service elementary science teachers can improve question-asking skills and wait-time through instruction (358).

Another form of wait-time was called the Pausing Principle (Rowe 258). The Pausing Principle technique was used with lecture types of classes where wait-time was a technique used mostly with discussion sessions (259). Rowe found that with college science students it was beneficial to pause at least three times during a lecture for two minutes. This allows students time to think, share ideas, and retain more of the lecture (258).

Rowe listed the positive effects of extended wait-times with the following behavioral changes noted in students.

1. The length of student responses increased between 300 percent and 700 percent, in some cases more, depending on the study.
2. More inferences were supported by evidence and logical argument.
3. The incidence of speculative thinking increased.
4. The number of questions asked by students increased as did the number of experiments they proposed.
5. Student-student exchanges increased: teacher-centered "show-and-tell" behavior decreased.
6. Failures to respond decreased.
7. Disciplinary moves decreased.
8. The variety of students participating voluntarily in discussions increased. Also, the number of unsolicited, but appropriate, contributions by students increased.
9. Student confidence, as reflected in fewer inflected responses, increased.
10. Achievement improved on written measures where the items were cognitively complex (Rowe 44-45).

Teacher changes were noted in Rowe's 1986 study with greater flexibility being demonstrated in teachers' responses. Teacher ideas and the reduction of discourse errors were noted as well as the quality and quantity of questions presented. Overall, teacher expectation for student performance showed a tendency for improvement (Rowe 45).

Wait-time was assessed in a 1983 study with 40 middle school science teachers in order to train the teachers in wait-time using a wait-time device that provided immediate feedback (Swift and Gooding 722). Prior to training in wait-

time, there was no difference in wait-time means for the four groups involved. After applying the experimental variable, teachers increased wait-times considerably (726). A follow-up study (Swift, Swift, and Gooding) was conducted in 1985 with 10 teachers from the original 1983 study. These teachers were trained in wait-time techniques and supportive interventions (7). In sum, the authors have determined use of wait-time can result in spontaneous improvements in both cognitive and affective variables in the classroom (9).

Tobin, in a 1980 study, investigated the effects of variation in teacher wait-time on science achievement for middle school age children (469). The results showed that an extended wait-time did lead to higher science achievement, which supported the experimental hypothesis. Tobin further investigated wait-time in 1984, in relation to student and teacher discourse/interaction when extended teacher wait-time was implemented. The results indicated teacher wait-time was related to teacher and student discourse/interaction variables. When a teacher's wait-time was short, student and teacher interaction tended to decrease (787).

Gooding, Swift, and Swift reviewed variables which resulted from wait-time research in an effort to help teachers moderate the pace of interactive speech in the classroom. Teacher training techniques were developed to help teachers measure and utilize pauses during questioning. Wait-time measuring devices were being developed and refined, in order to promote a more reliable wait-time measurement and to help minimize error (8). Rowe concluded her 1974 study by stating a stopwatch was not the best measuring device since some pauses are too

brief for measurement. She devised a servo-chart plotter to record pauses and voice activation, yet extraneous sounds and background noises still caused some difficulty in recording wait-time (269).

Gender Related Differences

While no research was found concerning the way children learn in relationship to wait-time and reading, much research has been conducted in relation to mathematics and wait-time. Gore and Roumagoux did a study on wait-time and teacher behaviors during mathematics instruction. Wait-time was considered in relation to the classroom environmental influences and teacher expectation during mathematics classes. Teacher expectations, behaviors, and wait-times given were considered to account for the differences in mathematics performance between boys and girls (275).

Sex-related differences in mathematics classes show males and females learning mathematics at different levels, yet the variables influencing these differences are still unclear (Fennema 189). Fennema's study involved sixth and seventh grade boys and girls and the assessment of mathematics ability. "Significant sex-related differences were found for only two affective variables: Confidence in Learning Mathematics and Mathematics as a Male Domain" (194). The results indicated males were significantly more confident of the ability to learn mathematics than were females, and males stereotyped mathematics as a male domain at higher levels than did females (194). Fennema's 1981 study compared females and males during mathematics instruction. Sex-related differences about

the inadequacy of females compared to males during the learning of mathematics has not reflected significant results (384).

Duval, in 1980, conducted a study involving secondary mathematics teachers and differential treatment of female students' grades on geometry papers. Duval theorized that females self-select themselves out of mathematics courses, in the area not required, and females should be encouraged to take mathematics courses (202). The expectation that a student's sex or ability level influences the grade assigned to a paper was not supported by the results of this study (207).

Marshall and Smith proposed to identify strengths and weaknesses in children's performance of mathematics over a three-year period with third and sixth graders. Percentage scores received usually tell only where the groups differ and not how they differ (372). Findings showed that girls excelled in mathematics in the third grade, yet failed to maintain the excellence in the sixth grade.

Marshall and Smith concluded the skills developed in third grade may no longer be required in the sixth grade. It was further stated that girls and boys have different deficiencies in mathematics in the third grade. Mistakes made by boys were more visible than those made by girls, and teachers tended to focus on these obvious deficiencies (383).

Leinhardt, Seewald, and Engle investigated why boys' and girls' performance differs on second grade mathematics and reading scores. Leinhardt, et al. concluded there are identifiable teacher behaviors that are differentially applied, depending on the sex of the student and subject being taught. Teachers

make more academic contacts with girls than with boys in reading and fewer with girls in mathematics. A greater percentage of contacts directed to girls were academic. Teachers spend more instructional time with girls in reading and with boys in mathematics. Teachers give more management information to boys overall (437).

The amount of wait-time given girls and boys may be a direct result of teacher expectations. Brophy and Good (365) reviewed teachers' expectations and found differences in teachers' behaviors based on criticisms of different levels of children. The teachers demanded better performance from children from whom they had high expectations (368).

Irvine viewed the sex variable in the classroom within a 1985 study and found females receiving less praise, communication, less neutral procedure feedback, and less nonacademic feedback. Male students received more teacher attention for praise, negative feedback about behavior, neutral feedback about procedure, and nonacademic feedback. The role of males has been reflective of society's sex role socialization. The male students have been socialized to be more active, assertive, independent, and demanding of the teacher's time and attention (342). Fennema and Sherman concluded, if causation of factors have been due to social forces in the environment, the forces can be modified and the behaviors changed (201). Myths about females and the learning of mathematics are damaging, but Fennema and Sherman see these myths amenable to change (202).

girls may be ...

Summary of the Literature Review

Wait-time as a teacher behavior has an effect on student learning. Most of the studies reviewed agreed that wait-time was an essential element in many areas of academic growth regardless of the student's age or sex. In all studies, the average wait-time needed for question comprehension for all age groups was at least three seconds. Teachers have been able to increase wait-time with rehearsal and practice using audio tapings. The benefits from increased wait-time for the students and teachers are numerous. Overall, increased wait-time improves student responses as well as the quality and length of the response. Increased wait-time by the teacher brought on more continuity for the lesson, with better formulated questions and higher expectations for the student. Wait-time in reading has been used to compare pre-service and in-service teachers with the results reflecting no significant difference in either group. The focus of wait-time research has been on measuring or increasing overall classroom wait-time for all students during instruction. Specific wait-time research in elementary reading comparing wait-time given to each gender has not been completed. Gender related wait-time completed during science and mathematics indicated differential treatment of students. The number and kind of contacts noted with all students indicated specific types of contacts with a particular gender. Girls received more academic contacts and instructional time, while boys received contacts in mathematics or behavior management. The amount of wait-time given to boys or girls may be a direct result of teacher expectation, which may be reflective of the

socialization process within our society. Gender related wait-time may be a variable which affects how and why the genders achieve at different rates. The literature review indicates more research should be done in the field of wait-time. Gender related wait-time during reading needs to be reviewed which may reflect differential treatment of students during instruction.

CHAPTER 3

Methodology

Design

This study was a Quasi-Experimental design with two elementary teachers participating in the research. The participating teachers were informed the purpose of the study was to investigate the effects of reading behaviors during reading instruction with no further explanation given. The teachers were unaware that teacher wait-time differences, gender related wait-time and amount of teacher calls were being viewed and evaluated. Teachers were informed of the specific nature and results of the study as soon as it was feasible to do so.

Subjects

The subjects were two elementary school teachers ($n=2$) who each taught a split second and third grade homogeneously grouped class. Teacher number one had three years of teaching experience, while teacher number two had four years of teaching experience. The level of education obtained by each teacher was a bachelors degree in elementary education.

The student population for this study was two second and third grade classes, with a total of six reading groups. These students were tri-cultural with Black Americans, Caucasians, and Spanish students represented. The student population consisted of twenty-two boys and nineteen girls with no subject losses due to attrition during the ten week study. All (100%) student participants resided in a housing development maintained for families from a low socio-

economic level. This study was conducted in a highly mobile community in the Mid-South where family relocation was commonplace.

Procedures

Written permission to conduct this study was obtained from the school administrative personnel prior to the study. A checklist form for human research was submitted to the university department prior to the onset of the research

Before the ten week study began, a letter briefly explaining the study (Appendix A) was sent to the parents of the students. Parents were given the same information as the participating teachers so that all concerned would not realize that gender related wait-time was being studied. Enclosed with the letter was an informed consent statement (Appendix B) explaining voluntary participation and procedures. All participation forms were returned from teachers and students.

The purpose of this study was to establish teacher differential treatment of different genders by documenting teacher wait-time during reading instruction. All reading classes for each participating teacher were video taped for a period of ten weeks for a total of three hours per day. All students used the same basal series, with each teacher conducting her reading groups in essentially the same manner using components of the Directed Reading Lesson. Video tapings were made of 252 reading classes with wait-time recorded from ninety randomly sampled lessons. Each taped reading lesson was thirty minutes long with data collected from ten minutes of the basal story or skill discussion portion of the lesson.

Teacher wait-times were then viewed and recorded by the researcher during ten minutes of the story or skill discussion. The second rater timed and recorded wait-time during the same reading video viewing. The third rater randomly sampled wait-times independently from the other raters by sampling and timing sixteen ten-minute reading segments. Interobserver agreement on wait-time for all three raters was .99 for females and .96 for males. These interobserver agreement scores show consistency in the interobserver process.

Digital stop (ACCUSPLIT) watches were used as the timing devices for measuring the time allowed for responding to a teacher-posed question. These measuring devices were rated by the manufacturer as the best and most practical available for conducting this type of research by claiming quartz accuracy to 0.002%.

The objective of the video observation was to record teacher wait-time and incidence of teacher calls on boys and girls during reading instruction. The observation system used pertained to individual responses with redirected questions being ignored. The teacher had to clearly pose an academic question and call on a student by name for a response. Wait-time was recorded after the teacher-posed question and student selection, until the teacher redirected the question. Only the initial gender related wait-time was reviewed, not subsequent elaboration time used during the discussion. Questions not directed to a specific student were ignored as well as multiple questions without a student being

selected for a response. Applicable wait-times were recorded for each gender. A t-test was applied to determine the differences and significance of the two genders.

CHAPTER 4

Results

This chapter contains a summary of the data and tests of the hypotheses for gender related wait-time. The data were summarized and analyzed according to the procedures outlined in Chapter 3.

Statistical Findings

The data consisted of the number of teacher calls, teacher wait-time in seconds for each call for boys and girls, as well as mean teacher wait-times between teachers. The subjects for the study were two elementary classroom teachers with a total of 41 students in two separate classrooms. Teacher one had 9 boys and 11 girls divided into three reading groups, while teacher two had 13 boys and 8 girls divided into three reading groups.

Teacher wait-time was collected to see if differences existed between the teachers in mean wait-times for boys and girls. The mean, a measure of central tendency, was used to determine the mean wait-time differences between boys and girls for each of the two teachers and 41 students. The differences were determined for each teacher and between boys and girls for the total sample. As shown in Table 1, mean wait-time for each teacher reflected girls receiving more wait-time than boys during reading instruction. The measures of central tendency showed the overall wait-time for each teacher and for total groups to favor more wait-time for girls. Total mean wait-time for boys equalled 1.64 seconds with girls' total wait-time being 2.14 seconds.

Table 1

Mean Wait-time in Seconds for Each
Gender Determined by Raters

Teacher	Rater #1		Rater #2		Rater #3 Random Sample		Total Mean	
	Male	Female	Male	Female	Male	Female	Male	Female
#1	2.11	2.70	2.07	2.79	1.71	2.12	1.96	2.54
#2	1.31	1.80	1.40	1.82	1.24	1.57	1.32	1.73
					X =		1.64	2.14

Null Hypothesis One

H

O

1: There will be no significant difference between the average teacher wait-time for girls than the average teacher wait-time for boys.

A t-test for the significance of difference in total girls wait-time and total boys wait-time reflected a statistically significant t value at the .05 level of confidence. The t value for boys and girls is noted in Table 2. The null hypothesis was rejected and it was concluded that wait-time for the two teachers and the participating students as a whole showed wait-time for girls to be significantly greater than for boys.

Table 2

Mean Teacher Wait-time for Boys from Each Teacher
and for Girls from Each Teacher in Seconds: t-test
for Significance of Difference

Teacher	Mean Wait-time		Standard Deviation		Differences	t Value
	#1	#2	#1	#2		
Males	2.11	1.31	.62	.70	.80	3.83*
Females	2.70	1.80	.77	1.17	.90	2.87*

*Statistically Significant at the .05 level ($p < .05$).

Null Hypothesis Two

H
O

2: There will be no significant difference in average teacher wait-times between teachers.

Mean teacher wait-time compared showed teacher one giving more academic wait-time than teacher two. A t-test was used to measure the significance of difference between teachers. The t value for teacher one equaled 2.67, with the t value for teacher two equaling 1.61. The t values are both statistically significant at the .05 level ($p < .05$). The t-test for comparing teachers are listed in Table 3. The null hypothesis was rejected for the sample since there was a significant difference in average teacher wait-time between teachers.

girls to respond more often
frequently. The Chi-square

Table 3

Mean Teacher Wait-Time Differences
Between Teachers in Seconds: t-test for
Significance of Difference

Teacher	Mean Wait-time		Standard Deviation		Differences	t Value
	Female	Male	Female	Male		
#1	2.70	2.11	.77	.62	.59	2.67*
#2	1.80	1.31	1.37	.70	.49	1.61*

*Statistically Significant at the .05 Level ($p < .05$).

Null Hypothesis Three

H

O

3: There will be no significant difference in the number of girls called on to respond in relation to the number of boys called on to respond. The number of teacher calls for a specific gender during reading instruction was considered from actual teacher calls. Teacher number one called on girls 352 times with boys being called on 285 times during the ten week study. In contrast to teacher number one, teacher number two called on boys 216 times and girls 123 times as summarized in Table 4. The Chi-square was applied to differences in incidence of teacher calls between boys and girls. The differences were not significant for the calls of teacher one nor teacher two. Teacher one called on girls to respond more often, while teacher two called on boys to answer more frequently. The Chi-square did not show gender being related to number of

teacher calls. Teacher two may have used frequency in calling on boys as a means to monitor behaviors since the reading groups consisted of active boys. The null hypothesis was accepted since there was not a significant difference in the number of each teacher's calls for each gender.

Table 4

Difference in Incidence of Teacher-Call
Between Boys and Girls: Chi-square
Analysis for Significance of Differences

Teacher	No. of Girls	No. of Boys	Calls on Girls	Calls on Boys	Chi-square Value
#1	11	9	352	285	
#2	8	13	123	216	
Totals	19	22	475	501	1.70*

*Statistical significance was not established at the .05 level ($p > .05$).

The total number of students equalled 41 with the number of teacher calls equalling 976. Teacher one called on students 637 times during the ten week study for an average of 30.33 calls per student. Teacher two called on students 339 times with an average of 16.14 calls per student. The calls used within the wait-time study were for academically-posed questions with the students being called on by name for a response. Table 5 reviews the total calls and average calls per student.

Table 5

Summary of Number of Students, Total Number
of Calls, and Average Number of Calls
for Each Teacher

Teacher	Number of Students	Total Number of Calls	Average Calls per student
#1	20	637	30.33
#2	21	339	16.14
Totals	41	976	$x = 23.80$

Summary of the Results

For the group as a whole, mean teacher wait-times were significantly greater for girls during reading instruction. Mean teacher wait-time for individual teachers reflected significantly greater wait-items for girls. However, the incidence of teacher call was not consistent for either teacher when comparing the gender called on most frequently. Teachers one and two differentiated boys and girls in respect to wait-time, but not in relation to incidence of teacher calls. Even though the incidence of teacher calls was not consistent, the mean wait-times for each teacher still reflected more wait-time given to girls during reading instruction.

CHAPTER 5

Summary, Conclusions, and Implications

Summary

The purpose of this study was to investigate gender related differences in relation to teacher behavior during second and third grade reading instruction. The variables involved within this study were incidence of teacher call and teacher wait-time. The study focused on the following research questions:

1. Will teacher wait-time differentiate the gender variable in favor of boys or girls? Specifically, will teacher wait-time be significantly greater for one gender than the other during reading instruction?
2. Will there be a significant different in mean wait-time between teachers?
3. Will the incidence of teacher call differentiate the gender variable in favor of boys or girls?

A review of the literature was conducted in order to investigate all research and knowledge concerning wait-time and gender related differences. The literature described a number of studies stating measures for academic performance in various academic areas, using wait-time as a possible variable. However, none of the studies dealt with the incidence of teacher wait-time in comparing actual wait-times given to either gender during reading instruction. The literature review supplied suggested wait-time as a positive benefit in the learning environment. New teacher training as well as in-service teacher

training has addressed the need and techniques for implementation of wait-time strategies as well as techniques for calling on all students equally. The literature review also indicated the socialization of males and females in our society may predispose a gender for a particular academic behavior. These social forces are reflected in expectation rather than the genders' actual academic ability. There was evidence in the literature suggesting that teachers do often tend to call and wait longer on boys during mathematics instruction.

The empirical part of this study involved two teachers and forty-one students in an elementary school that facilitates students from a low socio-economic level in the Southern part of the United States. Three thirty minute reading classes for each teacher were video taped daily for a period of ten weeks. Forty-five randomly sampled reading classes from each teacher were viewed by two raters, with wait-time being measured during ten minutes of the basal story discussion or skill discussion portion of the story. A third rater randomly sampled sixteen reading classes, viewing and recording wait-times for ten minute segments on each lesson.

Interobserver (Gay 217) agreement on wait-time for all three rates was .99 percent for females and .96 percent for males. These interobserver agreement scores show there was consistency in the interobserver process. All raters used digital timing devices to time and verify actual wait-times. The data were analyzed at the .05 level of confidence using t-tests. For the overall group, mean teacher wait-time was significantly greater for girls during reading instruction. The

incidence of teacher-call for each teacher was not consistent. Each teacher called on an opposite gender more frequently, so frequency of teacher call cannot be evidence in this study.

The results of this research indicate further study into questioning strategies using wait-time. The mean wait-time received by all raters in reading supported the literature in other disciplines, which indicates teachers may need to increase teacher wait-time.

Conclusions

The conclusions of this study were based on the review of the literature and the research findings. These gender related conclusions are as follows:

1. Definite gender differences have been determined in mathematics and science studies in respect to performance. These differences tend to favor the male gender.
2. Societal expectations and socialization of the genders may account for the teachers' perceptions and expectations of students during different academic disciplines.
3. High expectations of all students with the variable of wait-time enhances all students' classroom abilities academically and socially.

Gender related wait-time within this study was viewed and recorded on basal story related questions and skill work discussions. It was necessary to use both types of questions since much skill work was involved in the basal series. The measurements in this study involved the differences in teacher wait-time for

boys and girls, mean teacher wait-time differences, and the incidence of teacher call between boys and girls during reading instruction. Future research could be expanded to reading discussion wait-time and academic reading achievement. Individual student differences, teacher differences, and learning style variations of both the student and teacher could be studied in relation to gender related wait-time. Other areas of research could be done concerning gender related reading wait-time using specific levels of questioning, depending on the objectives of the reading lesson.

Numerous areas concerning wait-time could be investigated and researched in the field of reading. Once a variable in wait-time draws supportive evidence, other researchers can expand the research and further the knowledge base on a specific topic or related area.

Implications

Implications and recommendations were made as a result of this study concerning gender related wait-time.

1. It is recommended the present research design be duplicated with various other diverse student populations. Teacher wait-time during reading instruction with the variable of student gender requires more empirical documentation. This research could be expanded to encompass other pertinent variables related to reading instruction.

2. It is recommended the number of teachers be increased when duplicating or expanding wait-time studies, so the subject sample will be more

representative of the teacher population. A method of sampling teacher expectation for the genders should be devised so the study will not be influenced by what the teachers perceive as the focus of the study.

3. It is recommended in further wait-time studies that more than one type of measuring instrument be utilized in order to correlate the accuracy of the given wait-time.

4. It is recommended reading wait-time and gender be assessed in relation to variations in individual student differences and learning styles compared to teacher differences and teaching styles.

5. It is recommended the implications of the present study be made available to teacher training institutions as well as in-service training groups. Teachers need to be knowledgeable of overall wait-time strategies, as well as having a gender related wait-time awareness.

WORKS CITED

- ACCUSPLIT, Accusplit Incorporated, 2290A Ringwood Avenue, San Jose, CA 95131.
- Boeck, Marjorie A. Classroom Interaction Patterns During Microteaching: Wait-time as an Instructional Variable. ERIC, 1973. ED 076 574.
- Bozsik, Beverly E. A Study of Teacher Questioning and Student Response Interaction during Pre-Story and Post-Story Portions of Reading Comprehension Lessons. ERIC, 1982. ED 215 294.
- Brophy, Jere E., and Thomas L. Good. "Teachers' Communication of Differential Expectations for Children's Classroom Performance." Journal of Educational Psychology 61 (1970): 365-374.
- Brophy, Jere E., and Thomas L. Good. Teacher-Student Relationships Causes and Consequences. New York: Holt, Rinehart and Winston, Inc. 1974.
- Castell, J. Doyle, and John W. Gregory. A Cluster of Technical Teaching Skills Acquisition through Microsimulation and Evaluation through Microteaching. ERIC, 1975. ED 107 645.
- Deture, Linda R. "Relative Effects of Modeling on the Acquisition of Wait-time by Pre-Service Elementary Teachers and Concomitant Changes in Dialogue Patterns." Journal of Research in Science Teaching 16 (1979): 553-62.
- Deture, Linda R., and Ann P. Miller. The Effects of a Written Protocol Model on Teacher Acquisition of Extended Wait-time. ERIC, 1984. ED 245 923.
- Duval, Concetta M. "Differential Teacher Grading Behavior Toward Female Students of Mathematics." Journal for Research in Mathematics Education 11 (1980): 202-11.
- Fennema, Elizabeth. "Women and Mathematics: Does Research Matter?" Journal for Research in Mathematics Education (November 1981): 380-385.
- Fennema, Elizabeth H., and Julia A. Sherman. "Sex Related Factors." Journal for Research in Mathematics Education 9 (1978): 189-203.
- Fowler, Thaddeus W. An Investigation of the Teacher Behavior of Wait-time During an Inquiry Science Lesson. ERIC, 1975. ED 108 872.

- Gambrell, Linda B. "The Occurrence of Think-Time During Reading Comprehension Instruction." Journal of Educational Research 77 (1983): 77-80.
- Gay, L. R. Educational Research. Merril Publishing Company, Columbus, OH, 1987.
- Gooding, C. Thomas. Supportive Intervention as a Vehicle for Faculty Development. ERIC, 1985. ED 255 518.
- Gooding, C. Thomas, Patricia R. Swift, and J. Nathan Swift. The Identification, Definition, and Measurement of Key Variables in Wait-Time Research. ERIC, 1984. ED 260 087.
- Goodwin, Stephanie S., Gregory W. Sharp, Edward P. Cloutier, Nancy A. Diamond, and Kathleen A. Dalgaard. Effective Classroom Questioning. ERIC, 1983. ED 285 497.
- Gore, Dolores, and Daniel V. Roumagoux. "Wait-time as a Variable in Sex-related Differences During Fourth-Grade Mathematics Instruction." Journal of Educational Research 76 (1983): 273-75.
- Hassler, Donni M. A Successful Transplant of Wait-time and Questioning Strategies to Children's Oral Language Behaviors. ERIC, 1979. ED 205 951.
- Irvine, Jacqueline Jordon. "Teacher Communication Patterns as Related to the Race and Sex of the Child." Journal of Educational Research 78 (1985): 338-345.
- Leinhardt, Gaea, Andrea Mar Seewald, and Mary Engel. "Learning What's Taught: Sex Differences in Instruction." Journal of Education Psychology 71 (1979): 432-459.
- Marshall, Sandra P., and Julie D. Smith. "Sex Difference in Learning Mathematics: A Longitudinal Study with Item and Error Analysis." Journal of Educational Psychology 79 (1987): 372-383.
- Moriber, George. "Wait-time in College Science Classes." Science Education 55 (1971): 321-328.
- Rice, Dale R. "The Effect of Questioning-Asking Instruction on Pre-Service Elementary Science Teachers." Journal of Research in Science Teaching 14 (1977): 353-359.

- Riley, Joseph P. "The Effects of Teachers' Wait-time and Knowledge Comprehension Questioning on Science Achievement." Journal of Research in Science Teaching 23 (1986): 335-342.
- Rowe, Mary Budd. "Reflections of Wait-time: Some Methodological Questions." Journal of Research in Science Teaching 11 (1974): 263-279.
- Rowe, Mary Budd. "Relation of Wait-time and Rewards to the Development of Language, Logic and Fate Control: Part II--Rewards." Journal of Research in Science Teaching 11 (1974): 291-308.
- Rowe, Mary Budd. "Wait-time: Slowing Down May Be A Way of Speeding Up!" Journal of Teacher Education (Jan-Feb) (1986): 43-50.
- Swift, J. Nathan, and C. Thomas Gooding. "Interaction of Wait-time Feedback and Questioning Instruction on Middle School Science Teaching." Journal of Research in Science Teaching 20 (1983): 721-730.
- Swift, J. Nathan, Patricia R. Swift, and C. Thomas Gooding. Two Effective Ways to Implement Wait-time. ERIC, 1985. ED 260 898.
- Swift, J. Nathan, Patricia R. Swift, and C. Thomas Gooding. Observed Changes in Classroom Behavior Utilizing Supportive Intervention. ERIC, 1984. ED 245 891.
- Tobin, Kenneth G. "The Effects of an Extended Teacher Wait-time on Science Achievement." Journal of Research in Science Teaching 17 (1980): 469-475.
- Tobin, Kenneth G. "Effects of Extended Wait-time on Discourse Characteristics and Achievement in Middle School Grades." Journal of Research in Science Teaching 21 (1984): 779-791.
- Tobin, Kenneth G. "Effects of Teacher Wait-time on Discourse Characteristics in Mathematics and Language Arts Classes." American Educational Research Journal 23 (1986): 192-200.
- Wilson, Robert M., and Maryanne Hall. Reading and the Elementary School Child. Van Nostrand Reinhold Company, New York 1972.

BIBLIOGRAPHY

- ACCUSPLIT, Accusplit Incorporated, 2290A Ringwood Avenue, San Jose, CA 95131.
- Berliner, David. "Viewing the Teacher as a Manager of Decision." Education Digest 47 (1982): 20-23.
- Boeck, Marjorie A. Classroom Interaction Patterns During Microteaching: Wait-time as an Instructional Variable. ERIC, 1973. ED 076 574.
- Bozsik, Beverly E. A Study of Teacher Questioning and Student Response Interaction during Pre-Story and Post-Story Portions of Reading Comprehension Lessons. ERIC, 1982. ED 215 294.
- Brophy, Jere E., and Thomas L. Good. "Teachers' Communication of Differential Expectations for Children's Classroom Performance." Journal of Educational Psychology 61 (1970): 365-374.
- Brophy, Jere E., and Thomas L. Good. Teacher-Student Relationships Causes and Consequences. New York: Holt, Rinehart and Winston, Inc. 1974.
- Castell, J. Doyle, and John W. Gregory. A Cluster of Technical Teaching Skills Acquisition Through Microsimulation and Evaluation through Microteaching. ERIC, 1975. ED 107 645.
- Cooper, Harris M. "Pygmalion Grows Up: A Model for Teacher Expectation Communication and Performance Influence." Review of Educational Research 49 (1979): 389-410.
- Deture, Linda R. "Relative Effects of Modeling on the Acquisition of Wait-time by Pre-Service Elementary Teachers and Concomitant Changes in Dialogue Patterns." Journal of Research in Science Teaching 16 (1979): 553-62.
- Deture, Linda R., and Ann P. Miller. The Effects of a Written Protocol Model on Teacher Acquisition of Extended Wait-time. ERIC, 1984. ED 245 923.
- Duval, Concetta M. "Differential Teacher Grading Behavior Toward Female Students of Mathematics." Journal for Research in Mathematics Education 11 (1980): 202-11.
- Fagan, Edward R., Donna M. Hassler, and Michael Szako. "Evaluation of Questioning Strategies in Language Arts Instruction." Research in the Teaching of English 15 (1981): 267-278.

- Fennema, Elizabeth. "Women and Mathematics: Does Research Matter?" Journal for Research in Mathematics Education (November 1981): 380-385.
- Fennema, Elizabeth H., and Julia A. Sherman. "Sex Related Factors." Journal for Research in Mathematics Education 9 (1978): 189-203.
- Fowler, Thaddeus W. An Investigation of the Teacher Behavior of Wait-time During an Inquiry Science Lesson. ERIC, 1975. ED 108 872.
- Gambrell, Linda B. "The Occurrence of Think-Time During Reading Comprehension Instruction." Journal of Educational Research 77 (1983): 77-80.
- Gay, L. K. Educational Research Merril Publishing Company, Columbus, Ohio 1987.
- Gooding, C. Thomas. Supportive Intervention as a Vehicle for Faculty Development. ERIC, 1985. ED 255 518.
- Gooding, C. Thomas, and J. Nathan Swift. Modifying Teacher Questioning Behavior in Classroom Interaction. ERIC, 1982. ED 214 769.
- Gooding, C. Thomas, J. Nathan Swift, and Patricia R. Swift. Development and Field Testing of a Wait-Time Feedback Device for Monitoring and Improving Classroom Interaction. ERIC, 1984. ED 241 482.
- Gooding, C. Thomas, Patricia R. Swift, and J. Nathan Swift. An Analysis of Classroom Discussion Based on Teacher Success in Observing Wait-Time. ERIC, 1983. ED 242 682.
- Gooding, C. Thomas, Patricia R. Swift, and J. Nathan Swift. The Identification, Definition, and Measurement of Key Variables in Wait-Time Research. ERIC, 1984. ED 260 087.
- Goodwin, Stephanie S., Gregory W. Sharp, Edward P. Cloutier, Nancy A. Diamond, and Kathleen A. Dalgaard. Effective Classroom Questioning. ERIC, 1983. ED 285 497.
- Gore, Dolores, and Daniel V. Roumagoux. "Wait-time as a Variable in Sex-related Differences During Fourth-Grade Mathematics Instruction." Journal of Educational Research 76 (1983): 273-275.

- Hassler, Donni M. A Successful Transplant of Wait-time and Questioning Strategies to Children's Oral Language Behaviors. ERIC, 1979. ED 205 951.
- Honea, J. Mark. "Wait-time as an Instructional Variable: An Influence on Teacher and Student." Clearing House 56 (1982): 167-170.
- Irvine, Jacqueline Jordon. "Teacher Communication Patterns as Related to the Race and Sex of the Child." Journal of Educational Research 78 (1985): 338-345.
- Leder, Gilah. Teacher Student Interaction: A Case Study. Educational Studies in Mathematics. Boston: D. Reidel Publishing Company, 1987.
- Leinhardt, Gaea, Andrea Mar Seewald, and Mary Engel. "Learning What's Taught: Sex Differences in Instruction." Journal of Educational Psychology 71 (1979): 432-459.
- Lucking, Robert A. Comprehension and a Model for Questioning. ERIC, 1975. ED 110 988.
- Marshall, Sandra P., and Julie D. Smith. "Sex Differences in Learning Mathematics: A Longitudinal Study with Item and Error Analysis." Journal of Educational Psychology 79 (1987): 372-383.
- Moriber, George. "Wait-time in College Science Classes." Science Education 55 (1971): 321-328.
- Rice, Dale R. "The Effect of Question-Asking Instruction on Pre-Service Elementary Science Teachers." Journal of Research in Science Teaching 14 (1977): 353-359.
- Riley, Joseph P. "The Effects of Teachers' Wait-time and Knowledge Comprehension Questioning on Science Achievement." Journal of Research in Science Teaching 23 (1986): 335-342.
- Rowe, Mary Budd. "Reflections of Wait-time: Some Methodological Questions." Journal of Research in Science Teaching 11 (1974): 263-279.
- Rowe, Mary Budd. "Relation of Wait-time and Rewards to the Development of Language, Logic and Fate Control: Part II--Rewards." Journal of Research in Science Teaching 11 (1974): 291-308.

- Rowe, Mary Budd. "Wait-time and Rewards as Instructional Variables, Their Influence on Language, Logic, and Fate Control: Part I--Wait-time." Journal of Research in Science Teaching 2 (1974): 81-94.
- Rowe, Mary Budd. "The Pausing Principle--Two Invitations to Inquiry." Journal of College Science Teaching (1976): 258-259.
- Rowe, Mary Budd. "Wait, Wait, Wait. . ." School Science and Math 78 (1978): 207-216.
- Rowe, Mary Budd. "Wait-time: Slowing Down May Be A Way of Speeding Up!" Journal of Teacher Education (Jan-Feb) (1986): 43-50.
- Sealy, Jean. Instructional Strategies. ERIC, 1985. ED 272 377.
- Sweitzer, Gary L., Robert W. Howe, Stanley L. Helgeson, and Patricia E. Blosser. A Meta-Analysis of Research on Science Teacher Education Practices Associated with Inquiry Strategy. ERIC, 1982. ED 226 991.
- Swift, J. Nathan. Wait-time and Questioning Skills of Middle School Science Teachers. ERIC, 1982. ED 220 276.
- Swift, J. Nathan, and C. Thomas Gooding. "Interaction of Wait-time Feedback and Questioning Instruction on Middle School Science Teaching." Journal of Research in Science Teaching 20 (1983): 721-730.
- Swift, J. Nathan, Patricia R. Swift, and C. Thomas Gooding. Two Effective Ways to Implement Wait-time. ERIC (1985). ED 260 898.
- Swift, J. Nathan, Patricia R. Swift, and C. Thomas Gooding. Observed Changes in Classroom Behavior Utilizing Supportive Intervention. ERIC, 1984. ED 245 891.
- Thompson, G. Brian. "Three Studies of Predicted Gender Differences in Processes of Word Reading." Journal of Education Research 80 (1987): 212-219.
- Tobin, Kenneth G. "The Effects of an Extended Teacher Wait-time on Science Achievement." Journal of Research in Science Teaching 17 (1980): 469-475.
- Tobin, Kenneth G. "Effects of Extended Wait-time on Discourse Characteristics and Achievement in Middle School Grades." Journal of Research in Science Teaching 21 (1984): 779-791.

Tobin, Kenneth G. "Effects of Teacher Wait-time on Discourse Characteristics in Mathematics and Language Arts Classes." American Educational Research Journal 23 (1986): 191-200.

Tobin, Kenneth G., and William Capie. The Effects of Teacher Wait-time and Questioning Quality on Middle School Science Achievement. ERIC, 1980. ED 196 860.

Tobin, Kenneth G., and William Capie. The Relationship of Selected Dimensions of Teacher Performance with Student Engagement. ERIC, 1980. ED 194 521.

Tobin, Kenneth G., and William Capie. Wait-time and Learning in Science. ERIC, 1981. ED 221 353.

Wilen, William W. Questioning Skills for Teachers. ERIC, 1982. ED 222 488.

Wilson, Robert M., and Maryanne Hall. Reading and the Elementary School Child. Van Nostrand Reinhold Company, New York 1972.

APPENDICES

APPENDIX A

Letter

Dear Parents,

I plan to do Educational Research in Reading at

_____ School during

_____. I will be viewing

reading behavior during reading as well as reviewing the research and literature concerning reading. I would like for your child to participate in this study. Please sign the enclosed Informed Consent Statement and return it to

_____ as soon as possible.

When my research is completed, a copy will be available at the school for examination. This study should provide a great learning experience for all students and teachers involved, as well as contribute to the field of education.

Thank you,

Mrs. Straub

Name (please print)

Signature

APPENDIX B

Informed Consent Statement

The purpose of this study is to investigate the effects of reading behaviors during reading instruction. Responses will be confidential. At no time will persons involved be identified nor will anyone other than the investigators have access to the data. No potential hazards may occur from participation in this research. Participation in this study is completely voluntary and participants are free to terminate involvement at any time without penalty. A copy of the research findings will be available at the school for your examination. Thank you for your cooperation.

Mrs. Pansy B. Straub, Graduate Student
Austin Peay State University

Dr. Dolores A. Gore, Faculty Advisor
Austin Peay State University

I agree to allow my child to participate in the present study being conducted under the supervision of a faculty member of the Department of Education at Austin Peay State University and a faculty member of _____ . I have been informed either orally or in writing or both about the procedures to be followed and about any discomforts or risks which may be involved. The investigator has offered to answer any further inquiries as I may have regarding the procedures. I understand that I am free not to participate in this study if I desire. I have also been told of any benefits that may result from my participation.

Name (please print)

Signature

Date