AN OBSERVATIONAL STUDY OF READING INSTRUCTION FOR STUDENTS WHO ARE DEAF/HARD OF HEARING IN PUBLIC SCHOOLS

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Observational studies of reading instruction for hearing students with and without a disability have provided valuable descriptive information on reading instruction; however, similar studies involving students who are deaf/hard of hearing have not been reported. Thus, an observational study of reading instruction, using the MS-CISSAR protocol, was conducted in general education classrooms, resource classrooms, and self-contained special education classrooms in grades 1-4 in public schools within the tri-state area of OH, PA, and WV. Participants included 24 students (with and without concomitant conditions and with varying levels of hearing loss) and 17 teachers of reading for these students. Results indicated that reading activities varied by reading curriculum grade level, grade level enrolled, instructional setting, and presence of concomitant disability.

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PREFACE

It is with a sense of deep gratitude that I wish to acknowledge the many people who have contributed to the present study. I am especially indebted to the teachers, students and parents, and school administrators for opening up their classrooms for this research. Without their participation, this project would not have been possible.

I would also like to express appreciation to my committee members who provided their valuable time, feedback, and guidance. Their patience and cooperation have been invaluable in seeing the present study come to fruition.

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Finally, and most importantly, I thank God for putting the people in my life that have guided and assisted me in this dissertation process and for giving me the heart and motivation to complete this project.

1.0 INTRODUCTION

Presently schools are diligently working toward compliance with the No Child Left Behind (NCLB) Act of 2001 (the reauthorization of the Elementary and Secondary Education Act). Specifically, NCLB §1201(1) states that schools are to establish "reading programs for students in kindergarten through grade 3 that are based on scientifically based reading research, to ensure that every student can read at grade level or above not later than the end of grade 3." The Individuals with Disability Education Improvement Act (IDEIA) supports and strengthens these academic expectations for students with disabilities.

To facilitate the implementation of these political initiatives, the National Research Council was asked to evaluate effective reading practices supported by scientifically based research. Experimental and quasi-experimental research studies on effective reading instructional methods and approaches were reviewed. Based on this review, five components of effective reading instruction were delineated: phonemic awareness, phonics, fluency, text comprehension, and vocabulary instruction (National Reading Panel, 2000). Thus, the U.S. Department of Education (DOE) established a position on reading instruction which reflected collaborative efforts between the National Institute for Literacy, National Institute of Child Health and Human Development, the Center for the Improvement of Early Reading Achievement (CIERA), and the National Reading Panel (NRP).

Results from specific research studies also clarify what constitutes effective reading instruction. For example, Hammill (2004) conducted a meta-analysis of more than 450 reading studies which measured abilities that correlated with reading ability. He reported that the best predictors of reading abilities were found to be the ability clusters of: reading (silent or oral), writing conventions (spelling, punctuation, capitalization, and basic concepts about print), and letters (naming letters and associating speech sounds with letters). Hammill reported that the only single ability which accurately predicted reading ability was reading itself.

Additional studies supporting the importance of reading (silently or orally) as part of effective reading instruction have been conducted at various grade levels. After controlling for prior reading achievement levels, time engaged at school in silent reading was found to be significantly related to gains in elementary age student reading achievement (Leinhardt, Zigmond, & Cooley, 1981) and intermediate age student reading achievement (Taylor, Frye, & Maruyama, 1990). In secondary classrooms, more reading gains were made when reading aloud occurred and when there was more discussion or review (more than 4% of observed time during reading class)(Stallings, 1980). Thus, another important aspect of reading instruction that has been studied is the effect of time spent in reading on reading achievement.

In order to ascertain if and how reading programs for students who are deaf/hard of hearing were implementing these scientifically based components of reading instruction in light of current political reforms, a review of the literature on the nature of reading instruction for this population was conducted. Due to the limited number of studies matching the search criteria, the literature review was expanded to explore reading instruction for hearing students and students with mild disabilities. This expansion of the search uncovered a popular method used by researchers to investigate the nature of reading instruction, observational studies. While

observational studies of what actually occurs during reading instruction have been conducted with hearing students with and without mild disabilities, similar studies involving students who are deaf/hard of hearing have not been reported. Thus, it became apparent that the more detailed descriptive information obtained through observational studies on the nature of reading instruction for students who are deaf/hard of hearing would be of benefit.

2.0 LITERATURE REVIEW

Several areas of research literature ground the study being proposed here. These include a critical review of studies in the following areas: reading achievement for students who are deaf/hard of hearing; nature of reading instruction for students who are deaf/hard of hearing; nature of reading instruction for hearing students; and nature of reading instruction for hearing students with mild disabilities.

2.1 READING ACHIEVEMENT OF STUDENTS WHO ARE DEAF/HARD OF HEARING

The reading level achieved by students who are deaf/hard of hearing has been well documented over the years. Since the 1970s, researchers have studied reading achievement levels of students who are deaf/hard of hearing and reported the resulting levels by various student characteristics: concomitant disability, educational setting, hearing loss, and communication method. The overall reading achievement of students who are deaf/hard of hearing is fourth grade equivalent. One of the most common reading achievement instruments used with this population has been the Stanford Achievement Test (SAT).

Jensema (1975) reported on results of the 1971 Stanford Achievement Test, using hearing scales. Participants included 16,822 students who are deaf/hard of hearing with a mean age of

13.6 years of age (researchers did not report the range of ages). Of these participants, 4,031 students (24%) reported a concomitant condition. Students reporting more than one additional condition were excluded from the study. The mean grade equivalent (GE) score for participants with no additional condition was 3.0 on paragraph meaning and 5.0 on spelling. The largest subgroup of additional condition reported in this study was students with a concomitant emotional/behavioral disorder (E/BD). The mean GE of this subgroup was 2.7 on paragraph meaning and 4.4 on spelling. Participants with a concomitant condition of mental retardation (MR) had the lowest achievement scores with a mean GE of 2.2 on paragraph meaning and 3.1 on spelling. Those participants with a concomitant condition of learning disability (LD) scored a mean GE of 2.4 on paragraph meaning and 3.3 on spelling. From this study, the reading achievement levels of students with concomitant conditions were reported at being .3 to 2 GEs below students who are deaf/hard of hearing with no additional conditions. Data were not reported or further analyzed based on educational setting, hearing loss, or mode of communication in this study.

One study of the reading achievement levels of students who are deaf/hard of hearing using an oral method of communication that focused on the educational setting was conducted by Geers and Moog (1989). These researchers reported on the reading achievement levels of 100 participants who were profoundly deaf (85dB loss or greater) living in the United States and Canada, ages 15 years, 10 months to 18 years, 2 months. All participants of this study were congenitally deaf or identified as deaf by 2 years of age. They were educated in an exclusively oral environment from preschool age to elementary age. The researchers reported that 85% of participants were included in general education for all or most of the school day and that 15% were educated in self-contained classrooms. All participants were of average (62% of

participants) or above average (36% of participants) intelligence, based on the Wechsler Adult Intelligence Scale-Revised (WAIS-R). Participants' parents were college educated and of above average socioeconomic status.

Participants attended five days of a Reading Research Camp where they participated in a series of tests and various recreational activities. Reading achievement at the word level was assessed by the Woodcock Reading Mastery Test and the California Achievement Test (CAT). Based on the Woodcock Reading Mastery Test, half of the participants scored above the 7th GE and half scored below. Results of the CAT indicated that 54% of participants scored above the 7th grade level. The Peabody Individual Achievement Test (PIAT) was used to assess reading achievement at the sentence level. The researchers reported that 54% of participants scored below the 7th grade level and 25% scored above the 10th grade level (considered to be at grade level by the researchers). The Stanford Achievement Test 7th Edition was used to assess reading achievement at the text level (text ranging in length from short paragraphs to six paragraphs). Using hearing norms, results indicated that only 15% of participants scored at or below 3rd grade level, 57% of participants scored at or above the 7th grade level and 30% scored at or above the 10th grade level. Conclusions regarding educational setting in relation to reading achievement levels should be made with caution; however, the authors did not report whether participants were successful in the general education setting because of their high reading levels or if instruction received in the general education setting contributed to the higher reading levels. Participants were reported to receive their early education in a variety of educational settings and no correlations between early educational settings and reading levels were reported. Also, all participants were educated using an oral mode of communication. Thus generalization of results is limited. Furthermore, the higher reading achievement levels could have been related to the

high level of parents' education and economic status rather than education in the general education setting and/or oral mode of communication.

Information on reading achievement based on educational setting, concomitant condition, and hearing loss was analyzed by Holt (1993, 1994), who reported on the median scaled scores for students taking the Stanford Achievement Test 8th Edition. On the reading comprehension subtest, the highest median scaled score, with a corresponding GE of 4.5, was reported for participants 17 years of age. An examination of the median scaled scores by educational setting indicated that participants in integrated local school programs scored highest with a median scaled score GE of 5.7; participants in special school programs, both residential and day, had a median scaled score GE of 3.8; and participants educated in non-integrated local school programs had a median scaled score GE of 2.8. The results also indicated that participants with a less-than-severe hearing loss scored considerably higher (median scaled score GE of 5.4) than participants with a severe loss (median scaled score GE of 4.5) or profound loss (median scaled score GE of 3.8). The researcher noted that 51% of participants with less-than-severe hearing loss were also educated in integrated local school programs. Participants identified with concomitant conditions of only emotional disturbance and/or specific learning disabilities were included in this study. Participants identified with mental retardation were specifically excluded from this study. Results showed that participants with a concomitant condition scored notably lower (median scaled score GE of 3.0) than participants with no concomitant condition (median scaled score GE 4.8). The researcher noted that 61% of participants with a concomitant condition were also educated in non-integrated local school programs. Classroom communication modes of speech only and sign (either with or without supported speech) were examined. Classroom communication mode was reported as not significantly related to reading comprehension.

As indicated in more recent studies, the reading achievement levels for students who are deaf/hard of hearing continues to be well below their hearing peers. Utilizing the Stanford Achievement Test, 9th Edition norming, conducted by the Gallaudet Research Institute, reading achievement levels of 4,808 participants who are deaf/hard of hearing, ages 8 to 18 years of age, were studied (Traxler, 2000). Unlike previous test versions, results of the Stanford 9 were no longer reported by grade equivalency, but by Levels 1 to 4, with Level 3 defined as proficient. The median reading comprehension and reading vocabulary scores of participants were reported at Level 1: Below Basic, indicating less than partial mastery. Participants included 8% with an identified additional physical condition and 24% with an additional cognitive condition. Participants with a concomitant condition demonstrated lower reading achievement levels in both comprehension and vocabulary than participants with no additional conditions (Holt, Traxler, & Allen, 1997). Thus, recent studies reported continued low reading achievement levels of students who are deaf/hard of hearing in the United States.

Studies involving students who are deaf/hard of hearing educated outside the U.S. have reported similar findings. For example, Conrad (1970) reported results from a study involving 468 participants with varying hearing losses from day schools for the deaf, residential schools for the deaf, and partially hearing units (self-contained classrooms), ages 15 to 16 ½ years of age, from England and Wales. A median reading age equivalency of 9 years of age was reported on the Wide-span Reading Test. Less than 4% had a reading age comparable to their chronological age. Studies in Denmark, Sweden, and New Zealand reported reading achievement levels of students who are deaf/hard of hearing leaving schools at less than the reading levels of an average hearing child 9 to 10 years of age (as cited in Conrad, 1979). Power (1985) reported on the results of a survey of 10 and 11 year old Australian students who are deaf. Less than 3% of

participants attending schools specifically for students who are deaf were reading within two years of age appropriate levels with 58% achieving below a 6 year age equivalency. Of participants attending general education classes, 50% were reading within two years of age appropriate levels (as cited in Power & Leigh, 2000).

Thus, decades of research utilizing various reading measurement tools have consistently indicated the average reading level of students who are deaf/hard of hearing to be markedly below grade level. Low reading achievement levels have been reported regardless of educational setting, hearing loss, communication mode, or presence of concomitant condition.

2.1.1 Possible Explanations for Low Reading Achievement of Students who are Deaf/Hard of Hearing

When exploring possible explanations for the low reading achievement levels of students who are deaf/hard of hearing, research has focused on two areas: student variables and instructional variables. Some examples of student variables and their relationship to reading achievement levels of students who are deaf/hard of hearing were reported by Padden and Ramsey (1997). These researchers reported that the student variables of deaf parents, age of hearing loss identification, and length of time the student had been in school correlated significantly with higher reading achievement. Again, researchers reported that the presence of a concomitant disability correlated negatively with reading achievement. A positive relationship was reported between American Sign Language (ASL) ability, as measured by an Imitation test and Verb Agreement Production test, and the reading comprehension portions of the Stanford

Achievement Test 6th Edition (SAT-HI). In addition, the researchers reported that fingerspelling comprehension abilities positively correlated with both reading achievement and ASL ability.

Additional studies reported results on the student variables of effective use of short-term memory, comprehension of multiple meanings of words, processing English syntax, and phonological processing in relation to reading achievement of students who are deaf/hard of hearing. Kelly (1995) suggested that a contributor to reading differences was the efficiency of processing textual visual information. An increase in the time that was required to process words placed a greater burden on working memory; thus, before the meanings of the words were constructed, the words were not clearly remembered. Letourneau (1972) found that the reading ability of students who are deaf/hard of hearing, as measured by the Metropolitan Reading Test, deaf norms, was positively correlated with the ability to comprehend multiple meaning words. Additional research on student variables which negatively impact reading achievement included difficulties in the ability to process English syntax (Quigley, Power, & Steinkamp, 1977) and difficulties in accessing phonological processing (Leybaert, 1993). These types of student variables and their relationship to reading achievement have been the focus of much of the research involving students who are deaf/hard of hearing.

Research on student variables and their relationship to reading achievement has contributed greatly to the investigation of the low reading achievement levels of students who are deaf/hard of hearing. Instructional variables, such as the quality and quantity of reading instruction, may also contribute to the low reading achievement levels of students who are deaf/hard of hearing; these instructional variables have received some attention from researchers in deaf education.

2.2 READING INSTRUCTION FOR STUDENTS WHO ARE DEAF/HARD OF HEARING

Although numerous studies have documented the reading levels achieved by students who are deaf/hard of hearing, research on the quality and quantity of reading instruction and the relationship to reading achievement for this population is limited. In a review of the research literature published over the last 25 years, few articles were found which focused on the type of reading instruction, type of reading material, reading teacher characteristics, or the nature and amount of reading instruction provided to this population.

One study investigating the nature of reading instruction and teachers' knowledge related to reading instruction for students who are deaf/hard of hearing was in the form of a longitudinal national survey (LaSasso, 1978; LaSasso, 1987; LaSasso and Mobley, 1997). In the most recent survey, researchers sent a 38-item questionnaire to programs listed in the 1993 American Annals of the Deaf Directory of Programs. A total of 267 programs (33.5%) responded with 68.5% from day-class programs, 14.6% from residential schools, 10.1% from resource-room programs, and 6.7% from day school programs. Seventy-two percent of respondents indicated the use of basal readers with the most frequently reported basal readers being Reading Milestones, Focus, Ginn World of Reading, and Scott Foresman Reading. When asked to report on the type of specific instructional strategies used, respondents indicated incorporating those strategies listed in Table 1.

Table 1: Reading Instructional Strategies Used with Students who are Deaf/Hard of Hearing*

Strategy	Percentage of Teachers Reporting per Age Group			
	5 to 8 years of age	9 to 12 years of age	13 to 14 years of age	15 years of age or older
Sustained silent reading	76	93	99	99
Guided reading	93	94	88	84
Language Experience Approach	91	88	78	78
Read aloud	93	93	84	73
Shared reading	92	92	87	65
Parallel reading	37	39	39	36

*as adapted from LaSasso & Mobley, 1997, p. 43

When surveyed about the teachers' knowledge in areas related to instructional strategies for developing reading ability, 38% responded that they felt their knowledge was up-to-date, 53% responded that their knowledge was satisfactory, and 9% reported minimal knowledge. When asked to rate their knowledge of variables influencing the development of the reading process, 24% of participants responded up-to-date, 62% responded satisfactory, and 14% responded minimal. Lastly, in the area of reading theory, 22% of respondents indicated that they

felt their knowledge was up-to-date, 63% indicated satisfactory, and 15% responded minimal. Results on teachers' knowledge of instructional strategies and variables influencing development of reading from this study confirmed findings from previous survey studies (LaSasso, 1978, 1987). Respondents from both the current and previous studies reported a general lack of knowledge in basic concepts related to reading instruction. These results should be interpreted with carefully given the low return rate.

Another study investigating the methods and materials used to teach reading to students who are deaf/hard of hearing was conducted by Coley and Bockmiller (1980). Questionnaires were sent to 122 residential schools for students who are deaf/hard of hearing in the United States; of the 543 questionnaires distributed at the schools, 395 complete questionnaires (72.7%) were returned from teachers directly involved in teaching reading. Biographical data collected from the survey indicated that 56.2% of respondents held Master's degrees. Almost 20% of respondents reported taking 0 or 1 reading courses throughout his/her combined undergraduate and/or graduate coursework. Teachers reported on the percentage of instructional time in reading that was spent with the following methods and how well prepared they felt to use the following approaches: basal readers, individualized reading, language experience approach, linguistic readers, programmed readers, packaged reading kids, and other techniques. Results indicated that 41.3% of teachers spent more than 50% of reading instructional time on basal readers, making basal readers the most commonly used material for reading instruction. Of those teachers who reported using basal readers more than 50% of instructional time, the largest percent (32.3%) taught at the primary reading level (grades 1 to 3). Individual reading, as the main instructional method (more than 50% of instructional time), was used by less than 2% of respondents. The language experience approach was used by 44.6% of respondents for 1 - 25% of reading time. Of

those teachers using the language experience approach, 5.6% were teaching students reading at the primary level, 5.3% were teaching students reading at the pre-primer level, and 0% were teaching students reading above the primary level. Teachers rated how well prepared they felt on a scale of 1 to 5 with 3 being adequately prepared. More than 80% of teacher respondents reported feeling adequately prepared to feeling very well prepared with the reading techniques of basal readers, individualized reading, and language experience approach. Researchers concluded that teachers used techniques for which they felt adequately prepared.

The above survey studies provide teacher-reported information on aspects of reading instruction, such as type of reading material used, type of instructional strategies utilized, and teachers' knowledge of those strategies. More in-depth information on the nature of reading instruction can be discerned from the few observational studies that have been conducted.

One observational study of reading instruction for students who are deaf/hard of hearing was conducted by Howarth et al. (1981). Participants in this comparative study included 14 students who were prelingually, profoundly deaf and 14 hearing students. Participants who were deaf reported no additional conditions and ranged in age from 6 years, 6 months to 10 years, 3 months. These participants attended two schools for the deaf in England (Schools A and B). Specific information on communication method used by participants who are deaf and their teachers was not given. Hearing participants ranged in age from 4 years, 11 months to 9 years, 1 month. In this study, participants were selected and matched based on the reading material used. After surveying the teachers of hearing students, those teachers and their students, using the same material as students who were deaf, were selected as participants.

Individual reading sessions were videotaped and analyzed for frequency of stops, reasons for stops, number of words actually read, and time spent in reading. Although all participants

were reading the same number of words, participants who were deaf spent more time in their reading sessions than participants who were hearing, but actually spent less time reading. The researchers attributed this to the large amount of time spent in stops and discussion of language (7 of the participants who were deaf were stopped by their teacher an average of every four words or less). Information on the specific components of reading instruction and time allocated to reading were not a focus of this study. Although time engaged in reading was discussed in this study, specific minutes of time engaged in reading were not reported.

There appeared to be some threats to the external validity of this study and this research suggests that the results be interpreted with caution. Although results were reported for all participants who were deaf, there appeared to be some differences between participants attending School A and School B. Participants from School A read faster and read more difficult books than those from School B. Participants in School A began reading only after they "mastered enough vocabulary and grammatical knowledge to enable him to translate the printed code into a phonetic one" (p. 161), often not beginning reading instruction until approximately 8 years of age. Thus the students from School A were older than those from School B. Since the results of this study were reported for all participants who were deaf, rather than by school, results should be interpreted with caution.

A second observational study, conducted by Limbrick, McNaughton, and Clay (1992), consisted of a longitudinal investigation of the amount of time students spent reading and teacher-student interactions during reading instruction. The study included 45 participants who were severely and profoundly deaf, ages 5 to 10 years of age. The limited information on participant characteristics indicated that participants with concomitant conditions were not included in this study. Participants were enrolled in 1 of 10 classrooms at a school for the deaf or

a resource room at a local primary school in New Zealand. No other information on the participants was provided. The only background information given on the 10 classroom teachers was that they "had all completed in-service courses on the education of the deaf" (p. 311). Some teachers reported using total communication for instruction while others reported using an oral only method. Specific data on the number of teachers using each communication method was not given and data were not reported based on these categories. Lack of information on specific characteristics of the sample, make generalization of the results limited.

Data were collected via teacher questionnaires and video recordings of periods allocated for reading instruction. A total of 575 minutes of observations were recorded. Each participant was observed in 45 second increments and observations were recorded in all 10 classrooms. The videotapes were then coded by teacher-student interactions, instructional focus and format of the lesson, mode of teacher communication, and student engagement in reading.

Results of the teacher questionnaires indicated that the mean time allocated to reading was 52.2 minutes/day. The actual time spent on reading instruction was based on videotaped observations and was calculated from the time the teacher and participant actually started to engage in reading activities until the completion of reading activities. The mean time spent on reading instruction was calculated to be 39.9 minutes per reading lesson (76.4% of allocated time). To be considered engaged in reading, "the child had to be reading to the teacher, reading to himself or herself (silently or with speech and signs), or reading to another child" (p. 311). The amount of time engaged in reading for individual participants was not reported. Rather, the individual times, based on the 45 second sample, were aggregated for the class and averages were reported on a class basis. The average time engaged in reading varied by class level, although specific information on age criteria for each level was not provided. The mean number

of minutes engaged in reading was 24.4 minutes for junior class levels, 19.7 minutes for middle class levels, and 27.8 minutes for senior class levels. The mean number of minutes engaged in reading for all levels was 24 minutes or 45.9% of the allocated instructional time.

The researchers also analyzed the data by reading progress (high or low) based on scores from the Gates and MacGinitie reading assessment. High progress readers spent a significantly higher percentage of time engaged in reading (mean of 74.5%) than low progress readers (mean of 41.2%) ($p<.001$). The researchers compared their findings to those of similar studies involving hearing children in New Zealand and reported that hearing children engaged in reading more (80% to 90% of the allocated instructional time). No data on any differences, or lack of differences, based on the classroom setting (school for the deaf or resource room), teachers' communication mode, or other teacher instructional variables was presented. The researchers also reported mean percentages of teacher behaviors in instructional interactions by class levels. Teachers provided immediate correction and positive feedback to participants. Results indicated that junior and senior level teachers provided a model of correct language and provided the word with more frequency than they provided meaning structures or visual prompts. However, specific information on the type of activities taking place during reading instruction was not reported.

These observational studies provide some useful information about the reading instruction for some students who are deaf. In both the Limbrick et al. (1992) and Howarth et al. (1981) studies, participants included students who were profoundly deaf in schools for the deaf in New Zealand and the United Kingdom; however, neither study included participants of varying hearing loss, participants in placements in general education, or participants with concomitant conditions. In addition, neither study included specific information on the amount of time spent in reading on an individual basis. Limbrick et al. (1992) reported results based on the

classroom as a whole and Howarth et al. (1981) reported results on their participants collectively. Both studies used videotaping of reading instruction to collect data and data were collected for one day. Observations occurred only during reading instruction with no studies observing reading which occurred throughout the entire school day. In addition, neither study reported on the specific type of reading activities taking place during reading instruction.

2.3 READING INSTRUCTION FOR HEARING STUDENTS WITH NO DISABILITY

The type of activities occurring during the reading instruction for students without a hearing loss has been studied in greater detail. One aspect of the quality and quantity of reading instruction studied is time engaged in reading. Over a period of 10 years, Allington (2002) observed, conducted interviews, and videotaped first and fourth grade teachers from six states. The teachers' classrooms were observed for 10 instructional days. The researcher reported that in the typical classroom, 90 minutes were allocated to reading, however, only 10 to 15 minutes (less than 20% of the allocated time) were actually spent reading. Over an entire school day, students in many classrooms spent only 20 minutes/day actually reading. In another study utilizing an informal survey, Allington (1977) reported on the number of words read in context during remedial reading instruction. The words read in context ranged from 24 words to 110 words, with a mean of 43 words read. The researcher then hypothesized that "if, in a typical week of reading instruction, students only encounter 150 to 500 words in context one has to ask: How they ever gonna get good?" (p. 58).

One influencing factor on engagement in reading during reading instruction is the reading ability of the student. One study noted that differences in reading experiences were seen as early

as first grade. Biemiller (as cited in Stanovich, 1986) studied the reading experiences of three groups of participants in first grade (most abled readers, average ability readers, and least able readers). Data were collected in October, January, and April. In October, results indicated that for the most able group, a mean of 12.2 words were read per reading session. Participants in the average ability group read a mean of 11.9 words and participants in the least able group were not reading at all. In January, the mean number of words read per reading session increased for all groups (with a mean of 51.9 words for the most abled participants, 25.8 words for the average ability participants, and 11.5 words for the least abled participants). In April, the respective means were 81.4 words, 72.3 words, and 31.6 words, with the least abled participants reading 1/3 the number words per reading session of most abled participants. Thus, the researcher concluded that as early as first grade, poorer readers begin to read less text than more abled readers during reading instruction.

Walberg (as cited in Stanovich, 1986) "has dubbed those educational sequences where early achievement spawns faster rates of subsequent achievement the 'Matthew effects,' after the Gospel according to Matthew: For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath" (p. 381). This theory was also supported by Allington, who proposed that if the reading instruction provided to less skilled readers is insufficient or not effective, then a "Matthew effect is being created whereby a child who is – for whatever reason - poorly equipped to acquire reading skill may evoke an instructional environment that will further inhibit learning to read" (as cited in Stanovich, 1986, p. 396).

Another study examining the variability of reading experiences during reading instruction was conducted by Thurlow, Graden, and Ysseldyke (1984). Participants included 35 second

grade students in 26 classrooms (26 teachers) from 10 elementary schools. Participants of varying reading abilities (high, middle, and low reading groups) were selected. Designation of high, middle, and low readers was based on within-school distributions. Observations of reading instruction were coded utilizing the Code for Instructional Structure and Student Academic Response (CISSAR) observation form. The observation protocol coded six areas: activity, task, teaching structure, teacher position, teacher activity, and student response. Data were collected using 10-second interval time sampling with observations occurring over two days.

Researchers reported that of the 120 minutes/day scheduled for reading, 81 minutes/day were actually allocated or spent on reading instruction (67.5% of the scheduled time). There was a great deal of variability in the actual time allocated to reading instruction by participants (from 35 minutes/day to 107 minutes/day) (Algozzine, Graden, Thurlow, & Ysseldyke, 1982). The researchers reported that a mean of 16.7 minutes were spent engaged in silent reading over the two day period (with a range of 36 seconds to 26.5 minutes). A mean of 2.9 minutes were spent engaged in reading aloud over the two day period (with a range of 0 minutes to 8 minutes). Participants in the low reading group engaged in 2.5 minutes/day more of reading aloud. The researchers used these two day means to estimate the amount of time engaged in reading over the course of an entire school year. They reported that an average of 21 hours would be spent in reading silently and 5 hours spent in reading aloud during an entire school year, with the participant who was reading for only 36 seconds would read for less than 1 hour over the entire course of the school year. This has important implications considering that the researchers also reported that reading silently was positively correlated to reading achievement while reading aloud was negatively correlated to reading achievement.

Some researchers have examined reading instruction not at the student level, but at the teacher and school level. Taylor, Pearson, Clark, and Walpole (2000) researched effective classroom practices in reading instruction. Participants included principals, teachers, and students from 14 schools in Virginia, Minnesota, Colorado, and California. There were 8 teachers from each of the 14 schools (2 teachers each from kindergarten to grade 3). From each class, two low and two average readers were selected as study participants. Participants also included the teachers' principals who completed a questionnaire on school reading practices and rated teachers as average, or better than average, for purposes of participant eligibility in the study.

Teachers were observed using the School Change Classroom Observation (SCCO) protocol. Observations occurred five times during reading instruction between December and April. In addition, teachers completed two weekly logs of instructional activities and were interviewed by researchers.

Researchers rated schools as most effective, moderately effective, or least effective based on students' gains in reading (words correct per minute, reading words in isolation, and retelling at the students' reading level) and reading achievement on standardized testing in third grade. Four schools were rated as most effective, six schools were rated as moderately effective, and four schools as least effective. Participants in the most effective and moderately effective schools spent more time reading independently than participants in the least effective schools (28 minutes/day, 27 minutes/day, and 19 minutes/day respectively). Reading included silent reading, choral reading, and oral turn-taking reading. Participants in the most effective schools spent more time in reading instruction than participants in the moderately and least effective schools (a mean of 134 minutes/day and a mean of 113 minutes/day respectively). Researchers reported that

participants in the most effective schools spent more time in small group instruction than participants in moderately and least effective schools (60 minutes/day, 26 minutes/day, and 38 minutes/day respectively). This study reported on school and teacher factors of reading instruction as they relate to time engaged in reading; however, results of statistical significance were not presented, thereby results should be interpreted cautiously.

An additional observational study of student engagement and overall quality of reading instruction was conducted by Edmonds and Briggs (2003). In order to evaluate the effectiveness of the National Reading Initiative in the state of Texas, the researchers surveyed, interviewed, and observed 36 kindergarten and first grade classrooms from 13 schools in 10 districts. A total of 100 observations were conducted using the Instructional Content Emphasis (ICE) protocol. This instrument coded observational data in four topic areas: main instructional category (alphabetics, fluency, reading, comprehension, and writing and language arts); instructional subcategory (22 items); grouping; and materials. Data were coded by instructional activity, not using a time sampling protocol. In addition to ICE observation coding, student engagement and overall instructional quality were rated on a Likert scale. Based on this data, the researchers reported that participants in first grade were more engaged when working in small groups than when working in whole class, pair, or independent grouping patterns. However, the most frequently used grouping pattern observed in first grade classrooms was whole class groupings. Data obtained from the ICE protocol was reported by percentage of time spent in each topic and subcategory. The researchers reported percentages of time in topics for kindergarten and first grade classrooms. These have been compiled and presented in Table 2.

Table 2: Percentage of Time in Topics (ICE)

		Percentage of Time in Topic	
Topic	Subcategory	Kindergarten	Grade 1
Alphabetics	Phonics	36	30
	Prereading	20	9
Fluency		2	3
Reading	Reading text (aloud or silently)	9	21
	Text read aloud (by teacher)	6	6
Comprehension	Comprehension monitoring	6	10
	Vocabulary	6	4
Writing & Language	Writing mechanics	5	6
	Publishing	10	11

A second study utilizing the ICE protocol was conducted at Florida State University's Center for Reading Research (2004). The researchers there observed 132 classrooms, kindergarten through third grade, from 34 schools in 17 districts. One-day observations were conducted during 45 minutes of reading instruction between March and May. Overall quality of instruction was rated on seven indicators (classroom management, classroom environment, instructional balance, level of instructional scaffolding, level of student self-regulation, academic expectations, and teaching in context) using a Likert scale of 1 to 4 with 1 indicating unacceptable quality and 4 indicating outstanding quality. Researchers reported a mean overall quality of instruction of 3.0. Overall student engagement was rated on a 3 point Likert scale. A

rating of 1, or low engagement, was coded when less than half the students were actively listening/ participating. A rating of 2 indicated medium engagement and a rating of 3 indicated high engagement. The researchers reported a mean student engagement of 2.7. In comparing the percentage of time by topics, this researcher noted larger percentages of time spent in comprehension monitoring (17.3% in kindergarten and 25.7% in first grade) and reading text, both text read to the student and text read by the student, (19.4% in kindergarten and 29.4% in first grade) in the study conducted by Florida State University's Center for Reading Research than those reported by Edmonds and Briggs (2003). Data indicated that the percentage of time spent in phonic/word study activities decreased as the grade level increased (33% of observed time was spent on phonic/word study activities in kindergarten, 26.1% in first grade, 12.9% in second grade, and 11.8% in third grade). In addition, the largest reported time spent in spelling activities was reported for second grade students (3.2% of the time). Both the Florida State University study and the Edmonds and Briggs study used the percentage of time in instructional activities as coded by the ICE observational instrumental to report on the nature of reading instruction.

As discussed above, several observational studies investigated the nature of reading instruction for hearing students using school-centered, teacher-centered, or student-centered approaches. In summary, students in the most effective schools spent more time on reading instruction and independent reading tasks than those in less effective schools (Taylor et al., 2000). The content emphasis during reading instruction, as reported by Edmonds and Briggs (2003), indicated that the largest percentage of reading activities were phonics, prereading skills, and reading text. From student observations, the mean minutes spent in reading text were reported at 8.4 minutes for reading silently and 1.5 minutes for reading aloud (Graden et al.,

1982). The mean words read during reading instruction were reported at 43 words with poor readers exposed to less text than abled readers (Allington, 1977). Thus, much is known about the nature of reading instruction for hearing students.

2.4 READING INSTRUCTION FOR HEARING STUDENTS WITH A MILD DISABILITY

As the above studies indicate, some insight into the nature of reading instruction for hearing students has been ascertained. Through several observational studies involving hearing students with a mild disability (LD, E/BD, and MR), the nature of reading instruction in the general education classroom, self-contained classroom, resource room setting, and pull-in and pull-out programs, and its relationships to reading achievement for this population has also been investigated.

Leinhardt et al. (1981) studied the nature of reading instruction of students with a learning disability (LD) in 11 self-contained primary grade classrooms. Participants included 105 students identified as LD, ranging in age from 6 years to 12 years of age. A series of pre and post reading achievement tests were administered. Observations utilized the Student-level Observation of Beginning Reading (SOBR), with instructional behavior measures taken by time sampling every 5 minutes for 1 hour. Participants' behaviors were observed 12 times for 10 seconds during each 1 hour observation. Observations occurred during a 20 week period with each classroom observed for 30 hours. Direct reading behaviors included "oral and silent reading of letters, words, sentences, and paragraphs" (p. 349) and indirect reading behaviors included "story discussion, circling pictures with a common phonetic element, listening, and writing,

whether copying or spelling" (p.349). The researchers reported that the mean time spent reading silently was 13.7 minutes/day, the mean time spent reading orally was 13.4 minutes, and the mean time spent in indirect reading was 48 minutes. These observed reading activities varied from those reported by teachers, who indicated that 60% of the day was allocated to reading. In evaluating the reading activities in terms of reading achievement, the researchers reported that posttest performance was significantly correlated with pretest performance, silent reading time, and overlap; however, posttest performance was not significantly influenced by oral reading or indirect reading activities ($p<.05$). The researchers stated that "an average of 1 minute per day of additional silent reading time increases posttest performance by one point. An increase of 5 minutes per day would be equivalent to about 1 month (on a grade-equivalent scale) of additional reading achievement" (p. 355).

A second study observing the nature and amount of reading instruction for students with mild disabilities in resource rooms and general education settings was conducted by Hayes and Jenkins (1986). Participants included three groups: a)117 students with mild disabilities (103 students with LD, 5 students with an E/BD, 7 students with MR, 1 student with a neurological impairment, and 1 student with an orthopaedic impairment) in grades 4 to 6 from 23 resource programs in an urban setting in the Pacific Northwest; b) 18 students with mild disabilities from the 117 participants in Group A selected to be observed in both the resource and general education setting and 45 students with no reported disability (3 of whom were randomly selected for observation from each class) in the regular classroom setting; 3) 16 students with mild disabilities (11 students with LD and 5 students with an E/BD) in grade 4 from 5 resource programs in a nearby suburban school district.

Reading achievement pretests and posttests were measured based on the Slosson Oral Reading Test (SORT), Wide Range Achievement Test (reading subtest), and the CAT vocabulary and reading comprehension subtests. Observation data were collected using the Student-level Observation of Beginning Reading (SOBR). Participants were coded as engaged in direct (oral and/or silent reading) or indirect reading behaviors, academic other (e.g., math, music), or non-reading activities. Instructional groupings between the student and teacher were recorded using proximity codes (e.g. student working alone, student working one-on-one with the teacher, student working in a small group with the teacher). Observational data was collected on teacher statements (positive, negative, or no statement from the statement). In addition, teacher instruction activities were coded (cognitive explanations or cognitive monitoring) and included: explanations, demonstrations, feedback, and asking questions. Observations in the resource room were scheduled from January through May to include 5 to 8 observations of reading instruction per participant. The target participant was observed for 10 seconds. Participant activity, proximity, and type of teacher statement were observed for 10 seconds. The observer then recorded behavior. Observations in 7 general education classrooms were conducted during two total school day observations in May.

Results indicated that participants were assigned to resource rooms for reading instruction a mean of 46.4 minutes/day (with a range of 11 to 180 minutes/day). For all resource rooms, a mean of 9.9 minutes of direct reading and 8.6 minutes of indirect reading were reported. A mean of 6 minutes/day of silent reading in the resource room was reported. For the urban sub-sample, the mean minutes of direct reading were 17.4 minutes (16.7 minutes of silent and .7 minutes of oral reading) for reading instruction in the general education classroom and 13.1 minutes (9.8 minutes of silent and 3.3 minutes of oral reading) in the resource room. Although

the mean minutes spent reading indicated that participants read more in the general education classroom than in the resource room; the range of minutes spent reading in the resource room was large at 0 minutes to 31.5 minutes indicating considerable variability among participants. Peer measures of direct reading in the general education classroom ranged from 6 minutes to 49 minutes. Results were not reported by disability. Results of a regression analysis indicated that, after controlling for pretest reading achievement, teacher instruction activities were the only significant predictor of total time participants spent in reading (44% of total variance). In this respect, results were similar to those obtained by Leinhardt et al. (1981).

Another study utilizing the SOBR was conducted by Gelzheiser, Meyers, and Pruzek (1992), who studied students' reading activities in pull-in and pull-out programs. Participants included 47 students (2 students per grade per school) receiving remedial or special education instruction. Participants were from 6 elementary schools, in grades 2 to 5 and from 9 pull-in and 15 pull-out classes. Criteria used to assign participants to pull-in or pull-out programs was not discussed. Participants whose performance on a school administered standardized reading test were below the 30^{th} percentile and who received services 2 to 3 times per week were classified as remedial. Participants were classified as receiving special education when they received supplemental or primary instruction in reading from a resource room teacher on a daily basis. Data were collected using the Student-level Observation of Beginning Reading Revised (SOBR-R) with observations occurring in 1 week cycles over a 4 month period. The Stanford Achievement Test was used as a pretest and posttest assessment of reading achievement. Participants in both groups spent a mean of 1 hour per week in reading text. Results indicated that differences in reading achievement, time in reading instruction, and direct reading between pull–in and pull-out groups were not significant.

A fourth observational study of reading instruction of students with mild disabilities in general education and special education classes was conducted by O'Sullivan, Ysseldyke, Christenson, and Thurlow (1990). Participants included 47 students with mild disabilities (21 students with a LD, 12 students with an E/BD, and 14 students identified as MR) and 30 students with no reported disability. Participants were from 10 schools in the Midwest (3 suburban schools and 7 urban schools). Participants were in the second, third, or fourth grades and ranged in age from 7 years, 7 months to 12 years, 2 months. Observations occurred throughout one entire school day between the months of November and May. Observations were coded using the Code for Instructional Structure and Student Academic Response (CISSAR). Researchers defined allocated time as "the time when the teacher began instruction to the time when the teacher ended instruction" (p. 138). Academic responding time was defined as "the time spent actively responding, such as reading aloud or writing" (p. 134) while academic engaged time was defined as "the time a student spends responding or passively attending to academic instruction" (p. 134). Academic engaged time included activities such as writing, playing an academic game, reading aloud or silently, academic talking, asking or answering an academic question, and attending to a task. Researchers reported that the mean time allocated to reading was 67.6 minutes for all participants with a disability (there were no statistically significant differences between groups). The mean time allocated to reading was 66.4 minutes for participants without disabilities. The mean time spent reading aloud by participants with a disability in the general education setting was 2.7 minutes (3.5 minutes for participants with LD, 2.4 minutes for participants with E/BD, and 1.7 minutes for participants with MR) while reading aloud by participants without a disability in the general education setting was 1.6 minutes. Participants with a disability spent a mean of 12.3 minutes reading silently in the general education setting

while their peers spent a mean of 18.7 minutes reading silently. In the special education setting, participants with a disability spent a mean of 23.8 minutes reading aloud and 19.9 minutes reading silently. Based on these findings, the researchers reported several differences across placements. For example, the mean percentage of academic responding time, reading aloud, and academic engaged time for participants with mild disabilities were higher in the special education setting than in the general education setting. Participants with LD were engaged for 81.4% of the 25.4 minutes of time allocated to instruction in the special education setting and were academically engaged for 67.2% of the 37.1 minutes of time allocated to reading instruction in the general education settings. Although there was a higher proportion of engagement and active responding in the special education setting, there were fewer minutes of time allocated to reading instruction there. Similar results were reported for participants with E/BD. Researchers concluded that the total time allocated for reading instruction was the same for both classroom settings for participants with LD and E/BD; however, for participants with MR, academic engagement and responding time were greater in the special education setting.

Additional observation studies using the Mainstream Version of the Code for Instructional Structure and Student Academic Responses (MS-CISSAR) investigated the type of activities that corresponded with high student engagement in reading. Greenwood, Delquadri, and Hall (1984) reported that academic responses (writing, reading silently, reading aloud, academic talk, academic game playing, and asking and answering questions) positively correlated to reading achievement. Investigation of subcategories of academic responses indicated that reading silently significantly correlated to reading achievement (.42 (df=91, $p<.01$)). Logan, Bakeman, and Keefe (1997) reported that participants with moderate to severe disabilities in the general education setting demonstrated higher levels of engagement in one-to-

one, small group, and independent groupings than whole class groupings; however, whole class groupings were observed most frequently. Overall, student engagement was reported at 68%, with higher levels reported when the teacher was focused on the target student only. Wallace, Anderson, Bartholomay, and Hupp (2002) reported that no differences were found in engaged time between students without a disability and students with a mild disability in general education high school settings; however, the participating high schools were selected based on exemplary inclusion practices. Abbott, Walton, Tapia, and Greenwood (1999) reported that reading texts in combination with a peer tutor were the instructional conditions which best supported reading behavior. Thus, the MS-CISSAR has been used in several studies involving students with mild disabilities to describe instructional practices and student engagement.

In summary, through several observational studies, data have been collected on the nature of reading instruction in the general education, resource room, and self-contained classroom settings for hearing students with mild disabilities. These observational studies involving students with mild disabilities tended to be more student centered, rather than teacher or school centered. Data were also reported based on the minutes spent reading, not on the number of words read unlike previous studies involving hearing students with no disability. Leinhardt et al. (1981) reported that in the resource room the mean time spent in silent reading was 13.7 minutes/day, oral reading was 13.4 minutes/day, and indirect reading was 48 minutes/day. Posttest reading achievement was significantly influenced by pretest, silent reading time, and overlap. These observational studies also reported that participants with mild disabilities read more in the general education setting than in the resource room setting (Hayes & Jenkins, 1986); however, participants with mild disabilities read for a greater proportion of time in the special education setting (O'Sullivan et al., 1990). In addition, participants with mild disabilities spent

more time in the general education setting reading aloud and less time reading silently than participants with no disability. These observational studies have provided considerable information on the quality and quantity of reading instruction for students with mild disabilities.

2.5 SUMMARY

Much of the research on reading with students who are deaf/hard of hearing focused on their low levels of reading achievement. However, through several survey studies, self-reported data on the type of reading instruction activities used by teachers of students who are deaf/hard of hearing has been collected. These survey studies provided teacher-reported information on reading instructional strategies used with students who are deaf/hard of hearing, teachers' knowledge in these instructional strategies, and the curriculum reported to be used by teachers of the deaf/hard of hearing. One observational study provided data on time engaged in reading for students receiving reading instruction in a resource room or school for the deaf. However, none of these studies included participants with concomitant disabilities or varying hearing losses. In addition, the observational study did not report on the actual type of reading activities taking place during reading instruction nor did it report on reading instruction activities occurring in the general education setting. Also, none of the studies involving students who are deaf/hard of hearing reported reading instruction activities in relation to reading achievement levels.

Borrowing from what we know about reading instruction in general, predictors of reading ability are reading, writing conventions, and letters. Also, time engaged in silent reading is significantly related to gains in reading achievement across age levels. In comparing what is known about reading instruction across populations, the range of minutes spent reading during

reading instruction by hearing students with no reported disability was much larger than for either students who are deaf/hard of hearing or hearing students with mild disabilities; however, more in-depth analyses are needed to determine the applicability of this statement for students who are deaf/hard of hearing. The reported time engaged in reading for students who are deaf/hard of hearing reflects only the time spent for reading instruction in the resource room and center school. It is not known whether students who are deaf/hard of hearing who receive reading instruction in the general education setting read more than those who receive reading instruction in the resource room setting (as is the case for students with mild disabilities). Likewise, it is questionable whether students who are deaf/hard of hearing with a concomitant disability receive reading instruction that looks more similar to that of students who are deaf/hard of hearing with no concomitant disability, more similar to that of hearing students with mild disabilities, or if the reading instruction varies significantly from that provided to either group. In addition, it is not known whether the types of reading activities observed during reading instruction would confirm those reported by survey methodology or would coincide more with reading instruction of hearing students with mild disabilities as determined through observational studies. A detailed descriptive observational study on the nature of reading instruction for students who are deaf/hard of hearing with and without concomitant conditions would begin to answer some of these questions.

3.0 STATEMENT OF THE PROBLEM

3.1 SIGNIFICANCE AND PURPOSE OF THE STUDY

Reading instruction for students who are deaf/hard of hearing poses quite a challenge for teachers as evidenced in the considerable documentation of low reading levels achieved by this population, regardless of students' placement, level of hearing loss, method of communication, or presence of a concomitant condition (Jensema, 1975; Geers and Moog, 1989; Holt, 1993, 1994; Traxler, 2000). Given the current political press to increase reading achievement outcomes for all students, a study of the quality and quantity of reading instruction for students who are deaf/hard of hearing is both timely and important. This study explored the types of activities that occurred and the level of student engagement during reading instruction of students who are deaf/hard of hearing.

3.2 RESEARCH QUESTIONS

This observational study answered the following questions:

1. What is the nature of the reading activities during reading instruction for students who are deaf/hard of hearing in grades 1 through 4 in public school settings?

2. To what extent are students who are deaf/hard of hearing actually reading during reading instruction in grades 1 through 4 in public school settings?
3. To what extent is reading instruction for students who are deaf/hard of hearing in grades 1 through 4 different based on classroom setting?
4. To what extent is reading instruction for students who are deaf/hard of hearing with a concomitant disability different than reading instruction for students who are deaf/hard of hearing with no reported concomitant disability?

4.0 METHODOLOGY

4.1 METHOD

In this descriptive, observational study, observations were conducted during teacher-reported periods allocated, or scheduled, to reading instruction for students who are deaf/hard of hearing. Observations occurred between January and May of 2006.

4.2 SETTING

Observations were conducted in general education classrooms, resource classrooms, and self-contained special education/deaf education classrooms in public schools where reading instruction occurred for one or more students who are deaf/hard of hearing in grades 1-4 in the tri-state area of OH, PA, and WV.

4.3 INSTRUMENTATION

The Mainstream Version of the Code for Instructional Structure and Student Academic Responses (MS-CISSAR), developed by Greenwood and colleagues (Greenwood, Abbott, and

Tapia, 2003), was the observational instrument utilized in the present study to record observations of behaviors of a target student participant and his/her teacher. The MS-CISSAR has been used in several observational studies involving hearing students with and without a mild disability to describe instructional practices and student engagement in public school settings (Greenwood et al., 1984; Logan et al., 1997; Wallace, et al., 2002; Abbott, et al., 1999). Further, the instrument has been used to evaluate teacher candidates in a deaf education teacher training program (Roberson, Woolsey, Seabrooks, and Williams, 2004). Reliability and validity of the instrument has been established by the developers and the training protocol enables observers to maintain that reliability. Taken together, these factors support utilizing the MS-CISSAR instrument to observe students who are deaf/hard of hearing in public schools.

This instrument used 20-second interval time sampling techniques. The MS-CISSAR allowed for 105 events to be coded in 3 categories: *Ecology*, *Teacher*, and *Student*. The instrument contained 13 subcategories under these 3 categories. *Setting*, *Activity*, *Task*, *Physical Arrangement*, and *Instructional Grouping* activities were coded under the category of Ecology. *Teacher Definition*, *Teacher Behavior*, *Teacher Focus*, *Teacher Position*, and *Teacher Approval* behaviors were coded under the category of Teacher. *Academic Responding*, *Task Management*, and inappropriate or *Competing Response* behaviors were coded under the category of Student. Each subcategory then had a specified number of mutually exclusive events (see Appendix A for information on the MS-CISSAR taxonomy).

Some of the MS-CISSAR Ecological Activities, or subject matter, specific to reading instruction included: *Reading* (comprehension, reading aloud, and reading silently), *Spelling*, and *Language* (vocabulary, language structure, and creative writing). To clarify, reading aloud for student participants using a form of manual communication refers to signing “through the air”.

MS-CISSAR Ecological Activities may also be coded as *Other*. For purposes of this research study, the Other category was used to designate Phonic and/or Phonemic Awareness Activities. The MS-CISSAR was originally designed to incorporate phonic and phonemic awareness activities under the general category of Reading and, as such, data on these activities were aggregated with all components of Reading. However, phonic and phonemic awareness activities have been reported to represent a large percentage of reading activities for hearing students. Thus, it was determined that these activities should be coded into the separate category of Other. Additional details regarding Reading and Language Activities were also recorded through anecdotal notes.

The MS-CISSAR provided two opportunities to record anecdotal notes, in opening and closing comments. For example, the observer entered data on the presence of fluency (i.e. repeated reading or partner reading), vocabulary, and/or comprehension activities in these comment sections. Suggested guidelines for anecdotal notes are detailed in Appendix B. Thus, through a combination of MS-CISSAR designated categories, the additional coding category of Other, subcategories, and the anecdotal notes, valuable information on the type of activities and the level of student engagement during reading instruction was collected.

Reliability for the MS-CISSAR instrument is measured based on percentage agreement between observers, or inter-observer reliability. Technical information provided by the developers reported 90% inter-observer reliability (Greenwood & Hou, 1995). The authors provided evidence of concurrent validity by referring to significant differences between low and high achieving students on frequency of engagement ($t(47)=5.8$, $p<.05$).

4.4 PROCEDURES

An informal interview with teacher participants and/or a review of student participants' school records were conducted by the researcher prior to classroom observations (see Appendix C and D for data collection forms). It was theorized that students who are deaf/hard of hearing could receive reading instruction from a variety of professionals (general education teachers, deaf education teachers, speech/language pathologists, reading specialists, etc.) in a variety of instructional settings; therefore, it was determined that time allocated to reading instruction would include scheduled or reported reading instruction provided by all professionals in all of the possible instructional settings; however, reading instruction should be observed only with those professionals and in those instructional settings where daily reading instruction was reported to occur.

Daily reading instruction in the combined general education and resource room settings (general/resource room settings) could be observed in several scenarios. Reading instruction in the resource room setting might be 'in place of' reading instruction in the general education setting, 'partially in place of' or 'partially supplemental to' reading instruction in the general education setting, or 'supplemental to' reading instruction in the general education setting. An example of instruction in the resource room setting that would be considered 'in place of' might be the following scenario: allocated reading instruction in the general education setting might be from 9:00 a.m. to 10:30 a.m. The student participant would receive reading instruction in the general education setting from 9:00 a.m. to 10:00 a.m., then receive reading instruction in the resource room setting from 10:00 a.m. to 10:30 a.m. Reading instruction in the resource room might also be 'supplemental to' reading instruction in the general education setting. For example, allocated reading instruction in the general education setting might be from 9:00 a.m. to 10:30

a.m. and the student participant remains in the general education setting for this entire scheduled time. Then, from 10:30 a.m. to 11:00 a.m., the student participant would receive additional or supplemental reading instruction in the resource room setting. A third option would be considered ‘partially in place of’ and/or ‘partially supplemental to’. For example, allocated reading instruction in the general education setting might be from 9:00 a.m. to 10:30 a.m. The student participant would receive reading instruction in the general education setting from 9:00 a.m. to 10:00 a.m., then leave at 10:00 a.m. to receive reading instruction in the resource room setting which would begin at 10:00 a.m. and continue until 11:00 a.m. (30 minutes longer than reading instruction in the general education setting).

Observer(s) arrived 15 to 30 minutes prior to teacher-reported periods allocated to reading instruction. During allocated periods of reading instruction, observations were coded based on the MS-CISSAR protocol. Observation codes were entered into a laptop computer using Ecobehavioral Assessment Software (EBASS). Using this protocol, one target student and his/her classroom teacher were observed. Following the first 20 seconds of observation, the observer was prompted to enter Ecological events. After the next 20 seconds, the observer was prompted to enter Teacher events. Then, following the third 20 seconds, Student events were coded. This 1 minute cycle of coding was repeated for the entire length of the observation. An audible prompt (heard through headphones) and a change in the computer screen prompted the observer to enter data at the designated time. Data were coded using momentary time sampling, thus only what was observed at that moment, not necessarily during the entire 20 seconds, was coded. Observational anecdotal notes were recorded immediately prior to and following the time-sample reading observations.

4.5 RELIABILITY OF INSTRUMENT

Observer training consisted of: studying the technical and EBASS manuals, completing a computer-assisted tutorial, and practicing coding procedures using videotaped simulations supplied by the MS-CISSAR developers. By studying the EBASS manual and watching the taxonomy videotape, observers gained an understanding of the event definitions and coding procedures. The observers progressed through the computer-assisted tutorials and classroom simulation videotapes until mastery was reached, defined as 90% agreement with coding by MS-CISSAR developers.

4.6 INTER-OBSERVER RELIABILITY

Inter-observer reliability checks were conducted for 10% of the observations. EBASS software was used to calculate the percent agreement overall and by category. Overall inter-observer percentage agreement was 91.6%. Category agreement ranged from 83.1% (Teacher Focus) to 100% (Setting). See Appendix E for the complete EBASS-generated inter-rater reliability report. Inter-observer reliability also fell within the range of reliability reported in the technical manual for this instrument (Greenwood & Hou, 1995).

4.7 NUMBER OF OBSERVERS AND OBSERVATIONS

To determine the optimal number of observers and observations for the present study, several resources were consulted: studies applying generalizability theory and studies utilizing the observational instrument. The procedures of generalizability theory have been applied to estimate the reliability of an observation instrument. Generalizability theory can be used to determine reliability across observers, situations, and occasions. Researchers have found that, for most measures, a single observer could reliably be used. Also, for most measures, two occasions of observations were reliable for estimating even small changes in classroom behaviors (Kohnke, 1986).

A second approach in determining the number of observers and observations was to review the existing studies utilizing the MS-CISSAR instrument. In recent studies, Devlin (2005) conducted an observational study using one observer and four occasions of observations for a total of 3 hours of observations per student. A second rater was used for inter-rater reliability checks in 10% of observations. Additional studies utilizing the MS-CISSAR conducted one entire day of observation with a mean length of 3 hours of observational data per student (Greenwood & Arreaga-Mayer, 1994). Greenwood et al. (1984) reported that one day of observation predicted .92 of the variance in student responses. Single observers were also used in these studies with second observers used for inter-rater reliability checks in 10% of observations.

Based on these findings, the present study was conducted using one observer in the classroom with a second observer present for inter-rater reliability checks in 10% of observations. The principal observer, this researcher, was hearing, had a background in deaf education, and had a working knowledge of sign language. A second observer was hearing, had a background in general education, and had a working knowledge of sign language. Two

observations per student were conducted during designated periods of reading instruction (with the projected length of a reading instruction period estimated to be 90 minutes) for a projected total of approximately 3 hours of observational data per student. Observations of reading instruction occurred on non-consecutive days and no student participant was observed on the same day of the week for both observations.

4.8 DESCRIPTION OF PARTICIPANTS

Data on the number of students who are deaf/hard of hearing nationwide were obtained from the 26th Annual Report to Congress (Department of Education, 2004) at the time of data collection. A reported 5,893,038 students with a disability, ages 6 to 21 years of age, were served under the Individuals with Disabilities Education Act (IDEA) in the 2002/2003 school year with 1.2% identified as deaf/hard of hearing. Of specific interest for the present study were those students in grades 1 to 4, or ages 6 to 11 years of age. A reported 2,725,180 students with a disability, ages 6 to 11 years of age, were served under IDEA with 1.2% identified as deaf/hard of hearing. Information reported on the total population of students who are deaf/hard of hearing served under IDEA in the tri-state area of OH, PA, and WV is detailed in Table 3.

Table 3: 26th Annual Report to Congress: Student Population Served Under IDEIA in the Tri-State Area

	Ohio		Pennsylvania		West Virginia		Total Tri-State	
Category	All Dis	D/HH	All Dis	D/HH	All Dis	D/HH	All Dis	D/HH
Ages 6-21	228,945	2,510	239,060	2,721	45,043	409	513,048	5,640
Ages 6-11	100,315	1,122	104,936	1,256	21,818	197	227,069	2,575

The 26th Annual Report to Congress also provided the number of students with a disability served in various educational settings nationwide and by state (as shown in Table 4). Based on these data, it would appear that a large percentage of students who are deaf/hard of hearing nationally (89.3%) and in the tri-state area (84.8% to 91.6%) received their education in the public school setting. Therefore, the present study focused exclusively on those students who are deaf/hard of hearing receiving reading instruction in various educational settings within public schools.

Table 4: 26th Annual Report to Congress: Student Population Served Under IDEIA in the Tri-State Area by Educational Setting

Age 6 to 11	Ohio		Pennsylvania		West Virginia		Total Tri-State	
Educational Setting	All Dis	D/HH	All Dis	D/HH	All Dis	D/HH	All Dis	D/HH
Outside Reg Class <21%	48,981	502	53,369	705	14,117	111	116,467	1,318
21-60%	28,809	257	30,345	157	5,628	48	64,782	462
>60%	15,455	269	18,956	238	1,963	8	36,374	515
Public Separate Facility	1,859	23	903	14	28	18	2,790	55
Private Separate Facility	4,760	46	992	123	2	0	5,754	169
Public Residential Facility	53	18	115	3	21	12	189	33
Private Residential Facility	47	1	134	14	11	0	192	15
Home/Hospital Environment	351	6	122	2	48	0	521	8

To further identify characteristics of students who are deaf/hard of hearing receiving services under IDEIA, data from the Annual Survey of Deaf or Hard of Hearing Students were collected (Gallaudet Research Institute, 2005). Based on the Annual Survey, 42.4% of students who are deaf/hard of hearing have a concomitant disability. The Annual Survey reported the

following areas of additional conditions for students who are deaf/hard of hearing: 9.5% with speech or language impairment, 9.2% with a learning disability, 8.2% with mental retardation, 6.9% with other conditions, 6.3% with Attention Deficit Disorder, 3.7% with orthopedic impairment (including cerebral palsy), 3.3% with low vision, 2% with other health impairment, 1.9% with emotional disturbance, 1.8% with developmental delay, 1.3% with legal blindness, 1.0% with autism, and .1% with traumatic brain injury. Based on the large percentage of students who are deaf/hard of hearing reporting a concomitant disability and their documented lower reading achievement levels, this population was a focus of the present study.

The Annual Survey also reported on the levels of hearing loss for the population of students who are deaf/hard of hearing. Survey data indicated that 25.8% have a reported mild-moderate to moderate hearing loss, 27.2% have a reported moderate-severe to severe hearing loss, and 29.9% have a reported severe-profound to profound hearing loss. Given the varying hearing losses reported for the population and the documented low reading levels across levels of hearing loss, students of varying hearing losses were also included as participants in the present study.

Professors at colleges providing teacher preparation in deaf education and special education coordinators of programs for students who are deaf/hard of hearing in the tri-state area were contacted requesting their assistance in recruiting teachers, and thereby students, to participate in the study (see Appendix F for a sample of the recruitment letter/e-mail). Based on their recommendations, the appropriate supervisors of these teachers were contacted. Following consent by the school principal or the special education coordinator and the reading teacher(s), an introduction letter, school permission letter, and informed consent letter were sent to parents of identified students who are deaf/hard of hearing. Parents obtained their child's assent as

indicated on the consent forms and explained in the school permission letter and introduction letter (Appendixes G and H). Consent from teachers of reading for the students who are deaf/hard of hearing who had agreed to participate was also obtained (Appendix I). Accordingly, participation in the study required mutual voluntary consent of both student and teacher participants.

Thus, participants of the present study included: (a) 24 students who are deaf/hard of hearing (with and without a concomitant disability and with varying levels of hearing loss) in grades 1 to 4 from 9 public schools in OH, PA, and WV; and (b) 17 teachers of reading for these student participants (teaching in general education classroom settings, resource classroom settings, and/or self-contained special education/deaf education classroom settings). Some teachers were working with more than one student participant. Also, some student participants were receiving reading instruction from more than one teacher.

4.8.1 Student Participants

Through informal teacher interviews and/or a review of student participants' school records, demographic data were collected on concomitant disability, gender, age, level of hearing loss, age of onset of hearing loss, parental hearing status, assistive listening devices used, primary method of communication, grade level enrolled, instructional setting where reading took place, length of time in current instructional setting, and reading level (see Appendix D for student participant data collection form).

Demographic data indicated that 6 of the 24 student participants were identified with a concomitant disability. Gender of participants indicated an even distribution of male and female

participants. The 24 student participants ranged from 6 years of age to 11 years of age with a mean age of 8 years, 4 months (see Table 5).

Data on the level of hearing loss, age of onset, and parental hearing status were also collected on each student participant. Student participants had varying degrees of hearing loss ranging from a mild-moderate to profound hearing loss. For purposes of data analysis, data on level of hearing loss were reported based on the hearing loss in the better ear, with the exception of the unilateral hearing loss which was reported based on the ear with the hearing loss (see Table 5). Data collected on the age of hearing loss onset indicated that 20 student participants experienced a prelingual hearing loss (prior to 2 years of age), 2 student participants experienced a postlingual hearing loss (after 2 years of age), and for 2 student participants the age of hearing loss onset was not known. Only 1 student participant had at least one parent who was deaf/hard of hearing and the other 23 student participants had hearing parents.

Data were collected on all the assistive listening devices that could be worn by the student(s) in schools and some student participants reported utilizing a combination of assistive listening devices. Thus the reported frequency of assistive listening devices used in the schools totaled more than 24 (total participants). All participants for whom the use of a cochlear implant was reported were implanted in just one ear had been implanted for a mean of 4 years. The frequency of each type of assistive listening device(s) reported to be used by student participants is detailed in Table 5.

Table 5: Demographic Characteristics of All Student Participants

Variable	Categories	N	%
Gender	Male	12	50
	Female	12	50
Level of Hearing Loss (based on better ear)	Mild-moderate/moderate	6	25
	Moderate-severe/severe	7	29.2
	Severe-profound/profound	11	45.8
Assistive Listening Devices Reported to be Used in School	Classroom amplification	9	37.5
	Cochlear Implant	8	33.3
	Hearing Aid	14	58.3
	Personal FM System	11	45.8
Primary Method of Communication	American Sign Language	9	37.5
	Sign Supported Speech	8	33.3
	Speech	7	29.2
Grade Level Enrolled	1st	9	37.5
	2nd	7	29.2
	3rd	5	20.8
	4th	3	12.5
Instructional Setting	General Education	5	20.8
	General/Resource Room	6	25
	Self-Contained	13	54.2

Also detailed in Table 5 is the frequency of primary method of communication reported. For student participants reporting the use of manual communication, none of the student participants' school records contained results of an assessment of sign language abilities, even when such assessment was available as part of the curriculum. In other cases, the lack of data on sign language assessment may be due to the limited sign language assessment tools readily available to the schools.

Student participants were enrolled in grades 1 to 4 (see Table 5 for a frequency distribution). Data on the instructional setting where reading was reported to occur were reported as follows: general education, resource room (where students with disabilities spent from 30 minutes to 3 hours), and self-contained. Table 5 summarizes the frequency and percentage of student participants by instructional setting. Data indicated that none of the student participants received reading instruction in the resource room exclusively, but 6 student participants received reading instruction in the general/resource room settings. The mean length of time in the current instructional setting was 2.2 years.

Data were collected on student participants' current reading level through informal teacher interviews and/or a review of student participants' school records. However, compiling these data was problematic. Some student participants (particularly those in first grade) had never had a reading assessment. Some student participants' reading assessments had been given in the previous school year, while other student participants' reading assessments had been given within 8 weeks of observation. There was also a wide variety of reading assessment instruments utilized (state-wide assessments, curriculum placement assessments, etc.). Additionally, it was not in the scope of the present study to administer a reading assessment. Thus, collectively it was difficult to analyze the reported reading levels across all student participants. However, the grade

level of the current reading curriculum utilized was consistently available and provided an estimate of current reading level. This reading curriculum grade level was then compared to the grade level in which the student was enrolled in order to assign each participant an on, above, or below reading grade level designation. Student participants ranged from working with reading curriculum ‘on grade level’ to working with reading curriculum ‘two grade levels below’. No student participants were reported to be working with reading curriculum above grade level. Table 6 reports cross-references of reading curriculum grade level by grade level enrolled. Across grade levels enrolled, 33% of student participants were working with reading curricula on grade level; however, from first grade to third grade, as grade level enrolled increased, the percentage of student participants working with reading curricula on grade level decreased. Also, there were no student participants enrolled in first or second grade working with reading curricula two grade levels below. Reading curriculum grade level was also investigated by method of communication. Results indicated that 100% of student participants using an oral method as the primary method of communication were working with reading curricula on grade level, while only 12.5% of student participants using sign supported speech and 0% of student participants using ASL were working with reading curricula on grade level. It should be noted again, however, that there were no levels of mastery assessed for student participants using sign supported speech or ASL. Thus formal analyses of reading curriculum grade level by sign language ability could not be conducted.

Table 6: Student Participant Reading Curriculum Grade Level based on the Grade Level Enrolled

		Grade Level Enrolled									
		1st		2nd		3rd		4th		Total	
Variable	Categories	N	%	N	%	N	%	N	%	N	%
Reading Curriculum Grade Level	On grade level (0)	4	44.4	3	42.9	-	-	1	33.3	8	33.3
	1 Level Below (-1)	5	55.6	4	57.1	1	20	-	-	10	41.7
	2 Levels Below (-2)	-	-	-	-	4	80	2	66.6	6	25

Throughout the present study, analyses were conducted to explore the variable of hearing loss as a possible confounding variable. Therefore, several demographic variables were cross-tabulated with level of hearing loss: instructional setting, primary method of communication, and reading curriculum grade level (see Table 7). Some cells within the cross-tabulation were empty (e.g., student participants with severe-profound/profound hearing losses receiving reading instruction in the general education setting and student participants with moderate-severe/severe hearing losses receiving reading instruction in the general/resource room settings). Data indicated that student participants with mild-moderate/moderate hearing losses were more likely

to receive reading instruction in the general education setting only or general/resource room settings (83.3%) while student participants with severe-profound/profound hearing losses were more likely to receive reading instruction in the self-contained setting (63.6%). Also, student participants with mild-moderate/moderate hearing losses had a greater percentage use of speech (66.7%) and a higher percentage of working with reading curricula on grade level (66.7%) and student participants with severe-profound/profound hearing losses had a greater percentage use of sign or sign supported speech (91%) and a lower percentage of working with reading curricula on grade level (18.2%).

For this sample, level of hearing loss seemed to be linked to both reading curriculum grade level and instructional setting. Therefore, a cross-tabulation including three variables was conducted and reported in Table 8. Regardless of level of hearing loss, all student participants in the general education setting were working with reading curricula on grade level. In addition, across all levels of hearing loss, 30.8% of student participants receiving reading instruction in the self-contained setting were working with reading curricula two levels below and the remaining 69.2% were working with reading curricula one level below. So, it appears that, for this sample, reading curriculum grade level was more strongly linked to instructional setting than level of hearing loss.

Table 7: Demographic Characteristics of All Student Participants by Level of Hearing Loss

Variable	Categories	Level of Hearing Loss							
		Mild-moderate/ moderate (n=6)		Moderate-severe/ Severe (n=7)		Severe-profound/ profound (n=11)		Total (n=24)	
		N	%	N	%	N	%	N	%
Instructional Setting	General Education	3	50	2	28.6	0	0	5	20.8
	General/Resource Room	2	33.3	0	0	4	36.4	6	25
	Self-contained	1	16.7	5	71.4	7	63.6	13	54.2
Primary Method of Communication	American Sign Language	1	16.7	3	42.9	5	45.5	9	37.5
	Sign Supported Speech	1	16.7	2	28.6	5	45.5	8	33.3
	Speech	4	66.7	2	28.6	1	9.1	7	29.2
Reading Curric-ulum Grade Level	On grade level (0)	4	66.7	2	28.6	2	18.2	8	33.3
	1 Level Below (-1)	0	0	3	42.9	7	63.6	10	41.7
	2 Levels Below (-2)	2	33.3	2	28.6	2	18.2	6	25

Table 8: Characteristics of All Student Participants: Cross-Tabulation of Reading Curriculum Grade Level, Instructional Setting, and Level of Hearing Loss

	Level of Hearing Loss								
	Mild-Moderate/ Moderate			Moderate-Severe/ Severe			Severe-Profound/ Profound		
Reading Curriculum Grade Level	0	-1	-2	0	-1	-2	0	-1	-2
	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
Instructional Setting									
General Education	3			2					
General/Resource Room	1		1				2	1	1
Self-Contained			1		3	2		6	1

Note: Reading curriculum grade level of on grade level is designated by '0', one grade level below is designated by '-1', and two grade levels below is designated by '-2'.

4.8.2 Teacher Participants

Informal teacher interviews were conducted to collect biographical information on teacher participants: hearing status, gender, instructional setting for teaching reading, degree or certification, years of teaching experience, number of reading courses taken, and number of in-service trainings in reading instruction attended within the last 5 years (see Appendix C for teacher participant interview form). Data obtained from these interviews indicated that all 17 teacher participants were hearing and that the teacher participant group was predominantly

female (88.2%). Eleven teacher participants (64.7%) reported teaching reading in the general education setting, 3 teacher participants (17.6%) reported teaching reading in the resource room setting, and 3 teacher participants (17.6%) reported teaching reading instruction in the self-contained setting. None of the teacher participants taught reading to student participants in more than one setting.

Background data on variables related to teacher preparation in reading instruction indicated that 7 teacher participants (41.1%) held Bachelor's degrees only and 10 teacher participants (58.8%) held Master's degrees. The mean number of years teaching was 17.9 years with a range of 2 years to 38 years and the mean number of years of teaching experience with students who are deaf/hard of hearing was 5 years with a range of 6 months to 31 years. The mean number of reading courses taken was 3.3 with a range of 0 to 10 courses. The mean number of reading in-services attended within the last 5 years was 8 with a range of 0 to 20 in-services. Thus, there were large ranges for variables related to teacher preparation in reading instruction.

Of the 17 teacher participants, 6 were teachers certified in Deaf Education. All teacher participants in this subgroup were hearing and female. The demographics of this subgroup varied somewhat from the general education teacher participants in several respects. All deaf education teachers taught in either self-contained (3 teacher participants) or resource room (3 teacher participants) settings (see Table 9). None of the teacher participants in this subgroup taught or co-taught student participants in the general education setting.

Table 9: Comparison of Demographic Characteristics of Deaf Education Teachers and General Education Teachers

		Deaf Education Teachers		General Education Teachers	
Variable	Categories	N	%	N	%
Gender	Male	0	0	2	18.2
	Female	6	100	9	81.8
Instructional Setting	General Education	0	0	11	100
	Resource Room	3	50	0	0
	Self-Contained	3	50	0	0
Highest Degree Held	Bachelor's	2	33.3	5	45.5
	Master's	4	66.6	6	54.5
Dual Certification	Elementary Education & Special Education or Elementary Education & Deaf Education	2	33.3	2	18.2

Background data on variables related to teacher preparation in reading instruction for the subgroup of deaf education teachers also varied from general education teachers. As noted in Table 9, a higher percentage of the subgroup (12.1% more) held Master's degrees. General education teachers had a mean of 10 years more teaching experience (almost twice as many years as did the deaf education teachers). Also, they attended a mean of 1.7 more reading classes and a mean of 5.2 more in-services on reading instruction than did the deaf education teachers. The range was also 2 times wider. Table 10 compares the specific background data on variables

related to teacher preparation in reading instruction for deaf education teachers and general education teachers.

Table 10: Comparison of Background Characteristics of Deaf Education Teachers and General Education Teachers

Variable	Participants	Mean	Median	S.D.	Min.	Max.
Total Years of Experience	Deaf Education Teachers	11.3	8.5	10.4	2	31
	General Education Teachers	21.5	20.0	11.5	2	38
Years Experience with Students who are Deaf/Hard of Hearing	Deaf Education Teachers	11.1	8.0	10.4	2	31
	General Education Teachers	1.8	1.0	1.3	.5	5
Number of Reading Classes Taken	Deaf Education Teachers	2.2	2.0	1.9	0	5
	General Education Teachers	3.9	3.0	2.8	0	10
Number of Reading In-services Attended within the Last 5 Years	Deaf Education Teachers	4.7	3.0	4.3	0	10
	General Education Teachers	9.9	5.0	8.4	1	20

4.9 DATA ANALYSIS

Data from informal teacher participant interviews, reviews of student participants' school records, and observations were analyzed using descriptive statistics. Data were analyzed using EBASS, SPSS, and spreadsheet software. Inferential statistics were used in reporting data by frequency, mean, and standard deviation. In addition, one way ANOVAs and independent t-tests were utilized to calculate significant differences between groups. A .05 level of significance (alpha) was set for all tests. However, because of the small sample size which lowers power, results of interest that are significant at the .10 level of significance are reported. Thus, the present study reported both quantitative and narrative, descriptive data on the nature of reading instruction for students who are deaf/hard of hearing and who are taught reading in grades 1-4 in public school settings.

5.0 RESULTS

Results are presented on the following research questions: a)What is the nature of reading activities during reading instruction for students who are deaf/hard of hearing in grades 1 through 4 in public school settings? b)To what extent are students who are deaf/hard of hearing actually reading during reading instruction in grades 1 through 4 in public school settings? c) To what extent is reading instruction for students who are deaf/hard of hearing in grades 1 through 4 different based on classroom setting? and d) To what extent is reading instruction for students who are deaf/hard of hearing with a concomitant disability different than reading instruction for students who are deaf/hard of hearing with no reported concomitant disability. Data obtained from teacher participant interviews, a review of student participants' school records, and observations were used to address these questions.

5.1 NATURE OF READING ACTIVITIES

To investigate the nature of reading activities during reading instruction for students who are deaf/hard of hearing, several analyses were conducted. Teacher-reported data on student use of assistive listening devices and method of communication were compared with observed data. Frequency and percentage occurrence of teacher-reported data on curriculum and reading modifications were presented, as were the mean time allocated to reading instruction and the

mean time observed in reading instruction. The frequency of occurrence of types of Activities, components of reading instruction, Tasks, Teacher Behaviors, and Instructional Groupings were calculated for the entire group of participants. In addition, an investigation of the level of hearing loss as a potential confounding variable was explored in relation to the time allocated to reading instruction, time observed in reading instruction, components of reading instruction, and instructional group size. Thus, the nature of reading instruction activities was investigated using an analysis of several frequency distributions.

5.1.1 Student Participants

Through informal teacher interviews and/or a review of student participants' school records, demographic data were collected on variables that may impact the reading instruction of students who are deaf/hard of hearing. During observations, data were also collected on some of these variables, specifically assistive listening devices and method of communication. Observational data indicated that 18 student participants (75%) used assistive listening devices during reading instruction, 3 student participants (12.5%) did not use assistive listening devices at all during reading instruction, and 3 student participants (12.5%) had inconsistent use of assistive listening devices during reading instruction (utilizing assistive listening devices in one observation but not in the other observation). Student participants using cochlear implants were observed using assistive listening devices with less frequency than student participants using other types of assistive listening devices. Of the 8 student participants who reported using a cochlear implant, 4 student participants (50%) were observed using the cochlear implant during reading instruction, 1 student participant (12.5%) was observed not using the cochlear implant at all during reading

instruction, and 3 student participants (37.5%) were observed inconsistently using the cochlear implant.

Although it was not the purpose of the present study to assess the proficiency or selection of the sign system used for either the teacher or student participants, data on communication method were also investigated during observations of reading instruction. Among student participants whose teachers reported speech as their primary method of communication (n=7), speech was the only communication method observed. Among student participants reported as using sign supported speech (n=8), sign supported speech was the communication method observed in 93% of observations and speech only was the communication method observed in 7% of observations. Among student participants reported as using ASL (n=9), sign only was observed in 62.5% of observations and some combination of sign and voice was observed in the remaining 37.5% of observations. The observed method of communication may have been influenced by the communication method of other student participants and/or teacher participants grouped with the target student during observation(s).

5.1.2 Reading Curriculum and Reading Modifications

Data were collected on the reading curriculum, IEP services which may be relevant to reading instruction, and reading modifications. Data on the core reading curriculum and supplemental curriculum utilized were obtained during informal teacher interviews and observations. Table 11 cross-references these curriculum data by school. Only one curriculum was reported and observed to be used by more than one school, Harcourt Trophies. This curriculum was used with student participants in the general education setting. Supplemental curricula of trade books,

individualized material, and computer software were also reported and observed to be used in several schools and several instructional settings. Some curricula were reported, but not observed. This may be due to the limited number of observations or the time of school year in which observations occurred. Also, in some situations it was not possible to determine which curriculum was used during an observation session. As noted in Table 11, student participants were taught reading using a variety of curricula.

Additional demographic data were collected on IEP services which may be relevant to reading instruction, including the use of interpreters. Overall, the use of an interpreter was reported for 54% of student participants (n=13). Specifically, the use of an ASL interpreter was reported for 9 student participants, the use of an interpreter with sign supported speech was reported for 4 student participants, and the use of an aide was reported for 1 student participant.

Table 11: Curriculum and Supplemental Curriculum Reported and Observed by School

Curriculum & Supplemental Curriculum	School								
	1	2	3	4	5	6	7	8	9
Accelerated Reader					RO				
Computer Software	O		O		RO	O			
Fairview	RO								
Focus		RO							
Harcourt Signatures	RO								
Harcourt Trophies				RO			RO		
Houghton Mifflin					RO				
Individualized						O			RO
Literacy Collaborative (Leveled Literacy Instruction (LLI) and Guided Reading)					RO				
McDougal, Little	RO								
McGraw Hill			RO						R
Reading A-Z									R
Reading Milestones						RO			
Reading Recovery					RO				R
Science Research Associates (SRA)	RO								
Success for All								RO	
Trade Books	RO		O	RO	O		O		RO

Note: R=reported by the teacher, O=observed

Data on other IEP services, i.e. reading modifications, were collected from informal teacher interviews and/or a review of student participants' school records. The most common reading modifications reported for student participants were: extended/extra time (70.8%), small group instruction (66.7%), adapted curriculum (41.7%), and preferential seating (29.2%). Closer inspection indicated that 52.9% of student participants whose records indicated extended/extra time were working with reading curriculum one grade level below and 35.3% were working with reading curriculum two grade levels below. Of those whose records indicated small group instruction, 56.3% were working with reading curriculum one grade level below and 37.5% were working with reading curriculum two grade levels below. Of those student participants whose records indicated an adapted curriculum, 70% were working with reading curriculum one grade level below and 30% were working with reading curriculum two grade levels below. All student participants reported to receive no reading modifications were enrolled in second grade and working with reading curriculum on grade level. Student participants for whom modifications of visual/verbal cues and prompts were indicated were enrolled in first grade, working on grade level, and used an oral method of communication. All participants reported as receiving modifications of use of a FM system and rephrasing, repeating, or clarifying of directions were enrolled in the first grade. Participants reported as receiving modifications of going to the room for learning support, signing material over reading level, and providing study guides were in the fourth grade. Data on all reported modifications are presented in Table 28.

5.1.3 Time Allocated for Reading Instruction and Time Spent in Reading Instruction

The time allocated for reading instruction was based on teacher-reported data of the times in which reading activities were scheduled for student participants. Theoretically, reading activities

could be provided by a variety of professionals (general education teachers, deaf education teachers, speech/language pathologists, reading specialists, etc.) in a variety of instructional settings (general education, resource room, and self-contained); however, the provision of reading instruction by a reading specialist and/or speech/language pathologist was not reported for any of the student participants in the present study. In two schools, additional elementary general education teachers were utilized to provide supplemental tutoring or to assist in small group instruction in the general education setting. The mean time allocated for reading instruction per day was 103.1 minutes/day with a range of 60 minutes/day to 140 minutes/day. The median time allocated for reading instruction was 112 minutes/day with a standard deviation of 21.6 minutes.

Student participants were observed only in instructional settings where daily reading instruction occurred and only with professionals teaching reading to student participants on a daily basis. Accordingly, if student participants were scheduled to receive daily reading instruction in both the general education and resource room, reading instruction was observed in both settings. Observed time spent in reading instruction was based on observations of daily allocated reading instruction. The mean reported time allocated for reading instruction was 103.1 minutes/day. The mean time observed for observation one was 78.8 minutes with a standard deviation of 20.6 (range of 50 minutes to 123 minutes) and the mean time observed for observation two was 75.8 minutes with a standard deviation of 29.0 (range of 27 minutes to 139 minutes). As seen by the standard deviations, there was considerable variability in time spent in reading instruction among student participants. The mean time observed being spent in reading instruction was 77.3 minutes/day with a range of 38.5 minutes/day to 123 minutes/day. The median time observed spent in reading instruction was 76 minutes/day.

The proportion of actual time spent in reading instruction was determined by comparing the teacher-reported allocated time of reading instruction with the EBASS observed time spent in reading instruction and the mean time observed spent in reading instruction per day was 77.3 minutes. The proportion of allocated time actually spent on reading instruction then was 75%.

Data on time allocated to reading instruction, time spent in reading instruction, and the proportion of allocated time actually spent on reading instruction were analyzed by grade level enrolled and reading curriculum grade level. Results indicated that student participants in third grade had the largest mean time allocated to reading instruction, the largest mean time actually spent in reading instruction, and the highest proportion of allocated time actually spent on reading instruction (107.8 minutes/day, 89.3 minutes/day, and 82.8% respectively). The smallest mean time spent in reading instruction and the smallest proportion of allocated time actually spent on reading instruction was reported for student participants in second grade (72 minutes/day and 69.2%). None of these differences reached levels of significance. In analyzing data by reading curriculum grade level, student participants working with reading curriculum one grade level below had the smallest mean time allocated to reading instruction, smallest mean time spent in reading instruction, and smallest proportion of allocated time actually spent on reading instruction (94.3 minutes/day, 63.9 minutes/day, and 67.8%, respectively). These student participants spent 23 minutes less per day in reading instruction than students working with reading curriculum on grade level and 22 minutes less per day in reading instruction than student participants working with reading curriculum two levels below. Results of a one way ANOVA showed a significant difference by reading curriculum grade level in the total time observed in reading instruction ($F(2,21)=5.204$, $p=.015$). Tukey post hoc comparisons revealed that student participants working with reading curriculum on grade level spent significantly more time

observed in reading instruction than student participants working with reading curriculum one level below. Also, student participants working with reading curriculum two grade levels below spent significantly more time observed in reading instruction than student participants working with reading curriculum one grade level below.

Results of a one way ANOVA showed no significant difference by level of hearing loss in the time allocated to reading instruction. Results indicated that students with a mild-moderate/moderate hearing loss were observed spending significantly more time in reading instruction than students with a severe-profound/profound hearing loss ($p=.052$).

In addition, results of an independent t-test indicated a significant difference in the mean time spent in reading instruction, $t(2.16)=22$, $p=.042$ (two tailed) when there was more than one student who was deaf/hard of hearing in the class during reading instruction. The mean time observed in reading instruction was significantly lower for students with more than one student who was deaf/hard of hearing in the class.

5.1.4 Reading Instruction

Based on MS-CISSAR observed data, the frequency of occurrence of Activities or subject matter during reading instruction was calculated. Reading activities (including reading aloud, reading silently, and comprehension) comprised 46.4% of observations, Language activities (including vocabulary, grammar, and creative writing) comprised 22.6% of observations, Spelling activities comprised 13.8% of observations, and Other or Phonic/phonemic awareness activities comprised 1.6% of observations. This translates to a mean of 35.9 minutes/day spent in Reading, 17.5 minutes/day spent in Language, 10.7 minutes/day spent in Spelling, and 1.2 minutes/day spent in Phonic/phonemic awareness activities. Spelling and Language activities were observed more

frequently with student participants working with reading curriculum below grade level. Results of a one way ANOVA showed a significant difference in time spent in Spelling and Language activities by the grade level enrolled ($F(3,20)=3.2350$, $p=.044$) and $F(3,20)=4.290$, $p=.017$, respectively). Student participants in first grade spent significantly less time than students in third grade in Spelling activities ($p=.061$). Tukey post hoc comparisons revealed that there was a significant difference in the time spent in Language activities between student participants enrolled in second and third grades and student participants enrolled in third and fourth grades with student participants in third grade spending more time in Language activities than students in second or fourth grade.

To further analyze the focus of Reading and Language activities, observational data were collected through anecdotal notes on components of reading instruction: fluency, vocabulary, comprehension, and phonic/phonemic awareness. Of the total 57 observations, fluency activities were observed in 10 observations (17.5%), vocabulary activities were observed in 25 observations (43.9%), comprehension activities were observed in 41 observations (71.9%), and phonic/phonemic awareness activities were observed in 6 observations (10.5%). The 10 observed fluency activities occurred during observations of 8 student participants, 4 of whom were enrolled in first grade, 2 were enrolled in second grade, 1 was enrolled in third grade, and 1 was enrolled in fourth grade. Data also indicated that 5 of these students were working with reading curriculum on grade level, 1 was working with reading curriculum one grade level below, and 2 were working with reading curriculum two grade levels below.

Phonic/phonemic awareness activities were observed with 4 student participants in 4 different schools for a total of 59 minutes. The mean time spent on Phonic/phonemic awareness activities was 7.4 minutes/day with a range of 2 minutes to 24 minutes/day. Three of the 4

students who were observed as participating in Phonic/phonemic awareness activities engaged in these activities in the general education setting for a total of 29 minutes or 5.2% of observations. For these 3 student participants, the mean time spent on Phonic/phonemic awareness activities were 4.9 minutes/day with a range of 2 minutes to 19 minutes. Phonic/phonemic awareness activities were observed for 1 student participant receiving reading instruction in the general/resource room settings while the student participant was in the resource room setting for a total of 30 minutes (24 minutes in observation one and 6 minutes in observation two) or 18.5% of observations. Two of the students who participated in Phonic/phonemic awareness activities were enrolled in first grade and 2 were enrolled in second grade. The reported levels of hearing loss for these student participants ranged from a unilateral severe loss to bilateral moderate-severe loss. Teachers reported that students who were observed participating in Phonic/phonemic awareness activities used a variety of assistive listening devices (personal FM systems, personal hearing aids, and/or classroom amplification) and the use of an assistive listening device was observed in all observations of these participants. Speech was the primary method of communication reported for these student participants, all of whom were working with reading curriculum on grade level (thus there was a significant difference in the frequency of Phonic/phonemic awareness activities and student participants working with reading curriculum on grade level, p=.023). The Teacher Behavior most associated with occurrences of Phonic/phonemic awareness activities was Talk Academic, when the teacher was lecturing or discussing academic topics (19% at .05 level of significance).

To learn whether the component of phonic/phonemic awareness was included in the curricula used with student participants, a review of the core curriculum and the components of reading instruction were conducted (see Table 12). An ‘x’ indicates that the component was

present in the curriculum though not the extent to which it was present. For some curricula, it was not possible to obtain information on the components of reading instruction covered. As indicated in the table, all curricula, for which there were data, contained all components of reading instruction with the exception of Reading Milestones. The lack of phonic/phonemic awareness activities then cannot be explained by the absence of this component in the curriculum.

Table 12: Curricula Observed and the Components of Reading Instruction

	Components of Reading Instruction				
Curriculum	Phonics	Phonemic Awareness	Fluency	Vocabulary	Comprehension
Fairview***	x	x	x	x	x
Focus*	x	x	x	x	x
Harcourt Signatures					
Harcourt Trophies*	x	x	x	x	x
Houghton Mifflin**	x	x	x	x	x
Literacy Collaborative****					
McGraw Hill**	x	x	x	x	x
Reading Milestones*****			x	x	x
Reading Recovery					
Science Research Associates (SRA)*	x	x	x	x	x
Success for All*	x	x	x	x	x

Note: an * indicates the source for data

*Florida Center for Reading Research (2006)

**Oregon Reading First Center (2004)

***Schimmel, C. (personal communication, July 18, 2006)

****Ohio State University (2006).

*****Pro-Ed (2006)

Activities other than Reading occurred during the allocated time of reading instruction. For example, Math activities were recorded during 3.3% of total observations (all occurrences were for student participants working with reading curriculum on grade level in the first and second grade general education setting). Science activities (.3%) were observed in the general education and self-contained settings and Self-care (2.2%) and Arts/Crafts (.3%) activities were observed in both the general education and resource room settings. The other Activity that was observed during reading instruction was Transition, which occurred in 6.4% of observations.

Activities were just one area coded in the Ecological category of MS-CISSAR. Other items coded under Ecology included Task and Instructional Grouping. The most frequently recorded Tasks were working with: *Readers* (24.1%), *Other Media* (18.2%), *Paper and Pencil* (17.2%), *Worksheets* (11.7%), and *Discussion* (11.3%). Readers included textbooks, trade books, etc.; Other Media included videos, overheads, flipcharts, flashcards, computer, dictionaries, and blackboard; Worksheets were teacher prepared worksheets; and Discussion was a verbal or signed interaction between teacher and student. For student participants enrolled in first and fourth grade, the most frequently recorded Tasks were working with Readers. For student participants enrolled in the second grade, the most frequently recorded Task was working with Other Media and for student participants enrolled in the third grade, the most frequently recorded Task was working with Paper and Pencil. For student participants working with reading curriculum on grade level and two grade levels below, the most frequently recorded Task was working with Readers. For student participants working with reading curriculum one grade level below, the most frequently recorded Task was working with Other Media (see Appendix J). There were no significant differences in Tasks by grade level enrolled, reading curriculum grade level, or level of hearing loss.

The most frequently recorded Instructional Grouping was *Whole Class* (observed in 58.1% of all observations), regardless of grade level enrolled or reading curriculum grade level. Furthermore, not only was Whole Class the most frequently observed Instructional Grouping across observations of all student participants, but it was also the most frequently observed Instructional Grouping for every student participant. Moreover, 3 student participants (12.5%) were observed only in Whole Class Instructional Groupings (1 student in each of the instructional settings). In the present study, Whole Class grouping was numerically quantified through anecdotal observation notes. During reading instruction, the mean number of students who were deaf/hard of hearing was 3.3 and the mean number of hearing students was 5.7 making Whole Class Instructional Grouping, on average, 9.0 students (with one-third of them students who were deaf/hard of hearing). *Small Group* instruction was recorded in 16.8% of observations, *One-on-One* instruction was recorded in 13.4% of observations, and *Independent Instruction* or work was recorded in 11.1% of observations. See Appendix K for detailed data on Ecological variables. As reading curriculum grade level decreased, the frequency of Independent work increased. Small Group instruction was never observed for 25% of student participants; One-on-One instruction was never observed for 33.3% of student participants; and Independent work was never observed for 33.3% of student participants. There were no significant differences in Instructional Grouping by grade level enrolled, reading curriculum grade level, and the level of hearing loss.

The second category in MS-CISSAR hierarchy was the Teacher category which included: Teacher Definition, Teacher Behavior, Teacher Approval, Teacher Focus, and Teacher Position. Reading instruction was provided by general education teachers in 29.7% of observations, by deaf education teachers in 59.6% of observations, by an aide/interpreter for 3.2% of

observations, and by peer tutors in 1.7% of observations. As one might expect, the observed frequency with deaf education teachers increased as the reading curriculum grade level decreased (see Appendix L). Results of a one way ANOVA showed a significant difference between the time spent with general education teachers and the time spent with deaf education teachers by reading curriculum grade level (p=.000). Tukey post hoc comparisons revealed that student participants working with reading curriculum on grade level spent significantly more time with general education teachers than student participants working with reading curriculum one grade level below (p=.000) or student participants working with reading curriculum two grade levels below (p=.001). There was a significant difference in the time spent with deaf education teachers with student participants working with reading curriculum on grade level spending significantly less time with deaf education teachers than student participants working with reading curriculum one grade level below (p=.001) or those working with reading curriculum two grade levels below (p=.000). In addition, student participants working with reading curriculum two grade levels below spent significantly more time working with deaf education teachers than those working with reading curriculum one grade level below (p=.047). Also, results of a one way ANOVA showed a significant difference in the time spent with deaf education teachers and the grade level enrolled (p=.029). Tukey post hoc comparisons revealed that student participants enrolled in third grade spent significantly more time with deaf education teachers than students enrolled in second grade. In addition, peer tutors were observed only with those student participants in first or second grade working with reading curriculum on grade level (see Appendix M). Student participants with mild-moderate/moderate hearing losses spent significantly more time with general education teachers than student participants with severe-profound/profound hearing losses (p=.082).

The most frequently reported Teacher Behaviors were: *Attention* (21.9%), *Talk Academic* (21.2%), *Question Academic* (16.5%), *Talk Management* (10.7%), and *Non-Verbal Prompting* (4.9%). Attention was coded when teachers were looking at or paying attention to any student; Talk Academic was coded when the teacher was lecturing or discussing academic topics; Question Academic was coded when a teacher asked (implied or directly) a question about the subject matter; Talk Management was coded when the teacher was talking or signing about topics to get the students prepared, i.e. giving directions; and Non-Verbal Prompting was coded when the teacher used physical guidance or gestures, not including sign language, to cue responses. Significant differences were found in the mean time teachers spent in Non-Verbal Prompting by grade level enrolled, specifically student participants in the third grade spent significantly more time with teachers using Non-Verbal Prompting than students in the second grade ($p=.026$). Student participants working with reading curriculum on grade level spent significantly more time with teachers in Talk Academic and Talk Management than student participants working with reading curriculum one grade level below ($p=.030$ and $p=.020$, respectively). Also, student participants working with reading curriculum two grade levels below spent significantly more time with teachers in Talk Academic than those working with reading curriculum one grade level below ($p=.006$). Student participants with mild-moderate/moderate hearing losses spent significantly more time with teachers in Talk Academic and Talk Management than student participants with severe-profound/profound hearing losses ($p=.033$ and $p=.06$, respectively).

Overall, teacher participants were observed showing neither approval nor disapproval toward student participants (90.1%). Results of a one way ANOVA showed significant differences by level of hearing loss ($F(2,21)=5.168$, $p=.015$) and reading curriculum grade level

(F(2,21)=5.885), p=.009) and the frequency of showing neither approval nor disapproval toward student participants. Tukey post hoc comparisons revealed that student participants with a mild-moderate/moderate hearing loss spent significantly more time with teachers showing neither approval nor disapproval than student participants with a severe-profound/profound hearing loss (p=.048). Also, student participants working with reading curriculum two grade levels below spent significantly more time with teachers showing neither approval nor disapproval than student participants working with reading curriculum one grade level below; student participants working with reading curriculum one grade level below spent significantly less time with teachers showing neither approval nor disapproval than student participants working with reading curriculum on grade level. There were no significant differences found by the grade level enrolled.

In 44.5% of observations, teachers were observed focusing on a group of students which included the student participant (*Target and Other*) and in 21.8% of observations, teacher participants were observed focused on the student participant only (*Target*). However, for student participants working with reading curriculum two grade levels below, teacher participants were observed most frequently, 39%, focusing on other students only (*Other*). There were no significant differences in Teacher Focus by reading curriculum grade level, grade level enrolled, or level of hearing loss. Teacher Position was most frequently coded as *In Front* of the student participant (67.6% of observations), regardless of grade level enrolled or reading curriculum grade level. (See Appendix N for detailed data on Teacher variables.)

5.1.4.1 Reading Instruction and Level of Hearing Loss

To investigate the possibility of the level of hearing loss as a confounding variable, the time allocated for reading instruction, the time observed in reading instruction, the variables of

components of reading instruction, and the number of students in the instructional setting during reading instruction were all analyzed by level of hearing loss.

As seen in Table 13, the mean time allocated to reading instruction and the mean time observed spent in reading instruction decreased as the level of hearing loss increased. As seen by the standard deviations, variability within levels of hearing loss was large as well. There were no significant differences in the mean time allocated to reading instruction and level of hearing loss. Significant differences were found in the mean time observed in reading instruction between student participants with mild-moderate/moderate hearing loss and student participants with severe-profound/profound hearing losses; however, the level of significance was at p=.052.

Table 13: Total Time Allocated to Reading Instruction and Total Time Spent in Reading Instruction by Level of Hearing Loss

Variable	Category	Time Allocated to Reading Instruction (Mean Minutes/Day)	Time Observed Spent in Reading Instruction (Mean Minutes/Day)
	All Student Participants	103.1	77.3
Level of Hearing Loss	Mild-moderate/ moderate	115.5	92
	Moderate-severe/ severe	102	78.5
	Severe-profound/profound	97	68.6

In investigating Ecological variables by level of hearing loss, no significant differences were found in Activities and level of hearing loss. The observed occurrences of components of reading instruction by level of hearing loss are reported in Table 14. No phonic/phonemic

awareness activities were observed for student participants with severe-profound/profound hearing losses. Also, as the level of hearing loss increased, the percentage occurrence of comprehension activities increased and the percentage occurrence of fluency and phonic/phonemic awareness activities decreased.

Table 14: Components of Reading Instruction by Level of Hearing Loss

Variable	Category	Total Obs. N	Fluency %	Vocabu-lary %	Compre-hension %	Phonic/ Phonemic Awareness %
	All Student Participants	57	17.5	43.9	71.9	10.5
Level of Hearing Loss	Mild-moderate/ moderate	16	37.5	43.8	56.3	25
	Moderate-severe/ severe	14	14.3	50	71.4	14.3
	Severe-profound/profound	27	7.4	40.7	81.5	0

Table 15 summarizes data on the Task variable by level of hearing loss. There were no significant differences in Tasks by level of hearing loss.

Table 15: Task by Level of Hearing Loss

Vari-able	Category (number of obser-vations)	Reader %	Work-book %	Work-sheet %	Paper & Pencil %	Listen & Lecture %	Other Media %	Discus-sion %	Fetch & Put %
	All Student Partici-pants (n=3711)	24.1	5.4	11.7	17.2	2.8	18.2	11.3	6.5
Level of Hear-ing Loss	Mild-moderate/ moderate (n=1104)	32.1	5.3	15.9	16.7	2.7	10.4	9.6	6.1
	Moderate-severe/ severe (n=1099)	17.2	11.2	8.9	18.2	2.9	19.8	11.2	7.6
	Severe-profound/ profound (n=1508)	23.2	1.2	10.6	16.8	2.7	22.8	12.5	6.1

Observed data on Instructional Grouping indicated that regardless of the level of hearing loss, the most common Instructional Grouping was Whole Class, with the percentage occurrence of Whole Class Instructional Grouping increasing as the level of hearing loss increased. Although the percentage occurrence of Small Group instruction decreased as the level of hearing loss increased, there were no significant differences in Instructional Grouping and level of hearing loss (see Table 16).

Table 16: Instructional Grouping by Levels of Hearing Loss

Variable	Category	Whole Class %	Small Group %	One-on-One %	Independent %
	All Student Participants	58.1	16.8	13.4	11.1
Level of Hearing Loss	Mild-moderate/ moderate	47.4	20.9	19.9	11.1
	Moderate-severe/ severe	56.5	18.9	5.6	17.9
	Severe-profound/ profound	67.2	12.1	14.4	6.0

As can be seen in Table 17, the number of hearing students in the classroom during reading instruction was twice as great for student participants with mild-moderate/moderate hearing losses than for student participants with severe-profound/profound losses. However, this is likely a function of instructional setting. Most student participants with mild-

moderate/moderate hearing losses (83.3%) reported receiving reading instruction in the general education or general/resource room settings. The mean class size was 12.7 for student participants with a mild-moderate/moderate hearing loss, 8.5 for student participants with a moderate-severe/severe hearing loss, and 7.1 for student participants with a severe-profound/profound hearing loss. Thus, as level of hearing loss increased, the mean class size decreased.

Table 17: Class Size by Level of Hearing Loss

		Mean Number in Class Per Observation		
		Students who are deaf/hard of	Hearing Students	Adults
Variable	Category	hearing		
	All Student Participants	3.3	5.7	1.5
Level of Hearing Loss	Mild-moderate/ moderate	2.2	10.5	1.8
	Moderate-severe/ severe	3.9	4.6	1.07
	Severe-profound/profound	3.7	3.4	1.44

In investigating Teacher variables by level of hearing loss, results of a one way ANOVA indicated that student participants with mild-moderate/moderate hearing losses spent

significantly more time with teachers showing neither approval/disapproval (p=.048) and with teachers in Talk Academic (p=.042) than student participants with severe-profound/profound hearing losses.

5.1.5 Summary

To summarize, for these 24 student participants, reading instruction was provided only by general education teachers and/or deaf education teachers. Students were taught reading instruction using a variety of curricula. The most commonly reported reading modifications were extended time, small groups, adapted curriculum, and preferential seating. Reading modifications varied by the reading curriculum grade level and grade level enrolled. The mean time allocated to reading instruction was 103.1 minutes/day but the mean time spent in reading instruction was 77.3 minutes/day. There was wide variability in both the time allocated to reading instruction and the time spent in reading instruction.

During reading instruction, comprehension and vocabulary activities were observed with the highest frequency. Phonic/phonemic awareness activities were observed with only 16.7% of student participants with a mean of only 7.4 minutes/day; this was not due to lack of a phonic/phonemic awareness component as part of the curriculum. Peer tutoring and Phonic/phonemic awareness activities were observed only in the first and second grade levels. Regardless of grade level enrolled or reading curriculum grade level, Whole Class instruction was the most frequently observed Instructional Grouping, and for 12.5% of student participants, the only Instructional Grouping observed. The most frequently reported Teacher Behavior was Atention and overall teacher participants showed neither approval nor disapproval toward student participants.

Reported and observed data revealed several trends in reading instruction activities by reading curriculum grade level. Student participants working with reading curriculum on grade level spent significantly more time observed in reading instruction than student participants working with curriculum one grade level below and student participants working with curriculum two grade levels below. Also, reading modifications varied by reading curriculum grade level. The frequency of Spelling and Language Activities increased with student participants working with reading curriculum below grade level. Of student participants observed in fluency activities, 62.5% were working with reading curriculum on grade level. All observations of Math Activities during reading instruction occurred with student participants working with reading curriculum on grade level. In addition, 100% of student participants using an oral method of communication, 100% of student participants receiving reading instruction in the general education setting, 100% of student participants observed in Phonic/phonemic awareness activities, and 100% of student participants observed working with peer tutors were all working with reading curriculum on grade level. Student participants working with reading curriculum one grade level below were most frequently observed with Teacher Focus on Other students and were most frequently observed using Other Media. Also, as reading curriculum grade level decreased, the frequency of independent work increased and the time observed with deaf education teachers increased. Student participants working with curriculum two grade levels below spent significantly more time with teachers in Talk Academic behavior than student participants working with curriculum one grade level below. Accordingly, data on many reading instruction activities varied by reading curriculum grade level with significant differences in the time spent with deaf education teachers and general education teachers and the frequency with which teachers showed neither approval nor disapproval toward student participants.

Reported and observed data on reading instruction activities also varied by grade level enrolled. The most frequently reported reading modifications and the most frequently reported Tasks varied by grade level enrolled. In addition, observations of interactions with peer tutors, observations of Math activities, and observations of phonic/phonemic awareness activities occurred only with student participants in first or second grade. Significant differences were reported in the time spent in Spelling and Language activities and the grade level enrolled. Student participants in first grade spent significantly less time than student participants in third grade in Spelling activities. Student participants in third grade spent significantly more time in Language activities than student participants in second and fourth grade. In addition, significant differences were found in the time spent with deaf education teachers and the grade level enrolled with student participants in third grade spending significantly more time with deaf education teachers than student participants in second grade. In addition, student participants in third grade spent significantly more time with teachers in Non-Verbal Prompting than student participants in third grade.

Several trends were also noted for the nature of reading instruction by level of hearing loss. The mean time allocated to reading instruction, mean time observed spent in reading instruction, and mean class size for reading instruction all decreased as the level of hearing loss increased. Student participants with mild-moderate/moderate hearing loss spent significantly more time in reading instruction than student participants with severe-profound/profound hearing loss. As level of hearing loss increased, the percentage occurrence of comprehension activities increased and percentage of occurrence of fluency and phonic/phonemic awareness activities decreased. Significant differences were found in that student participants with mild-moderate/moderate hearing losses spent more time with teachers in Talk Academic and with

teachers showing neither approval/disapproval than student participants with severe-profound/profound hearing losses. Student participants with mild-moderate/moderate hearing loss spent significantly more time with general education teachers than student participants with severe-profound/profound hearing loss. The percentage occurrence of Whole Class Instructional Grouping increased as the level of hearing loss increased and the percentage occurrence of Small Group instruction decreased as the level of hearing loss increased.

5.2 STUDENT ENGAGEMENT IN READING

In order to determine the extent to which student participants were actually reading during reading instruction, several analyses were conducted utilizing both reported and observed data. Then, calculations of the frequencies, means, and ranges of total reading (both reading aloud and reading silently), reading aloud, and reading silently were reported. Reading aloud for student participants using a form of manual communication indicates signing in the air. Additionally, conditional probabilities of Teacher and Ecological categories for the time observed engaged in total reading (both reading aloud and reading silently), reading aloud, and reading silently were computed. Finally, the frequency and percent occurrences of Student variables of Academic Responding, Task Management, and Competing Responses were reported.

5.2.1 Student Engagement in Reading Aloud and Reading Silently

Across all students and all observations (3,711 minutes), 15.9% of the time was actually spent reading, an aggregate of reading aloud (9%) and reading silently (6.9%), which translates to a

mean of 12.3 minutes/day. The range of time actually spent reading across all student participants was large (0 minutes/day to 37.5 minutes/day). The mean time spent reading aloud was 6.9 minutes/day with a range of 0 minutes/day to 22.5 minutes/day and the mean time spent reading silently was 5.3 minutes/day with a range of 0 minutes/day to 21.5 minutes/day.

The time spent in total reading, reading aloud, and reading silently was analyzed by grade level enrolled. The mean minutes spent in total reading was 11.8 minutes/day for student participants in first grade, 10.6 minutes/day for student participants in second grade, 12.1 minutes/day for student participants in third grade, and 17.8 minutes/day for student participants in fourth grade. Student participants in first grade had the largest mean minutes spent reading aloud (8.7 minutes) and student participants in fourth grade had the largest mean minutes spent reading silently (12.8 minutes). Indeed, student participants in fourth grade were reading silently almost 4 times longer than student participants in first or third grade and 2 times longer than student participants in second grade.

Results of the Levene test for homogeneity of variance were also significant for reading curriculum grade level and reading aloud ($F(2,21)=3.479$, $p=.05$). Results of a one-way ANOVA showed a significant difference in reading curriculum grade level and the mean time spent reading aloud ($F(2,21)=3.711$, $p=.042$) and reading silently ($F(2,21)=2.953$,$p=.074$. Tukey post hoc comparisons revealed a significant difference in reading aloud between student participants working with reading curriculum on grade level and student participants working with reading curriculum one grade level below ($p=.035$). The mean minutes spent in total reading were 19.7 minutes/day for student participants working with reading curriculum on grade level and 5.7 minutes/day for student participants working with reading curriculum one grade level below. Student participants reading on grade level spent 3.2 minutes more/day reading aloud than

student participants working with reading curriculum two grade levels below and 7.8 minutes more/day than student participants working with reading curriculum one grade level below. Student participants working with reading curriculum on grade level spent 3.1 minutes/day more reading silently than student participants working with reading curriculum two grade levels below and 6.2 minutes more/day than student participants working with reading curriculum two grade levels below. Results of a one way ANOVA were significantly at the .10 level of significance for reading silently with student participants working with reading curriculum one grade level below spending significantly less time reading silently than student participants working with reading curriculum on grade level. In fact, student participants working with reading curriculum one grade level below spent half as much time in all reading Academic Responses (total reading, reading aloud, and reading silently) than either student participants working on grade level or two grade levels below (see Appendix O).

The time spent in total reading, reading aloud, and reading silently was analyzed by the number of students who are deaf/hard of hearing in the class. Results of an independent t-test indicated significant differences in the mean time spent reading silently, $t(2.188) = 22$, $p=.04$ (two-tailed) when there was more than one student who was deaf/hard of hearing in the class during reading instruction. The mean time spent reading silently was significantly less for students with more than one deaf/hard of hearing student in the class.

To further analyze the extent to which student participants were actually engaged in reading during reading instruction, it was revealing to look at the results on an individual basis (see Appendix P). Over the two days of observations, 25% of student participants ($n=6$) spent 0 minutes or 1 minute reading aloud and 21% of student participants ($n=5$) spent 0 minutes or 1 minute reading silently. Moreover, 4% of student participants ($n=1$) spent 0 minutes in any form

of reading (reading aloud and/or silently) over two days of observation of reading instruction and 4% of student participants (n=1) spent only 1 minute in any form of reading (reading aloud and/or silently) over two days of observation of reading instruction. Both of these student participants had profound hearing losses and received reading instruction in the self-contained setting. In contrast, 1 student participant spent 75 minutes reading aloud and silently over two days of observation; this student participant had a moderate hearing loss and received reading instruction in the general education setting.

Student participants with mild-moderate/moderate hearing losses spent 21.9% of the time in total reading with 12.6% in reading aloud and 9.3% in reading silently. Student participants with moderate-severe/severe hearing losses spent 14.6% of the time in total reading with 7.5% in reading aloud and 7.1% in reading silently. Student participants with severe-profound/profound hearing losses spent 12.3% of the time in total reading with 7.4% in reading aloud and 4.9% in reading silently. Thus, the mean times observed in total reading, reading aloud, and silently decreased as level of hearing loss increased (see Table 18), however none of the results were significant at the .05 level. In addition, results of a one way ANOVA showed no significant differences across observed use of assistive listening devices (consistent use, inconsistent use, no use) in the means for total time allocated to reading instruction, time spent in reading instruction, and time engaged in reading.

Table 18: Student Academic Responses of Reading Aloud, Reading Silently, and Total Reading by Level of Hearing Loss

		Mean Minutes/Day (Range)			
Variable	Category	Time Observed in Reading Instruction	Time Spent Reading Aloud	Time Spent Reading Silently	Total Time Spent Reading
	All Student Participants	77.3 (38.5-123)	6.9 (0-22.5)	5.3 (0-21.5)	12.3 (0-37.5)
Level of Hearing Loss	Mild-Moderate/ Moderate	92 (71-123)	11.6 (.5-22.5)	8.6 (1.5-21.5)	20.2 (16.5-37.5)
	Moderate-Severe/Severe	78.5 (49.5-104)	5.9 (0-13)	5.6 (.5-12.5)	11.5 (3-17.5)
	Severe-Profound/ Profound	68.6 (38.5-95.5)	5.1 (0-15.5)	3.4 (0-16.5)	8.5 (0-24.5)

5.2.2 Ecobehavioral Analysis of the Probability of Reading Aloud and Reading Silently

The amount of time engaged in total reading, reading aloud, and reading silently was further analyzed as a function of Teacher and Ecological conditions. Using EBASS software

(Greenwood & Hou, 1995), this "ecobehavioral analysis" involved the computation of the probability of a student participant behavior (total reading, reading aloud only, and reading silently only) given the occurrence of a specified condition. The specified environmental conditions analyzed included: Teacher (Teacher Definition, Teacher Focus, and Teacher Behavior) and Ecological (Activity, Task, and Instructional Grouping). The probability of a behavior under a specified condition is known as the conditional probability; the probability of a behavior across all conditions is known as the unconditional probability. EBASS software computes a "z-score" which reflects the difference between conditional and unconditional probabilities, and determines the level of significance associated with the z-score (i.e., the probability that the difference between conditional and unconditional probabilities of a behavior could occur strictly due to chance). Inspection of the z-scores and their associated levels of significance made it possible to learn whether there were environmental conditions in which the probability of a behavior, such as total reading, was significantly increased or decreased. The results of these ecobehavioral analyses provided a way to numerically quantify the interactions between the teacher, student, and environment during reading instruction. These results can be found in Appendix Q.

Results of the ecobehavioral analysis focused on Teacher Definition, indicated that in the conditions where student participants worked with peer tutors, general education teachers, and aides/interpreters, the probability of total reading behavior was significantly greater than the unconditional probability of 16%. The observed probabilities were 56% ($p=.001$) for peer tutors, 22% ($p=.001$) for general education teachers, and 26% ($p=.01$) for aides/interpreters. On the other hand, in the condition where student participants worked with deaf education teachers, the conditional probability of 12% was significantly less ($p=.001$) than the unconditional probability.

The highest probability of total reading activities was observed when student participants were working with peer tutors; however, student participants were seen working with peer tutors only in first and second grades and only in 1.7% of observations.

Working with peer tutors and aide/interpreters significantly increased the probability of reading aloud (48% and 24%, respectively, p=.001); and working with general education teachers significantly decreased the probability of reading aloud (7%, p=.05). With respect to reading silently, the only Ecological categories to reach significance indicated that working with general education teachers increased the probability of reading silently (15%, p=.001) and working with deaf education teachers decreased the probability of reading silently (3%, p=.001).

Additional Teacher variables of Teacher Focus, Behavior, Attention, and Approval were examined in relation to the occurrence of reading behaviors. Teacher Focus on only the target student significantly increased the probability of total reading (reading aloud and/or reading silently) and reading aloud (27%, p=.001) while Teacher Focus on target and other students and Teacher Focus on other students significantly decreased the probability of total reading and reading aloud. Teacher Focus on target and other students was the most frequently Teacher Focus reported. The probability of reading silently was significantly increased when the teacher was focused on other students (9%, p=.05). Data on Teacher Behavior indicated Talk Management significantly decreased the probability of reading aloud (4%, p=.01). Teacher Attention significantly increased the probability of total reading activities (26%, p=.001), reading aloud behaviors (14%, p=.001), and reading silently (12%, p=.001). Attention was the most frequently reported Teacher Behavior. None of the conditional probabilities associated with the Teacher Approval variables reached levels of significance for any of the reading behaviors.

Results of the ecological analyses focused on the subcategories of Activity and Task indicated that in conditions where students worked in Reading and Phonic/phonemic awareness, the probability of total reading (reading aloud and reading silently) (25% and 24% respectively, p=.001) was significantly greater, whereas in conditions where students worked in Language and Spelling, the probability of total reading (9% and 8% respectively, p=.001) was significantly less than the unconditional probability. This finding is important given that Spelling and Language activities occurred in 36.5% of observations. Results further indicated that the probability of total reading, reading aloud, and reading silently was significantly accelerated when student participants worked with Readers (34%, 21%, and 13% respectively, p=.001). Also, student participants working with Readers were the most frequently observed Task.

The Ecological variable of Instructional Grouping was also examined using ecobehavioral analysis. Overall, the Instructional Grouping of student participants working One-on-One with a teacher significantly increased the probability of total reading (31%, p=.001) while Whole Class grouping significantly decreased the probability of total reading (12%, p=.001) (unconditional probability at 16%). Student participants working Independently significantly increased the probability of reading silently while student participants working One-on-One with a teacher significantly decreased the probability of reading silently (11% and 2% respectively, p=.01 and p=.001) with unconditional probability at 7%; however, student participants working One-on-One with a teacher increased the probability of reading aloud (29% p=.001) and Whole Class grouping and student participants working Independently decreased the probability of reading aloud (5% and 4% respectively, p=.001 and p=.01) with the unconditional probability at 9%. Although Whole Class grouping decreased the probability of total reading and reading silently, Whole Class grouping was the most frequently observed Instructional Grouping.

Also, while student participants working One-on-One with a teacher increased the probability of total reading and reading aloud, it was reported in only 13.4% of observation segments.

To summarize, teacher conditions most associated with the occurrence of reading behaviors were student participants working with peer tutors and working with aides/interpreters, Teacher Focus on target student only, and Teacher Behavior of Attention. Ecological activities of Reading, Tasks with Readers, and One-on-One Instructional Grouping all *increased* the probability of total reading and reading aloud. The probability of reading aloud was *decreased* when working with general education teachers, Instructional Grouping of Whole Class and Independent, and Teacher Behavior of Task Management. Working with deaf education teachers, participating in Language and Spelling activities, Whole Class grouping, and Teacher Focus of Target and Other students all *decreased* the probability of total reading. The probability of reading silently was *increased* with the Teacher Definition of general education teacher, Reading Activities, Reader Tasks, Independent Instructional Grouping, Teacher Focus on Other students, and Teacher Behavior of Attention. Working with deaf education teachers and Instructional Grouping of One-on-One *decreased* the probability of reading silently. All of these conditional probabilities reached levels of significance. See Table 19 for a summary of ecobehavioral analysis results which yielded significant increasing or decreasing conditional probabilities.

Table 19: Summary of Ecobehavioral Analysis

		Total Reading	Reading Aloud	Reading Silently
Teacher Definition	General Ed. Teacher	I	D	I
	Deaf Ed. Teacher	D	-	D
	Aide/Interpreter	I	I	-
	Peer Tutor	I	I	-
Teacher Focus	Target	I	I	D
	Target & other	D	D	-
	Other	D	D	I
Teacher Behavior	Attention	I	I	I
	Talk, Academic	D	-	D
	Talk, Management	D	D	-
	Question, Academic	D	-	D
Activity	Reading	I	I	I
	Language	D	D	-
	Spelling	D	D	D
Task	Readers	I	I	I
	Other Media	D	-	D
	Paper & Pencil	D	D	D
	Discussion	D	D	D
Instructional Grouping	Whole Class	D	D	-
	Small Group	-	-	-
	One-on-One	I	I	D
	Independent	-	D	I

*Note:*I=Probability is significantly increased and D=Probability is significantly decreased

5.2.3 Composite of Student Responses

Data collected on Academic Responding during reading observations are reported in Table 20. Overall, less than half the time observed (45.7%) was coded as student participants being academically engaged or Academic Responding. The most frequently reported Academic Response was writing (17.5% of observations) regardless of grade level enrolled, reading curriculum grade level, or level of hearing loss. Results indicated student participants in the first grade spent significantly less time in Academic Responding than student participants in the fourth grade ($p=.041$). In addition, student participants enrolled in the first grade spent significantly less time writing than student participants in the second grade ($p=.024$) and than student participants enrolled in the third grade ($p=.015$). Data collected during reading observations on Academic Responding by grade level enrolled are reported in Appendix R and Academic Responding by reading curriculum grade level are reported in Appendix S. Student participants enrolled in fourth grade and student participants working with reading curriculum two grade levels below had the highest frequency of Academic Responding (59% and 48.4%, respectively). There were no significant differences in Academic Responding by the reading curriculum grade level or by the level of hearing loss.

Table 20: Academic Responding as Coded during Observations

Academic Response	N	%
Writing	651	17.5
Task Participation	129	3.5
Reading Aloud	333	9
Reading Silently	255	6.9
Talking Academically	328	8.8
No Academic Response	1994	53.7

Student participants who were not academically engaged or responding may have been getting ready to respond. These moments were coded as Task Management and accounted for 41.4% of observations. Data indicated that in 26.3% of observations, student participants were coded as Attending or in passive response, regardless of grade level enrolled or reading curriculum grade level (see Table 21). Significant differences were found in the percentage of time spent in Task Management and the grade level enrolled, specifically with student participants enrolled in first grade spending significantly more time in Task Management than student participants in fourth grade ($p=.026$). There were no significant differences found in Task Management by reading curriculum grade level or level of hearing loss.

Table 21: Task Management as Coded during Observations

Task Management	N	%
Raise Hand	57	1.5
Play Appropriately	16	.4
Manipulate Material	158	4.3
Move	199	5.4
Talk Management	132	3.6
Attention	975	26.3
No Management	2147	57.9

Student participants who were not academically responding or getting ready to respond may have demonstrated competing behaviors. Competing Responses were not mutually exclusive, and thus may also have been coded in conjunction with Academic Responses and/or Task Management responses. Table 22 summarizes competing responses coded during observations. Competing Responses were recorded in only 13.9% of observations and the most frequently reported Competing Response was looking around (7.6% of observations). In the present study, there was no way to determine if looking around was a non-compliant behavior, an appropriate strategy to relieve eye strain, or the result of competing demands. The smallest percentage of Competing Responses was observed with student participants in fourth grade and student participants working with reading curriculum on grade level. Significant differences were found in the percentage of time spent in Competing Responses by grade level enrolled, specifically student participants enrolled in third grade spent significantly more time in

Competing Responses than those in fourth grade (p=.028). There were no significant differences found in Competing Responses by the reading curriculum grade level or level of hearing loss. Overall, little inappropriate behavior was recorded during observations.

Table 22: Competing Responses as Coded During Observations

Competing Response	N	%
Aggression	0	0
Disruption	7	.2
Talk Inappropriately	121	3.3
Look Around	283	7.6
Non-Compliance	11	.3
Self-Stimulation	91	2.5
No Inappropriate	3164	85.3

In exploring level of hearing loss as a confounding variable, composite frequencies were compared. The frequency of Academic Responses decreased as the level of hearing loss increased. Student participants with severe-profound/profound hearing losses had the highest percentage occurrence (17.4%) of Competing Responses. However, there was no apparent trend overall between level of hearing loss and Academic Response, Task Management, or Competing Response data.

5.2.4 Summary

In summary, results indicated that although student participants spent little time in Competing Responses, less than half the observed time in reading instruction was spent in on-task Academic Responding. In addition, Academic Responses of reading aloud and reading silently comprised only a small percentage of the observed time in reading instruction (9% and 6.9% respectively). The variability was great with 1 student participant not reading at all and 1 student participant reading for 75 minutes over two days of observations. As stated previously, 25% of student participants spent 0 minutes or 1 minute reading aloud and 21% of student participants spent 0 or 1 minute reading silently. The extent to which student participants were actually reading during reading instruction amounted to a mean of 12.3 minutes/day from the mean of 103.1 minutes/day reported as allocated for reading instruction and the mean of 77.3 minutes/day spent in reading instruction. Significant differences in the time spent in reading aloud and reading silently by reading curriculum grade level were found. Significant differences in the mean time spent reading silently were found when there was more than one student who was deaf/hard of hearing in the classroom during reading instruction. No significant differences in the mean times observed in total reading, reading aloud, and reading silently by level of hearing loss were found. Student participants enrolled in fourth grade spent significantly more time in Academic Responding and significantly less time in Task Management than student participants enrolled in first grade. In addition, student participants in first grade spent significantly less time in Academic Responding than student participants enrolled in any other grade. The highest probability of total reading was observed with student participants working with peer tutors. In addition, Whole Class, the most frequently observed Instructional Grouping, decreased the

probability of total reading and reading silently. The most frequently observed Academic Response was writing, however, not reading.

5.3 READING INSTRUCTION AND INSTRUCTIONAL SETTING

Several analyses were conducted to determine the extent to which reading instruction for student participants was different based on classroom setting. Demographic data on student and teacher participants were reported by instructional setting. Frequency and percentage occurrence of curriculum, use of interpreters, and reading modifications were reported by instructional settings. Also, comparisons of time allocated to reading instruction, time observed in reading instruction, and time spent in student Academic Responding were conducted to provide information on student engagement in reading across instructional settings. In addition, EBASS conditional probability analyses were conducted to calculate the probability that a student behavior would occur based on Ecological or Teacher variables and instructional settings. Also, frequency of occurrences of Activities, Tasks, Instructional Groupings, and Teacher Behaviors were reported by instructional settings.

5.3.1 Student Participants

Through informal teacher interviews and/or a review of student participants' school records, demographic data were collected and analyzed by instructional setting. Reported data indicated that 5 student participants received reading instruction in the general education setting only, 6 student participants received reading instruction in a combination of the general education setting

and resource room setting (general/resource room), and 13 student participants received reading instruction in the self-contained setting. The mean length of time in the current instruction setting for student participants was 1.6 years in the general education setting only, 2.6 years in the general/resource room settings, and 2.3 years in the self-contained setting.

Demographic data on gender and age are reported by instructional setting in Table 23. Gender of student participants in the self-contained setting was evenly distributed; however, this was not the case for other instructional settings. Student participants receiving reading instruction in the general education setting ranged in age from 7 years, 3 months to 8 years, 8 months of age with a mean of 8 years, 2 months of age. Student participants receiving reading instruction in the general/resource room setting ranged in age from 6 years, 9 months to 11 years, 3 months of age with a mean of 9 years, 6 months of age (1.3 years older than other settings). Student participants receiving reading instruction in the self-contained setting ranged in age from 7 years, 1 month to 10 years, 8 months of age with a mean of 8 years, 3 months of age.

Table 23 also reports the frequency of student participants by grade level enrolled and instructional setting. The percentage of student participants in the general/resource room settings increased 5 times between first grade and fourth grade. Also, the percentage of student participants in the self-contained setting increased as the grade level enrolled increased. This may reflect the inverse relationship between grade level enrolled and reading curriculum grade level reported for this sample or the smaller proportion of students in the upper grade levels in this sample.

Table 23: Demographic Characteristics of Student Participants by Instructional Setting

		Instructional Setting					
		General Education		General/Resource Room		Self-Contained	
Variable	Categories	N	%	N	%	N	%
Gender	Male	1	20	4	66.7	7	53.8
	Female	4	80	2	33.3	6	46.2
Age of Onset	Prelingual	3	60	6	100	11	84.6
	Postlingual	1	20	0	0	1	7.7
	Unknown	1	20	0	0	1	7.7
Grade Level	1st	2	22.2	2	22.2	5	55.6
Enrolled	2nd	3	42.9	0	0	4	57.1
	3rd	0	0	1	20	4	80
	4th	0	0	3	100	0	0

Student participants had varying degrees of hearing losses across all instructional settings. Of student participants receiving reading instruction in the general education setting, 60% had a mild-moderate/moderate loss and 40% had a moderate-severe/severe loss. There were no student participants receiving reading instruction in the general education setting reporting severe-profound/profound hearing loss. Of student participants receiving reading instruction in the general/resource room setting, 33.3% had a mild-moderate/moderate loss, 66.7% had a severe-profound/profound hearing loss. No student participants receiving reading instruction in the general/resource room settings had a moderate-severe/severe hearing loss. Of student

participants receiving reading instruction in the self-contained setting, 7.7% had a mild-moderate/moderate hearing loss, 38.5% had a moderate-severe/severe hearing loss, and 53.8% had a severe-profound/profound hearing loss (Table 7). Data on age of onset of hearing loss by instructional setting indicated that a higher percentage of student participants with prelingual onset received reading instruction in the general/resource room settings or self-contained setting; however, this may be due to the large number of student participants with prelingual onset in this sample (83%). Reported data on parental hearing status indicated that the 1 student participant with at least one parent who was deaf/hard of hearing received reading instruction in the self-contained setting.

Additional demographic data on the frequency and percentage of reported use of assistive listening devices by instructional setting can be found in Table 24. None of the student participants receiving reading instruction in the general education setting only reported the use of a cochlear implant. However, cochlear implants were the most frequently reported assistive listening devices used for student participants receiving reading instruction in the general/resource room settings. The most frequently reported assistive listening devices used for student participants receiving reading instruction in the self-contained setting was classroom amplification.

Table 24: Assistive Listening Devices Reported to be Used in School by Instructional Setting

	Assistive Listening Devices Reported to be Used in School							
Instructional Setting	Classroom Amplification		Cochlear Implant		Hearing Aid		Personal FM System	
	N	%	N	%	N	%	N	%
General Education	1	11.1	0	0	3	21.4	3	27.3
General/Resource Room	2	22.2	3	37.5	2	14.3	2	18.2
Self-Contained	6	66.7	5	62.5	9	64.3	6	54.5

Note: Data were collected on all the assistive listening devices that could be worn by student participants in schools and some student participants reported utilizing a combination of assistive listening devices; therefore frequency of assistive listening devices used in the schools totaled more than 24 (total participants).

Table 25 summarizes data on the assistive listening devices observed in use by instructional setting. All student participants receiving reading instruction in the general education setting only wore assistive listening devices during reading instruction compared to 66.7% of student participants receiving reading instruction in the general/resource room settings and 69.2% of student participants receiving reading instruction in the self-contained setting. Student participants receiving reading instruction in the general/resource room settings had higher observed inconsistent use, both collectively and individually by setting, than all student participants and student participants in general education setting only or self-contained setting. The highest percentage of equipment observed not in use (15.4%) was reported for student participants receiving reading instruction in self-contained setting. Initially, it was hypothesized

that since 63.6% of student participants with severe-profound/profound hearing losses received reading instruction in the self-contained setting and that students with more severe hearing losses might not perceive as much benefit from using assistive listening devices that this might explain the low percentage of assistive listening device use observed in the self-contained setting. However, a cross-tabulation of assistive listening devices observed in use by instructional setting and level of hearing loss indicated the contrary. Regardless of the level of hearing loss, all student participants in the general education setting only or general/resource room settings used equipment during reading instruction. Of the 13 student participants receiving reading instruction in the self-contained setting, 3 student participants did not use assistive listening devices during reading instruction, 1 of which had a moderate to severe loss and 2 of which had severe to profound losses. From these data, it appears that the use of assistive listening devices was more strongly linked to instructional setting than level of hearing loss.

Reported and observed data on the primary method of communication was also examined by instructional setting (see Table 26). All student participants for whom ASL was reported to be the primary method of communication received reading instruction in the self-contained setting. The only method of communication reported for student participants receiving reading instruction in the general education setting only was speech. Thus, there were noticeable differences in the method of communication reported by instructional setting.

Table 25: Auditory Equipment Observed in Use in School by Instructional Setting

Instructional Setting		Assistive Listening Devices Used		Assistive Listening Devices Not Used		Inconsistent Use of Assistive Listening Devices Observed	
		N	%	N	%	N	%
General Education		5	100	0	0	0	0
General/Resource Room		4	66.7	0	0	2	33.3
	General Education	4	80	0	0	1	20
	Resource Room	5	71.4	0	0	2	28.6
Self-Contained		9	69.2	2	15.4	2	15.4

Table 26: Reported Communication Method by Instructional Setting

Instructional Setting	Method of Communication		
	ASL (N)	Sign Supported Speech (N)	Speech (N)
General Education	0	0	5
General/Resource Room	0	4	2
Self-Contained	9	4	0

As stated earlier, the reading curriculum grade level was compared to the grade level in which the student participant was enrolled in order to calculate an on/above/below grade level. Overall, student participants ranged from working with reading curriculum on grade level to working with reading curriculum two grade levels below. All 5 of the student participants (100%) receiving reading instruction in the general education setting only were working with reading curriculum on grade level. Of those student participants receiving reading instruction in the general/resource room settings, 3 participants (50%) were working with reading curriculum on grade level, 1 participant (16.7%) was working with reading curriculum one grade level below, and 2 participants (33.3%) were working with reading curriculum two grade levels below. None of the student participants receiving reading instruction in the self-contained setting were working with reading curriculum on grade level. Of the student participants receiving reading instruction in the self-contained setting, 69.2% were working with reading curriculum one grade level below and 30.8% were working with reading curriculum two grade levels below. Another way of looking at this was that 90% of student participants working with reading curriculum one grade level below and 66.7% of student participants working with reading curriculum two grade levels below received reading instruction in the self-contained setting.

In summary, student participants receiving reading instruction in the general education setting were in their current instructional setting for the shortest length of time (mean of 1.6 years). As the grade level enrolled increased, the percentage of student participants in the general education setting only decreased. Student participants in the general education setting also had the smallest ratio of male to female student participants (1:4). Student participants receiving reading instruction in the general education setting only had less severe hearing losses (60% with mild/mild-moderate loss and 40% with moderate/moderate-severe). All student participants

receiving reading instruction in the general education setting used an oral method of communication, were observed wearing assistive listening devices, and were working with reading curriculum on grade level.

In contrast, student participants receiving reading instruction in the general/resource room settings were a mean of 1.3 years older than other student participants. The ratio of male to female student participants was 2:1. Student participants in this setting had a range of levels of hearing loss and they had the highest inconsistent use of assistive listening devices (66.7%). The most frequently reported primary method of communication for student participants receiving reading instruction in the general/resource room settings was sign supported speech. Fifty percent of student participants were working with reading curriculum on grade level.

The ratio of male to female student participants receiving reading instruction in the self-contained setting was 1:1. Student participants in this group had more severe levels of hearing losses; however, student participants in this group also had the lowest percentage of assistive listening devices in use. All student participants used a form of manual communication. None of the student participants receiving reading instruction in the self-contained setting were working with reading curriculum on grade level.

5.3.2 Teacher Participants

Informal teacher interviews were conducted to collect biographical information on teacher participants. Table 27 provides a tabular comparison of background characteristics of teacher participants by instructional setting. Data indicated that the 2 male teacher participants taught reading instruction in the general education setting. Eleven teacher participants taught reading instruction in the general education setting. As stated previously, 45.5% of these teachers held

Bachelor's degrees and 54.5% held Master's degrees. Teacher participants teaching reading instruction in general education setting had the largest mean total years of teaching experience, number of reading classes taken, and number of reading in-services attended within the last 5 years. The 3 teacher participants in the resource room setting and 3 teacher participants in the self-contained setting were teachers in deaf education. Teacher participants teaching reading instruction in the resource room had the smallest mean years of teaching experience and smallest mean years teaching experience with students who are deaf/hard of hearing. In comparison, teacher participants teaching reading instruction in the self-contained setting had the largest mean years experience with students who are deaf/hard of hearing. Although all teacher participants teaching reading instruction in the self-contained setting held Master's degrees, they had taken half the mean number of reading classes and attended half the mean number of reading in-services within the last 5 years.

Table 27: Comparison of Background Characteristics of Teacher Participants by Instructional Setting

Variable	Instructional Setting	Mean	Median	S.D.	Min.	Max.
Total Years of Experience	Teachers in General Education	21.5	20	11.5	2	38
	Teachers in Resource Room	5.7	5	4	2	10
	Teachers in Self-Contained	16.8	12.5	12.6	7	31
Years Experience with Students who are Deaf/Hard of Hearing	Teachers in General Education	1.8	1	1.3	.5	5
	Teachers in Resource Room	5.3	5	3.5	2	9
	Teachers in Self-Contained	16.8	12.5	12.6	7	31
Number of Reading Classes Taken	Teachers in General Education	3.9	3	2.8	0	10
	Teachers in Resource Room	2.7	3	2.5	0	5
	Teachers in Self-Contained	1.5	1.5	.7	0	2
Number of Reading In-services Attended Within the Last 5 Years	Teachers in General Education	9.9	5	8.4	1	20
	Teachers in Resource Room	5.3	3	4	3	10
	Teachers in Self-Contained	4	2	5.3	0	10

5.3.3 Reading Curriculum and Reading Modifications

Reported and observed data collected on curriculum, IEP services which could be relevant to reading, and reading modifications were also analyzed by instructional setting. The reported and observed reading curriculum used with student participants was the same reading curriculum used with hearing students in the general education setting of each school in the general education only setting and in the general/resource room settings. In addition, the reading curriculum used was at the same grade level in all but one of these classrooms, with one resource room classroom using the same reading curriculum but at a lower grade level. Teachers in the self-contained setting did not use the same reading curriculum used with students in the general education setting or with students in other special education settings in the same school. Teachers in two of the self-contained classrooms used reading curriculum specifically designed for students who are deaf/hard of hearing (Reading Milestones and Fairview with SRA) and the teacher in the remaining self-contained classroom used reading curriculum designed for students learning English as a second language (Focus).

Data collected during informal teacher interviews and/or a review of student participants' student records indicated that overall 13 student participants reported utilizing an interpreter. Eight of these student participants received reading instruction in the self-contained setting. During observation of reading instruction in this setting, the interpreters were present for 3 of the student participant observations; however, the interpreters were not working with the student participants at that time (they were on a break, looking up signs, etc.). Four of the student participants for whom interpreters were reported received reading instruction through a combination of the general/resource room settings. In these cases, the interpreters were observed working with the students in the general education setting only (during two observations

interpreters were present in the resource room, but were on a break). One student participant receiving reading instruction in the general education reported, and was observed, utilizing an interpreter. Thus, although interpreters were observed and recorded as present in multiple settings, interpreters were observed directly working with student participants only in the general education setting. Likewise, 1 student participant who received reading instruction in the self-contained setting was reported to use an aide. The aide was observed and recorded as present in the self-contained setting during reading instruction; however the aide was not working with the student. The aide was reportedly utilized to relieve the teacher in the self-contained classroom for breaks, lunch, etc.

Obtained from teacher-reported data and/or a review of student participants' school records, reading modifications by instructional setting are presented in Table 28. Investigating these data by instructional setting revealed that the only modification reported for more than one student participant receiving reading instruction in the general education setting only was preferential seating (2 student participants received no modifications). Given that all student participants receiving reading instruction in the general education setting only were working with reading curriculum on grade level, the fact that no reading modifications were reported may/may not be surprising. Only 1 student participant reported extended time. None of the student participants receiving reading instruction in the general education setting only reported the modification of small group instruction or adapted curriculum. The most commonly reported modifications for students receiving reading instruction in the general/resource room settings were extended time, small group instruction, and preferential seating. Of those student participants receiving reading instruction in the general/resource room settings not working with reading curriculum on grade level, 2 student participants reported the modification of signing

material over reading level and 1 student participant reported curriculum modifications. The most frequently reported reading modifications for student participants receiving reading instruction in the self-contained setting were: extended time, small group instruction, and adapted curriculum. All student participants reporting reading modifications of an adapted curriculum and a specified curriculum received reading instruction in the self-contained setting. This coincides with reported information on curriculum utilized in the self-contained setting. Also, none of the student participants receiving reading instruction in the self-contained setting reported the reading modification of preferential seating.

Table 28: Reported Reading Modifications by Instructional Setting

	All Student Participants (n=24)		General Education (n=5)		General/ Resource Room(n=6)		Self-Contained (n=13)	
Reading Modification	N	%	N	%	N	%	N	%
Adapted curriculum	10	41.7	0	0	0	0	10	77
Can go to LD for tests	1	4.2	0	0	1	16	0	0
Curriculum modifications	1	4.2	0	0	1	16	0	0
Extended/ extra time	17	70.8	1	20	4	66	12	92
FM system	2	8.33	1	20	0	0	0	0
Hearing aid for all academics	1	4.2	1	20	0	0	0	0
Material at reading level	1	4.2	0	0	0	0	1	7
None	2	8.3	2	40	0	0	0	0
Preferential seating	7	29.2	2	40	5	83	0	0
Reduction of background noise	1	4.2	0	0	1	16	0	0
Rephrase,repeat,clarify directions	2	8.3	1	20	1	16	0	0
Sign material over reading level	2	8.3	0	0	2	33	0	0
Small groups	16	66.7	0	0	4	66	12	92
Study guides	1	4.2	0	0	1	16	0	0
Tests read aloud/interpreted	2	8.3	1	20	1	16	0	0
Use of a specified curriculum	2	8.3	0	0	0	0	2	15
Visual/verbal cues & prompts	2	8.3	1	20	1	16	0	0
Word cards go home	2	8.3	0	0	0	0	2	15

5.3.4 Time Allocated for Reading Instruction and Time Spent in Reading Instruction

The mean time allocated to reading instruction by instructional setting is reported in Table 29. There was a large range of reported allocated time across instructional settings. For student participants receiving reading instruction in the general/resource room settings, the time allocated to the general education setting was 55.8% of the total allocated time and the time allocated to the resource room setting was 42.4% of the total allocated time.

Table 29: Total Time Allocated to Reading Instruction by Instructional Setting

		Time Allocated to Reading Instruction/ Day				
Instructional Setting		Mean	Median	S.D.	Min.	Max.
	All Student Participants	103.1	112	21.6	60	140
General Education		111.8	120	16.6	90	134
General/Resource Room		113.8	118.5	23.0	66	140
	General Education	63.5	62.5	16.2	36	85
	Resource Room	48.3	55	13.4	30	60
Self-Contained		94.8	91	17.9	60	119

None of the student participants who reported receiving reading instruction in a combination of the general education setting and resource room setting reported receiving reading instruction in the resource room setting which was totally supplemental to instruction in the general education setting. For 1 student participant, the time allocated in the resource room

setting was partially in place of (70% of the time) and partially supplemental to (30% of the time) instruction in the general education setting. Similarly, for another student participant, the time allocated in the resource room setting was in place of (50% of the time) and supplemental to (50% of the time) instruction in the general education setting. For the remaining 4 student participants, the time spent in the resource room setting was in place of instruction in the general education setting for the entire time the student participant received instruction in the resource room setting. For all 6 student participants, a total of 290 minutes/day were allocated to reading instruction in the resource room setting with only 15.5% supplemental to reading instruction received in the general education setting. Based on reported and observed data, the instruction provided in the resource room was in place of phonic/phonemic awareness instruction in the general education setting (with the deaf education teacher instructing the student participant in phonic/phonemic awareness and vocabulary), sustained silent reading (with the deaf education teacher instructing the student participant in vocabulary), and reading of the curriculum readers (with the deaf education teacher instructing the student participants in reading with curriculum below grade level).

The mean time observed spent in reading instruction for student participants receiving reading instruction in the general education setting only was the highest across instructional settings at 94.8 minutes/day with a range of 71 minutes/day to 123 minutes/day. The mean time observed spent in reading instruction for student participants receiving reading instruction in the general/resource room settings was 81.2 minutes/day with a range of 51 minutes/day to 95.5 minutes/day. Further, for these student participants receiving reading instruction in the general/resource room settings, the mean time observed spent in reading instruction in the general education setting was 34.9 minutes/day with a range of 0 minutes/day to 54 minutes/day

and the mean time observed spent in reading instruction in the resource room setting was 46.3 minutes/day with a range of 27 minutes/day to 77.5 minutes/day. Thus student participants in this setting spent a mean of 11.4 minutes more in the resource room setting. Although student participants receiving reading instruction in the general/resource room settings had a higher percentage allocated time in the general education setting, they had a higher percentage observed time in the resource room setting (57%) than in the general education setting (43%). The mean time observed spent in reading instruction for student participants receiving reading instruction in the self-contained setting was the lowest for any instructional setting at 68.8 minutes/day with a range of 38.5 minutes/day to 100 minutes/day.

The proportion of actual time spent in reading instruction was calculated (see Table 30). The highest proportion of allocated time actually spent in reading instruction occurred with student participants receiving reading instruction in the resource room (95.9%) as part of reading instruction in the general/resource room settings.

Results of a one-way ANOVA showed a significant difference across instructional settings in the means for total time observed in reading instruction ($F(2,21)=3.981, p=.034$). Tukey post hoc comparisons revealed that student participants receiving reading instruction in the general education only were observed in reading instruction significantly longer than student participants receiving reading instruction in the self-contained setting.

Table 30: Comparison of Time Allocated to Reading Instruction and Time Observed in Reading Instruction by Instructional Setting

		Mean Minutes/Day		
Instructional Setting		Time Allocated to Reading Instruction	Time Observed in Reading Instruction	Proportion of Allocated Time that was actually Spent on Reading Instruction
	All Student Participants	103.1	77.3	75%
General Education		111.8	94.8	84.8%
General/Resource Room Settings		113.8	81.2	71.4%
	General Education	63.5	34.9	55%
	Resource Room	48.3	46.3	95.9%
Self-Contained		94.8	68.8	72.6%

5.3.5 Student Engagement in Reading Aloud and Reading Silently

Of the overall observed time spent in reading instruction, student participants spent 15.8% actually reading (reading aloud and/or reading silently) for a mean of 12.3 minutes/day. Based on instructional setting, student participants receiving reading instruction in the general

education had the largest total mean time spent reading (20.7 minutes/day) with 11.3% of the total time observed spent reading aloud and 10.6% of the total time observed spent reading silently. Student participants receiving reading instruction in the general/resource room settings had a total mean time spent reading of 15.4 minutes/day with 9.1% of the total time observed spent reading aloud and 9.9% of the total time observed spent reading silently. Student participants receiving reading instruction in the self-contained setting had the smallest total mean minutes spent reading (7.5 minutes) with 7.7% of the time reading aloud and 3.3% of the time reading silently. Student participants receiving reading instruction in the general education had a mean time reading aloud that was twice that of student participants receiving reading instruction in the self-contained setting and a mean time reading silently that was 4 times that of student participants in the self-contained setting. The mean times spent in total reading, reading aloud, and reading silently for student participants while in the resource room was very similar to that for student participants receiving reading instruction in the self-contained settings, although student participants in the resource room spent a mean of 22.5 minutes less in reading instruction (see Table 31).

The variance (squared standard deviation) with respect to reading silently was approximately 4 times greater in the general/resource settings than in the general education setting alone and approximately 20 times greater in the general/resource room settings than in the self-contained setting. Results of a one way ANOVA showed a significant difference across instructional settings in the mean time spent reading silently ($F(2,21)=5.559$, $p=.012$). Tukey post hoc comparisons revealed that student participants receiving reading instruction in the general education setting only and student participants receiving reading instruction in the general/resource room setting spent significantly more time reading silently than student

participants receiving reading instruction in the self-contained setting. There were no significant differences in the variances or means for reading aloud by instructional setting.

Table 31: Student Academic Responses Reading Aloud, Reading Silently, and Total Reading by Instructional Setting

		Mean Minutes/Day (Range)			
Instructional Setting		Time Observed in Reading Instruction	Time Spent Reading Aloud	Time Spent Reading Silently	Total Time Spent Reading
	All Student Participants	77.3 (38.5-123)	6.9 (0-22.5)	5.3 (0-21.5)	12.3 (0-37.5)
General Education		94.8 (71-123)	10.7 (.5-22.5)	10 (5-15)	20.7 (6.5-37.5)
General/Resource Room		81.2 (51-95.5)	7.4 (2.5-13.5)	8 (.5-21.5)	15.4 (5-24.5)
	General Education	34.9 (0-54)	2.7 (0-9.5)	7 (0-16.5)	9.7 (2.5-16.5)
	Resource Room	46.3 (27-77.5)	5.2 (2.5-9)	2.2 (.5-5)	7.3 (5-10)
Self-Contained		68.8 (38.5-100)	5.3 (0-15.5)	2.3 (0-6.5)	7.5 (0-17.5)

To further investigate reading instruction in the self-contained setting, an analysis by the grade level enrolled was conducted. The total allocated time for reading instruction, the total time observed in reading instruction, the mean total time spent reading, and the mean time spent reading aloud increased as the grade level enrolled increased. For example, for student participants enrolled in first grade receiving reading instruction in the self-contained setting, a mean of only 2.3 minutes/day were spent in total reading, a mean of 1.4 minutes/day were spent reading aloud, and mean of .9 minutes/day were spent reading silently. Student participants enrolled in third grade received reading instruction in the self-contained setting spent a mean of 12.8 minutes/day in total reading, 9.9 minutes/day in reading aloud, and 2.9 minutes/day reading silently. Results of a one way ANOVA indicated significant differences across grades in the mean time observed in reading instruction and the mean time spent reading aloud ($p=.008$ and $p=.049$ respectively). Tukey post hoc comparisons revealed that student participants in third grade receiving reading in the self-contained setting spent significantly more time in reading instruction than students in first grade ($p=.008$) and students in second grade ($p=.036$). Students in third grade receiving reading instruction in the self-contained setting also spent significantly more time reading aloud than students in the first grade. This does not appear to be the trend for all instructional settings as seen in Table 32. For student participants receiving reading instruction in the general education setting only, the mean time observed in reading instruction, the mean total time spent reading, and the mean time spent reading aloud decreased between first grade and second grade with significant differences found in the mean time spent reading aloud ($p=.001$). For student participants receiving reading instruction in the general/resource room settings, the mean time allocated to reading instruction decreased as grade level enrolled increased and the mean time spent reading silently increased as grade level enrolled increased,

however, none of these reached levels of significance. These results are limited in numbers in the categories are small and that several categories of the cross-tabulation were not present for all instructional settings.

To further analyze the extent to which reading instruction differed based on instructional setting, data on time spent in reading was examined on an individual basis. As stated earlier, 2 student participants enrolled in the first grade and receiving reading instruction in the self-contained setting spent 0 minutes or 1 minute in any form of reading over two days of observations (217 minutes of observation). In analyzing data on reading aloud, results revealed that 5 student participants receiving reading instruction in the self-contained setting spent 0 minutes reading aloud and 1 student participant receiving reading instruction in the general education setting only spent 1 minute reading aloud. In contrast, 2 student participants enrolled in the first grade and receiving reading instruction in the general education setting only spent 45 minutes reading aloud. Further, 2 student participants in the first grade receiving reading instruction in the self-contained setting spent 0 minutes in reading silently and 3 student participants spent 1 minute reading silently (2 student participants received reading instruction in the self-contained setting and 1 student participant received reading instruction in the general/resource room settings). In contrast, 3 student participants spent over 30 minutes reading silently (1 student participant receiving reading instruction in the general education setting only and 2 student participants receiving reading instruction in the general/resource room settings).

Table 32: Student Academic Responses of Reading Aloud, Reading Silently, and Total Reading by Instructional Setting and Grade Level Enrolled

		Mean Minutes/Day			
Grade Level Enrolled	Instructional Setting (N)	Time Observed in Reading Instruction	Time Spent Reading Aloud	Time Spent Reading Silently	Time Spent in Total Reading
1st grade	General Education (2)	112.5	22.5	10	32.5
	General/Resource Room(2)	85.5	13.3	1.5	14.8
	Self-Contained (5)	57.7	1.4	.9	2.3
2nd grade	General Education (3)	83	2.8	10	12.8
	General/Resource Room(0)				
	Self-Contained (4)	63.75	5.5	3.4	8.9
3rd grade	General Education (0)	-	-	-	-
	General/Resource Room(1)	95.5	3	6.5	9.5
	Self-Contained (4)	87.8	9.9	2.9	12.8
4th grade	General Education	-	-	-	-
	General/Resource Room (3)	73.5	5.0	12.8	17.8
	Self-Contained (0)	-	-	-	-

To further explore the extent to which reading instruction differed based on instructional setting, a cross-tabulation of time engaged in reading and instructional setting by level of hearing loss was conducted (see Table 33). Data were not present for two levels of the cross-tabulations (severe-profound/profound receiving reading instruction in the general education setting and moderate-severe/severe receiving reading instruction in the general/resource room settings). Results indicated that where data were available, as level of hearing loss increased, the total time engaged in reading and the time engaged in reading aloud decreased, regardless of instructional setting. Interestingly, student participants with moderate-severe/severe hearing losses had the largest mean time in reading silently, regardless of instructional setting.

Table 33: Cross-Tabulation of Time Engaged in Reading by Instructional Setting and Level of Hearing Loss

		Level of Hearing Loss		
Reading Variable	Instructional Setting	Mild-Moderate/ Moderate Mean (min./day)	Moderate-Severe/Severe Mean (min./day)	Severe-Profound/Profound Mean (min./day)
Total Reading	General Education	23.8	16	-
	General/Resource Room	19.5	-	13.4
	Self-Contained	10.5	8	5.6
Reading Aloud	General Education	15.2	4	-
	General/Resource Room	8	-	7.1
	Self-Contained	8	6.6	3.9
Reading Silently	General Education	8.7	12	-
	General/Resource Room	11.5	-	6.3
	Self-Contained	2.5	3	1.7

5.3.6 Ecobehavioral Analysis of the Probability of Reading Aloud and Reading Silently

The amount of time engaged in total reading, reading aloud, and reading silently was further analyzed by instructional setting using ecobehavioral analysis. The results of these

ecobehavioral analyses by instructional setting can be found in Appendix Q. Upon initial analysis, student participants observed in reading instruction in the general education setting had significantly greater probability of total reading (reading aloud and reading silently) above the unconditional probability, while student participants observed in reading instruction in the self-contained setting had significantly less probability of total reading (reading aloud and reading silently) below the unconditional probability. In fact, the probability of total reading was 2 times greater in the general education setting than in the self-contained setting. Thus, it was beneficial to look at what behaviors occurred in the general education setting to increase the probability of total reading. A two level analysis of Teacher Definition and Setting was conducted. The highest probabilities of reading activities occurred with peer tutors in the general education setting (56%, p=.001), with interpreters in the general education setting (27%, p=.01), and with general education teachers (21%, p=.001). There were no instances of peer tutors or interpreters working with student participants in the self-contained setting. When student participants worked with general education teachers in the general education setting, the probability of reading aloud was decreased (6%, p=.01). Two categories reached the level of significance for behaviors of reading silently: when student participants worked with general education teachers in the general education setting, the probability of reading silently was significantly increased (15%, .001) and when student participants worked with deaf education teachers in the self-contained setting, the probability of reading silently was significantly decreased (3%, p=.001). The probability of reading silently was 4 times higher in the general education setting than in the self-contained setting (p=.001).

A two level analysis focused on Instructional Grouping and Setting was also conducted. Results indicated that when student participants worked in small groups and one-on-one with a

teacher in the general education setting and when student participants worked one-on-one with a deaf education teacher in the self-contained setting (p=.001), the probability of total reading was significantly greater than the unconditional probability. When student participants worked in whole class groups and small groups in the self-contained setting, however, the probability of total reading was significantly less than the unconditional probability. The probability of reading aloud was significantly increased when student participants worked one-on-one with a teacher across instructional settings (p=.001). Also, student participants in the general education setting working in whole class groups, small groups, and independently significantly increased the probability of reading silently. Resource room settings and instructional groupings never reached z-score levels sufficient to be reported (see Appendix Q).

5.3.7 Composite of Student Responses

Minutes engaged in reading were just one aspect of student Academic Responding. Across instructional settings, student participants spent 50.1% of observed time or less Academically Responding. As seen in Table 34, the highest percentage occurrence of Academic Responding was reported for student participants receiving reading instruction in the general/resource room settings (while in the resource room) and the lowest percentage occurrence of Academic Responding was for student participants receiving reading instruction in the self-contained setting.

Table 34: Student Participant Composite by Instructional Settings (Percentage of Occurrence)

Instructional Setting		Composite (Percentage of Occurrence) Academic Responding	Task Management	Competing Responses
	All Student Participants	45.7	41.4	13.9
General Education		46.2	45.4	7.8
General/Resource Room		48.5	38.0	15.3
	General Education	46.3	37	20.1
	Resource Room	50.1	38.7	11.7
Self-Contained		43.9	41.2	16.4

The percentage occurrence of time spent in specific subcategories of Academic Responding is reported in Table 35. Across instructional settings, the most frequently reported Academic Response was writing (mean of 13.6 minutes/day).

Table 35: Academic Responding by Instructional Setting

Instructional Setting		Writing	Task Participation	Read Aloud	Read Silently	Talk Academic	No Academic Response
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
	All Student Participants	651 (17.5%)	129 (3.5%)	333 (9%)	255 (6.9%)	328 (8.8%)	1994 (53.7%)
General Education		131 (13.8%)	56 (5.9%)	107 (11.3%)	100 (10.6%)	44 (4.7%)	508 (53.6%)
General/ Resource Room		154 (15.8%)	29 (3%)	89 (9.1%)	96 (9.9%)	104 (10.7%)	502 (51.5%)
	General Education	66 (15.8%)	6 (1.4%)	27 (6.4%)	70 (16.7%)	25 (6%)	225 (53.7%)
	Resource Room	88 (15.9%)	23 (4.1%)	62 (11.2%)	26 (4.7%)	79 (14.2%)	277 (49.9%)
Self-Contained		366 (20.5%)	44 (2.5%)	137 (7.7%)	59 (3.3%)	180 (10.1%)	984 (55%)

Overall, student participants spent 41.4% of observed time in Task Management, or getting ready to respond. Overall, the highest percentage occurrences of Task Management were observed in the general education setting only (45.4%) while the lowest percentage occurrences of Task Management were observed in the general/resource room settings (38%). As seen in

Table 36, the most frequently reported Task Management across instructional settings was Attention.

Table 36: Task Management by Instructional Setting

Instructional Setting		Raise Hand %	Play Appropriately %	Manipulate Material %	Move %	Talk Management %	Attention %	No Management %
	All Student Participants	1.5	.4	4.3	5.4	3.6	26.3	57.9
General Education		3.2	.5	6.8	6.2	2.2	26.5	54.3
General/ Resource Room		.5	0	2.5	4.8	5.5	24.6	61.8
	General Education	1	0	2.6	5.5	5.7	22.2	62.5
	Resource Room	.2	0	2.3	4.3	5.4	26.5	61.3
Self-Contained		1.2	.6	3.9	5.2	3.2	27.1	57.6

Overall, there was a low percentage of inappropriate behavior. Student participants in the general education setting only were observed with the smallest percentage of inappropriate behavior while student participants in the self-contained setting were observed with the highest percentage of inappropriate behavior. Observed data on subcategories of Competing Responses can be found in Table 37. For student participants receiving reading instruction in the general education setting only and the self-contained setting, the most frequently reported Competing Response was Looking Around; however, for student participants in the resource room setting, the most frequently reported Competing Response was Self-Stimulation.

Table 37: Competing Responses by Instructional Setting

Instructional Setting		Disruptive %	Talk Inappropriately %	Look Around %	Non-Comply %	Self-Stim %	Self Abuse %	No Inappropriate %
	All Student Participants	.2	3.3	7.7	.3	2.5	.1	85.3
General Education		0	1.2	5.8	0	.7	.1	91.8
General/ Resource Room		.2	2.9	7.3	.1	4.6	.2	84.4
	General Education	.2	3.8	11	0	3.8	.2	79.2
	Resource Room	.2	2.2	3.8	.2	5.2	.2	88.3
Self-Contained		.3	4.6	8.8	.6	2.2	0	82.3

5.3.8 Reading Instruction

Based on MS-CISSAR observed data, the frequency of occurrence of Activities observed during reading instruction is reported in Table 38. Across instructional settings, Reading activities comprised the highest percentages of occurrences (a mean of 50.1 minutes/day

in the general education setting, 41.8 minutes/day in the general/resource room settings, and 27.7 minutes/day in the self-contained setting) followed by Language activities (a mean of 15.4 minutes/day in the general education setting, 14.8 in the general/resource room settings, and 19.5 minutes/day in the self-contained setting). Student participants receiving reading instruction in the general education setting spent significantly more time in Reading Activities than student participants in the self-contained setting ($p=.071$). Student participants receiving reading instruction in the self-contained setting spent a mean of 16.3 minutes/day in Spelling Activities, more than 2 times more than student participants in other settings (a mean of 1.7 minutes/day in the general education setting and 6 minutes/day in the general/resource room settings). There was a significant difference in the mean time spent in Spelling Activities between the general education setting and self-contained setting ($p=.061$). Phonic/phonemic awareness activities were observed for a mean of 2.9 minutes/day in the general education setting, 2.5 minutes/day in the general/resource room settings, and 0 minutes/day in the self-contained setting. Transition activities were reported with the highest frequency for student participants in the general education setting only, while Transition activities were reported with the smallest frequency in the general/resource room settings.

Table 38: Activities by Instructional Setting

Instructional Setting		Reading %	Spelling %	Language %	Phonic/ Phonemic Awareness %	Transitioning %
	All Student Participants	46.4	13.8	22.6	1.6	6.4
General Education		52.9	1.8	16.2	3.1	8.5
General/ Resource Room		51.5	7.4	18.3	3.1	5.1
	General Education	54.7	2.2	17.4	0	6.7
	Resource Room	49.2	11.4	18.9	5.4	4.0
Self-Contained		40.3	23.7	28.4	0	6.0

Additional data on components of reading instruction were collected through anecdotal notes. Of the 10 observations in the general education setting only, there was an equal occurrence or emphasis on fluency, vocabulary, and phonic/phonemic awareness activities. However, comprehension activities were observed in twice as many observations as other

components. Of the 21 observations in the general/resource room settings, phonic/phonemic awareness and fluency activities had similar occurrences. Vocabulary activities were observed almost twice as often as fluency and phonic/phonemic awareness activities. Similar to reading instruction in the general education setting only, comprehension activities were observed in almost twice as many observations as any other activities. Analyzing separately data on the components of reading instruction observed in the general/resource room settings, however, the emphasis in instruction changes. There were no phonic/phonemic awareness activities reported for student participants observed in the general education setting; the three observations of phonic/phonemic awareness activities occurred while the student participants were in the resource room setting. While comprehension activities were observed with the highest frequency in both settings, they were observed 3 times as often in the general education setting. In the resource room setting, vocabulary and comprehension activities had similar occurrences. Of the 26 observations in the self-contained setting, comprehension activities were also observed with the highest frequency (65.4% of observations) and were significantly different than those recorded in the general/resource room settings ($p=.025$). In contrast to reading instruction in the general education setting only or the general/resource room settings, reading instruction in the self-contained setting placed no emphasis on phonic/phonemic awareness activities. The difference in occurrences of phonic/phonemic awareness activities were significant between the self-contained setting and the general education setting ($p=.029$). Fluency activities were observed in the self-contained setting half as frequently as in the general/resource room settings and one-fourth as frequently as in the general education setting only. See Table 39 for data on components of reading instruction by instructional setting.

Table 39: Components of Reading Instruction by Instructional Setting

			Components of Reading Instruction							
Instructional Settings	Categories	Total Obs.	Fluency		Vocab-ulary		Compre-hension		Phonics/ Phonemic Awareness	
		N	N	%	N	%	N	%	N	%
	All Student Participants	57	10	17.5	25	43.9	41	71.9	7	12.3
General Education (5 students)		10	4	40	4	40	9	90	4	40
General/Resource Room(6 students)		21	4	19.1	8	38.1	15	71.4	3	14.3
	General Education	9	2	22.2	1	11.1	7	77.8	0	0
	Resource Room	12	2	16.7	7	58.3	8	66.7	3	25
Self-Contained (13 students)		26	2	7.7	13	50	17	65.4	0	0

Note: The number of observed components of reading instruction may be more than the total number of observations because of multiple components observed in one observation.

Activities were just one area coded under the Ecological category of MS-CISSAR. Other items coded under Ecological variables included: Task and Instructional Grouping. The percentage occurrences of Tasks are reported in Table 40. Similar to all student participants, student participants receiving reading instruction in the general education setting only and the general/resource room settings (both in general education classrooms and resource classrooms) were observed with the highest frequency in Reader Tasks. Results of a one way ANOVA showed a significant difference in Reader Tasks by instructional setting ($F(2,21)=3.924$, $p=.036$). Tukey post hoc comparisons revealed that there was a significant difference in time spent in Reader Tasks with student participants receiving reading instruction in the general/resource room settings spending significantly more time in Reading Tasks than student participants receiving reading instruction in the self-contained setting ($p=.035$). This is important in that Reader Tasks in the general education setting increased the probability of total reading and reading silently (at the .001 level of significance). However, for student participants receiving reading instruction in the self-contained setting, Other Media was the most frequently observed Task. In addition, results of a one-way ANOVA showed a significant difference in the time spent in Workbook Tasks by instructional setting ($F(2,21)=10.517$), $p=.001$). Tukey post hoc comparisons revealed that student participants receiving reading instruction in the general education setting spent significantly more time in Workbook Tasks than student participants in other instructional settings.

Table 40: Tasks by Instructional Setting

Instruc-tional Setting		Readers %	Work-books %	Work-sheet %	Paper & Pencil %	Listen & Lecture %	Other Media %	Discus-sion %	Fetch & Put %
	All Student Participants	24.1	5.4	11.7	17.2	2.8	18.2	11.3	6.5
General Education		24.0	16.6	16.7	8.4	1.5	13.7	9.6	8.8
General/ Resource Room		36.2	.3	9.6	20.8	2.1	10.7	12.8	3.7
	General Education	52.5	.7	6.0	17.0	3.8	2.0	11.9	5.3
	Resource Room	24.0	0	12.3	23.8	.7	17.3	13.5	2.5
Self-Contained		17.5	2.2	10.2	19.8	3.9	24.7	11.3	6.9

Table 41 reports on the Instructional Groupings observed by instructional setting. The most frequently observed Instructional Grouping for all student participants and across instructional settings was Whole Class. This is important given that Whole Class Instructional

Grouping in the self-contained setting decreased the probability of total reading and in the general education setting it increased the probability of reading silently.

Table 41: Instructional Groupings by Instructional Setting

Instructional Setting		Whole Class %	Small Group %	One-on-One %	Independent %
	All Student Participants	58.1	16.8	13.4	11.1
General Education		59.6	19.7	11.2	9.1
General/ Resource Room		66.9	9.1	17.4	6.1
	General Education	78.3	5.7	1.9	12.9
	Resource Room	58.4	11.7	29.0	.9
Self-Contained		52.5	19.3	12.5	14.8

Through anecdotal notes, observational data were collected on the number of students who are deaf/hard of hearing, the number of hearing students, and the number of adults in the instructional setting during reading instruction (see Table 42). The mean class size was 17.8 for

student participants receiving reading instruction in the general education setting only, 9.1 for student participants receiving reading instruction in the general/resource room settings (16.3 while in the general education setting and 3.6 while in the resource room setting), and 5.6 for student participants receiving reading instruction in the self-contained setting. Therefore, although Whole Class Instructional Grouping was the most frequently reported Instructional Grouping across settings, what numerically constituted whole class size varied across instructional settings (from 3.6 students to 17.8 students). The mean number of students who are deaf/hard of hearing in each class indicated that students who receive reading instruction in the general education setting only or the general/resource room settings, are usually the only student who is deaf/hard of hearing in the class. In fact, in 33% of schools, they were the only student who was deaf/hard of hearing in the school.

Table 42: Class Size by Instructional Setting

Instructional Setting		Mean Number in Class Per Observation		
		Students who are Deaf/Hard of Hearing	Hearing Students	Adults
	All Student Participants	3.3	5.7	1.5
General Education		1.1	16.7	1.8
General/Resource Room		1.6	7.5	1.5
	General Education	1.3	15	1.9
	Resource Room	1.8	1.8	1.2
Self-Contained		5.6	0	1.3

Teacher variables (Teacher Definition, Teacher Behavior, Teacher Approval, Teacher Focus, and Teacher Position) were also examined by instructional setting. Peer tutors were observed in the general education setting and in the general/resource room settings (general education setting only). However, the use of peer tutors was observed 2 times more frequently in the general education setting only than in the general education setting as part of general/resource room settings (see Table 43). Results of a one way ANOVA showed a significant difference at the .10 level of significance in the time spent with peer tutors and instructional setting. Tukey post hoc comparisons revealed a significant difference at the .10 level of significance in the time spent with peer tutors between student participants receiving reading instruction in the general education setting and student participants receiving reading instruction in the self-contained setting ($p=.068$). This was important given the high probability of reading behaviors with peer tutors.

Table 43: Teacher Definition by Instructional Setting

Instructional Setting		General Education Teacher %	Deaf Education Teacher %	Aide/ Interpreter %	Peer Tutor %
	All Student Participants	29.7	59.6	3.2	1.7
General Education		76.6	0	9.1	5.7
General/Resource Room		38.7	57.5	2.9	.8
	General Education	89.98	1.4	6.7	1.9
	Resource Room	0	99.8	0	0
Self-Contained		0	92.3	.2	0

Appendices N and T, and Table 44 present data on Teacher Behaviors by instructional setting. Attention was the most frequently observed Teacher Behavior for all student participants and student participants receiving reading instruction in the general education setting only and general/resource room settings (only in the general education setting). Results of a one way ANOVA showed significant differences by instructional setting in the time spent in Talk Management ($F(2,21)=14.658$, $p=000$) and Attention ($F(2,21)=5.276$, $p=0.14$). Tukey post hoc comparisons revealed that teacher participants teaching in the self-contained setting spent less time in Talk Management than those teaching in the general education setting ($p=.000$) and the general/resource room settings ($p=.003$). There were also significant differences in the time spent in attention with teacher participants teaching in the self-contained setting spending significantly

less time in Attention than those teaching in the general education setting (p=.014). Teachers in the self-contained setting spent significantly more time in Non-Verbal Prompts than teachers in the general education setting (p=.085).

Overall, teacher participants were observed showing neither approval nor disapproval toward student participants. Teacher participants in the self-contained setting were observed with the highest incidence of teacher approval (5.2%) and disapproval (6.5%). The smallest incidence of teacher approval was reported for teacher participants in the general/resource room settings (in the general education setting). The lowest occurrence of teacher disapproval was reported for teacher participants in the general education setting only. Teachers in the general education setting only were observed twice as frequently showing approval but less than half as frequently showing disapproval toward students than were teachers in the general education setting, as part of the general/resource room settings. Results indicated a significant difference in the time spent in teachers showing neither approval nor disapproval by instructional setting ($F(2,21)=6.489$, $p=.006$), specifically with teachers in the general education setting spending less time than teachers in the self-contained setting (p=.006).

Table 44: Teacher Behaviors by Instructional Setting

Instructional Setting		Academic Question %	Academic Talk %	Talk Management %	Attention %	Read Aloud %
	All Student Participants	16.5	21.1	10.7	21.9	6.1
General Education		12.3	20.9	15.6	25.3	8.7
General/ Resource Room		17.7	20.5	14.8	23.7	5.3
	General Education	14.3	19.1	18.9	27.2	8.6
	Resource Room	20.2	21.6	11.7	21.1	2.9
Self-Contained		18.1	21.6	5.8	19.2	5.1

Observational data on Teacher Focus indicated that the minimum and maximum occurrence of teacher focus on the target student only and the target student and other students were seen with teacher participants in the general/resource room settings. (Teacher participants in the general education setting had the smallest incidence of focusing on the target student only and the largest incidence of focusing on the target student and other students. Teacher

participants in the resource room setting had the largest frequency of teacher focus on the target student only and the smallest frequency of teacher focus on the target student and other students). The general education setting only and the general education setting as part of the general/resource room settings had the same order or rank of frequency distributions for teacher focus with both settings having the highest frequency of teacher focus on the target student and other students. There was a significance difference in the time spent with the target student and other students with teachers in the general education setting spending more time with the target student and other students than teachers in the self-contained setting (p=.026). This finding was important given that teacher focus on the target student and other students increased the probability of total reading and reading silently (p=.001). They also had the same rank order of frequency observations of teacher position with the most frequently reported teacher position being in front of the student participant (60% occurrence in the general education setting only and 58.2% occurrence in the general education setting as part of the general/resource room settings). See Appendix N for detailed information on teacher variables by instructional settings.

5.3.9 Summary

In summary, the general education setting only and general education setting as part of the general/resource room settings were similar in many ways. In both, Readers were found to be the most frequently observed Task and Attention was found to be the most frequently observed Task Management. A lot of Activities areas other than Reading occurred during times allocated to reading instruction (e.g. Math, Science, and Self-Care) in both settings. They had the same order or rank frequency of observed Teacher Behaviors, Teacher Focus, and Teacher Position. The general education setting only and the general education setting as part of the general/resource

room settings were also very different. The use of Paper and Pencil Tasks were observed twice as often in the general education setting as part of the general/resource room settings. Independent Instructional Grouping was observed 3% more frequently in the general education setting as part of the general/resource room settings. Peer tutors were observed twice as often in the general education only setting. Also, Teacher Approval in the general education only setting was observed almost twice as often than in the general education as part of the general/resource room settings; disapproval was observed less frequently in the general education only setting than in the general education as part of the general/resource room settings. The most frequently reported Academic Response in the general education setting only was writing and the most frequently reported Academic Response in the general education setting as part of the general/resource room settings was reading silently. In the general education setting, part of the general/resource room settings, Competing Responses or inappropriate behavior were observed 2 times more often than in the general education setting only.

Reading instruction in the self-contained setting and the resource room setting were similar in several respects. In both settings, student participants spent a small percentage of time in Activities other than Reading, Spelling, and Language. Neither instructional setting used peer tutors. The most frequently reported Teacher Behavior in both settings was Talk Academic. Student participants in both instructional settings had similar mean minutes spent in total reading, reading aloud, and reading silently. Writing was also the most frequently observed student Academic Response.

Reading instruction in the self-contained setting and resource room setting were also different in many aspects. Student participants receiving reading instruction in the self-contained setting had no observed occurrences of Phonic/phonemic awareness activities while student

participants receiving reading instruction in the resource room setting had 5.4% observed occurrences of Phonic/phonemic awareness activities. The most frequently reported Task in the self-contained setting was Other Media and the most frequently reported Task in the resource room setting was Readers. Teacher participants in the self-contained setting were observed with a higher frequency of approval and disapproval Teacher Behaviors than teacher participants in the resource room setting. Teacher focus in the self-contained setting on the target student only was twice that observed in the resource room setting. The most frequently reported Competing Response in the resource room setting was Self-Stimulation and the most frequently reported Competing Response in the self-contained setting was Looking Around. The frequency observance of Independent Instruction Grouping was larger in the self-contained setting than in the resource room setting; however, the frequency observance of One-on-One Instruction Grouping was twice that of the self-contained setting.

Reading instruction was similar across instructional settings in that Reading was the most frequently observed Activity or subject area. Whole class Instructional Grouping was the most frequently observed Instructional Grouping. Generally teachers showed neither approval nor disapproval toward student participants. Also, teacher position was observed most frequently in front of the student participant. Attention was the most frequently observed Task Management. The main ways in which reading instruction across instructional areas was different was in the use of peer tutors, Teacher Focus, and Teacher Behavior. Significant differences were found in the mean time observed spent in reading instruction between the general education setting only (94.8 minutes/day) and the self-contained setting (68.8 minutes/day). The mean time engaged in total reading varied by instructional setting with the student participants in the self-contained setting reporting the lowest mean (7.5 minutes/day) and the general education setting reporting

the highest mean (20.7 minutes/day). Also, the mean time engaged in reading aloud varied by instructional setting from 5.3 minutes/day in the self-contained setting to 10.7 minutes/day in the general education setting only. In addition, the mean time engaged in reading silently varied by instructional setting to a significant degree between the general education setting (10 minutes/day) and the self-contained setting (2.3 minutes/day).

5.4 READING INSTRUCTION FOR STUDENT PARTICIPANTS WITH A CONCOMITANT DISABILITY

In order to examine the extent to which reading instruction for student participants with a concomitant disability was different than or similar to reading instruction for student participants with no reported concomitant disability, reported and observed data were analyzed using EBASS, SPSS, and spreadsheet software. Based on student participants who were identified through teacher interviews and/or a review of student participants' school records as having a concomitant disability, demographic data were reported and compared to demographic data of student participants with no reported concomitant disability. Demographic data of teacher participants working with this subgroup were compared to demographic data of teacher participants working with student participants with no concomitant disability. Frequency and percentage occurrence of curriculum, reading modifications, and use of interpreters was reported and compared. Analysis of time allocated to reading instruction, time observed in reading instruction, and percentage of student Academic Responses were conducted to provide comparison information on student engagement in reading. Also, to obtain information on the differences or similarities in type of reading Activities, frequency of occurrences of Ecological

variables were compared. In addition, a comparison of the frequency of Teacher variables was reported. Comparisons of frequency of occurrences using independent t-sampling provided information on any differences or similarities in where or how reading instruction occurred.

5.4.1 Student Participants

Six student participants (25%) were identified with a concomitant disability: 1 participant with attention deficit hyperactivity disorder, 1 participant with an emotional/behavior disorder, 2 participants with a specific learning disability, and 2 participants with mental retardation. Reported demographic data on gender, age, level of hearing loss, age of onset of hearing loss, parental hearing status, assistive listening devices utilized, primary method of communication, grade level enrolled, instructional setting, length of time in current instructional setting, and reading curriculum grade level were analyzed for this subgroup (see Appendix D for student participant data collection form).

Demographic data on gender of student participants with no concomitant disability indicated that the ratio of males to females was almost 1:2; however, the ratio of males to females for student participants with a concomitant disability was 5:1. This subgroup of student participants ranged from 7 years, 3 months of age to 11 years, 3 months of age with a mean of 9 years, 6 months of age. Thus the mean age of student participants with a concomitant disability was slightly older (1 year older) than the mean age of student participants with no concomitant disability (8.3 years of age).

Table 45: Demographic Characteristics of Student Participants with/without a Concomitant Disability

		Student Participants with No Concomitant Disability (n=18)		Student Participants with a Concomitant Disability (n=6)	
Variable	Categories	N	%	N	%
Gender	Male	7	38.9	5	83.3
	Female	11	61.1	1	16.6
Hearing Loss (based on better ear)	Mild-moderate/moderate	6	33.3	0	0
	Moderate-severe/severe	5	27.8	2	33.3
	Severe-profound/profound	7	38.9	4	66.6
Assistive listening devices Reported to be Used In School	Classroom amplification	7	38.9	2	33.3
	Cochlear Implant	5	27.8	3	50
	Hearing Aid	10	55.6	4	66.6
	Personal FM System	9	50	2	33.3

Table 45: Demographic Characteristics of Student Participants with/without a Concomitant Disability (Continued)

Primary Method of Communication	American Sign Language	7	38.9	1	16.6
	Sign Supported Speech	3	16.7	4	66.6
	Speech	8	44.4	1	16.6
Grade Level Enrolled	1st	8	44.4	1	16.6
	2nd	6	33.3	1	16.6
	3rd	3	16.7	2	33.3
	4th	1	5.6	2	33.3
Instructional Setting	General Education	5	27.8	0	0
	General/Resource Room	3	16.7	3	50
	Self-Contained	10	55.6	3	50

Data on the level of hearing loss, age of onset of hearing loss, and parental hearing status were also collected for this subgroup of student participants. As indicated in Table 45, levels of hearing loss ranged from bilateral moderate-severe hearing loss to bilateral severe hearing loss. There were no student participants in this subgroup reporting mild-moderate/moderate hearing loss. A higher percentage of student participants with a concomitant disability also reported a severe-profound/profound hearing loss (27.7% more). Data on age of onset indicated that all student participants with a concomitant disability had a prelingual hearing loss (prior to 2 years

of age). This was higher than the 88.9 reported for student participants with no concomitant disability. All student participants in the subgroup had hearing parents.

Reported data for this subgroup on assistive listening devices used in the schools are also presented in Table 45. The percentage of student participants with a concomitant disability reporting the use of cochlear implants was almost twice that of student participants with no concomitant disability. Based on observational data, 2 student participants (33.3%) wore assistive listening devices during observations, 2 student participants (33.3%) did not wear assistive listening devices during observations, and 2 student participants (33.3%) were inconsistent in their use of assistive listening devices during observations. Thus student participants with a concomitant disability had a lower frequency of assistive listening devices use than student participants with no concomitant disability (88.9%, 5.6%, and 5.6%, respectively). For student participants with a concomitant disability, there was no difference in use of assistive listening devices by instructional setting (1 student participant in each instructional setting wore assistive listening devices). Unlike student participants with a concomitant disability, there was a difference in use of assistive listening devices by instructional setting for student participants with no concomitant disability. For example, 100% of participants receiving reading instruction in the general education setting only and general/resource room settings wore assistive listening devices during observations and 80% receiving reading instruction in the self-contained setting wore assistive listening devices during observations. Based on level of hearing loss, student participants with no concomitant disability and with mild-moderate/moderate or moderate-severe/severe hearing losses all wore assistive listening devices while 71.4% of student participants with severe-profound/profound hearing loss wore assistive listening devices. Based on level of hearing loss, 50% of student participants with a concomitant disability with

moderate-severe/severe wore assistive listening devices during observations and 25% of student participants with severe-profound/profound wore assistive listening devices during observations. The percentage of assistive listening devices used was also lower than the percentage of assistive listening devices worn by student participants with no concomitant disability based on level of hearing loss or instructional setting.

Reported data on the primary method of communication indicated that the percentage of student participants with a concomitant disability reporting the use of sign supported speech was 4 times that of student participants with no concomitant disability. The percentage of student participants with a concomitant disability reporting the use of ASL or speech were half that of student participants with no concomitant disability (see Table 45). For student participants with a concomitant disability reporting speech or sign supported speech as the primary method of communication, those were the methods of communication observed in all observations. For the 1 student participant reporting ASL, sign and speech were observed in both observations.

The frequency and percentage of participants by grade level enrolled is reported for this subgroup in Table 45. Data indicated that the frequency of student participants with no concomitant disability decreased as the grade level enrolled increased and the frequency of student participants with a concomitant disability increased as the grade level enrolled increased.

Table 45 also reports the frequency and percentage of student participants with a concomitant disability by instructional setting. Certain pairings of student participants with a concomitant disability and instructional setting did not occur. For example, none of the 6 student participants with a concomitant disability received reading instruction exclusively in the general education setting. There was, however, an equal distribution of student participants receiving reading instruction in the general/resource room settings and in the self-contained setting. The

mean length of time in the current instructional setting for this subgroup of student participants was 2.8 years (2.5 years for student participants in the general/resource room settings and 3.2 years for student participants in the self-contained setting). This was slightly longer than the mean length of time in instructional setting for student participants with no concomitant disability (2.0 years), although differences did not reach levels of significance.

Reading curriculum grade level was compared to the grade level in which the student participant was enrolled in order to obtain an on/above/below grade level. Student participants with a concomitant disability had the same percentage of students working with reading curriculum on grade level (33.3%) as student participants with no concomitant disability. Student participants working with reading curriculum on level had severe-profound/profound hearing losses and were identified with concomitant disabilities of attention deficit hyperactivity disorder and specific learning disability. The percentage of student participants with a concomitant disability working with reading curriculum two grade levels below (50%) was 3 times more than student participants with no concomitant disability and the percentage of students in this subgroup working with reading curriculum one grade level below (16.7%) was 3 times less than student participants with no concomitant disability. Results of a cross-tabulation of level of hearing loss, instructional setting, and reading curriculum grade level for student participants with a concomitant disability indicated that 75% of student participants with a concomitant disability and 83% of student participants with no concomitant disability working on curriculum below grade level received reading instruction in the self-contained setting. Thus, data indicated similar findings as those found for student participants with no concomitant disability in that reading curriculum grade level was linked more closely to instructional setting than level of hearing loss.

Overall, student participants with a concomitant disability were predominantly male and were equally distributed in receiving reading instruction in the general/resource room settings and self-contained setting. They were slightly older and had slightly longer mean lengths of time in their current instructional setting than student participants with no concomitant disability. None of the student participants in this subgroup received reading instruction in the general education setting only. Unlike the number of student participants with no concomitant disability, which decreased as grade level enrolled increased, the number of student participants with a concomitant disability increased as the grade level enrolled increased. A higher percentage of student participants with a concomitant disability reported a severe-profound/profound hearing loss with prelingual onset. Furthermore, none of the student participants in this subgroup had a mild-moderate/moderate hearing loss. The frequency of student participants in this subgroup using cochlear implants was twice the frequency reported for student participants with no concomitant disability. Additionally, student participants in this subgroup were observed wearing assistive listening devices less frequently than student participants with no concomitant disability. Also, 4 times as many student participants in this subgroup reported the use of sign supported speech than student participants with no concomitant disability. They had the same percentage of student participants working on grade level; however, this subgroup had 3 times as many student participants working two grade levels below than that reported for student participants with no concomitant disability. For both groups, reading curriculum grade level was linked more closely to instructional setting than to level of hearing loss.

5.4.2 Teacher Participants

From the sample of all teacher participants, 7 were responsible for teaching reading instruction to the 6 student participants with a concomitant disability. Biographical data collected through informal teacher interviews indicated that all 7 of these teachers were hearing. Both male general education teachers taught reading instruction to student participants with a concomitant disability. Three teacher participants taught reading in the general education setting, 2 teacher participants taught reading in the resource room setting, and 2 teacher participants taught reading in the self-contained setting.

Data on variables related to teacher preparation indicated that 5 of the teacher participants working with student participants with a concomitant disability held Master's degrees (71.4%), a higher percentage than that reported by other teacher participants (50%). Examining these data further revealed that 75% of deaf education teachers working with student participants with a concomitant disability held a Master's degree. Thus more teachers working with student participants with a concomitant disability held higher degrees.

The mean years teaching experience for teacher participants working with student participants with a concomitant disability was 5 years less than teachers of students without a concomitant disability; however, the mean years teaching experience with students who are deaf/hard of hearing was 3 times greater. Based on teacher-reported demographic data, 4 teacher participants in this subgroup were certified in Deaf Education. The greater proportion of teachers in deaf education in this subgroup and their greater number of years teaching experience with students who are deaf/hard of hearing and smaller mean years of teaching experience overall could account for these differences.

Data also indicated that teacher participants in this subgroup had taken a mean of 1.4 fewer reading courses; however, they had attended a mean of 2.8 more reading in-services than other teacher participants (see Table 47). This was interesting given the high proportion of teachers in deaf education in this subgroup which overall had lower means in variables related to teacher training (refer to Table 9).

Overall, teacher participants working with student participants with a concomitant disability had a higher percentage of teachers holding higher degrees, but these teachers had taken fewer reading courses. Teachers in this subgroup, however, had attended more reading in-services than other teacher participants. They reported fewer years teaching experience, but more years teaching experience with students who are deaf/hard of hearing.

Table 46: Comparison of Background Characteristics of Teacher Participants Working with Student Participants With/Without a Concomitant Disability

Variable	Category	Mean	Median	S.D.	Min	Max
Total Years of Experience	Teachers working with students with no concomitant disability (n=10)	20.0	19	12.5	2.0	38.0
	Teachers working with students with a concomitant disability (n=7)	14.9	10.0	11.1	4.0	31.0
Years Experience w/Students who are Deaf/ Hard of Hearing	Teachers working with students with no concomitant disability	2.5	1.5	3.6	.5	12.5
	Teachers working with students with a concomitant disability	8.7	5.0	10.2	1.0	31.0
Number of Reading Classes Taken	Teachers working with students with no concomitant disability	3.8	3.0	3.0	0	10.0
	Teachers working with students with a concomitant disability	2.4	3.0	1.5	0	4.0
Number of Reading In-Services Attended within the Last 5 years	Teachers working with students with no concomitant disability	6.9	4.5	7.5	0	20.0
	Teachers working with students with a concomitant disability	9.7	10.0	7.8	2.0	20.0

5.4.3 Reading Curriculum and Reading Modifications

The 6 student participants with a concomitant disability attended 4 different schools. Three participants (50%), receiving reading instruction in self-contained settings at two schools, were observed using curriculum other than that used in the general education classrooms and/or special education classrooms (Fairview and Focus). Two participants (33.3%), receiving reading instruction in general/resource room settings in a third school, were observed using the same curriculum utilized in the general education classrooms (Literacy Collaborative and AR). One of these student participants was working with reading curriculum on grade level and 1 student participant was working with reading curriculum two levels below grade level. One participant (16.7%), receiving reading instruction in the general/resource room settings in a fourth school, was observed using the same supplemental curriculum, on grade level, as that used in the general education classroom (trade book). The curriculum reported by instructional setting for student participants with a concomitant disability was the same as the curriculum reported for student participants with no concomitant disability.

Demographic data collected on variables and IEP services which may be specifically relevant to reading instruction indicated that 50% of student participants with a concomitant disability (3 student participants) reported the use of an interpreter. One received reading instruction in the self-contained setting and the 2 others in the general/resource room setting. Observed practices, however, revealed that although the interpreter was observed in the room during one observation, the interpreter was on a break and not involved in interpreting during reading instruction. Two student participants reporting the use of an interpreter received reading instruction in the general/resource room settings. However, the interpreter was not observed in either setting for 1 student participant and the interpreter was observed in the general education

setting for the second student participant. Thus only 1 student participant was observed utilizing an interpreter for reading instruction and this occurred in the general education setting.

Through teacher interviews and/or a review of student participants' school records, data on reading modifications were collected. Of the 6 student participants with a concomitant disability, the only reading modifications reported by more than one student participant were: extended/extra time (83%), small groups (83%), and preferential seating (33%). These modifications were also three of the most common modifications reported by student participants with no concomitant disability [extended/extra time (66.7%), small groups (61.1%), adapted curriculum (50%), and preferential seating (27.8%)]; however, they were reported in greater frequency for student participants with a concomitant disability. Although only 1 student participant with a concomitant disability reported the modification of an adapted curriculum, a second student participant reported curriculum modifications and a third student participant reported the use of a specified curriculum. Taken together, an equal percentage (50%) of student participants with concomitant disability reported curriculum modifications as that reported for student participants with no concomitant disability.

5.4.4 Time Allocated for Reading Instruction and Time Spent in Reading Instruction

Based on teacher-reported data, the mean time allocated for reading instruction for student participants with a concomitant disability was 98.2 minutes/day with a standard deviation of 28.5. This mean time allocated was 6.5 minutes/day less than that reported for student participants with no concomitant disability. The median time allocated was 95 minutes/day, 17 minutes/day less than the median time reported for other student participants. As seen by the standard deviation (see Table 48), there was considerable variability in time allocated among

student participants. Results of an independent sample t-test indicate no significant differences in mean time allocated to reading instruction between groups.

Table 47: Total Time Allocated to Reading Instruction for Student Participants with a Concomitant Disability

Instructional Setting		Time Allocated to Reading Instruction/Day				
	Categories	Mean	Median	S.D.	Min.	Max.
	Student Participants with No Concomitant Disability	104.7	112	19.5	60	134
	Student Participants with a Concomitant Disability	98.2	95	28.5	66	140
General Education		-	-	-	-	-
General/Resource Room		107	115	30.7	66	140
	General Education	57	55	18	36	80
	Resource Room	50	60	14.1	30	60
Self-Contained		89.3	78	16.0	78	112

The mean time observed spent in reading instruction for the subgroup of student participants with a concomitant disability was 76.4 minutes/day with a range of 51 minutes/day to 90 minutes/day. This mean time was similar to that observed for student participants with no concomitant disability; however, the range was considerably smaller (see Table 48). Results of an independent sample t-test indicate no significant differences in the mean time spent in reading instruction between groups.

For student participants with a concomitant disability receiving reading instruction in the general/resource room settings, the mean time observed spent in reading instruction was 72.8 minutes/day, with a range of 51 minutes/day to 90 minutes/day. This was 16.7 minutes less than the mean time observed spent in reading instruction for student participants with no concomitant disability receiving reading instruction in the same setting (89.5 minutes/day). The subgroup of student participants in the general/resource room settings reported almost equal mean times allocated to reading instruction in each sub setting (53.3% in the general education and 46.7% in the resource room setting); however, the mean time observed spent in reading instruction for these students in the general education setting was 32.6% and in the resource room setting was 67.6%. In comparison, the time observed in reading instruction in the general/resource room settings were nearly evenly distributed (51.6% in the general education setting and 48.4% in the resource room setting) for student participants with no concomitant disability. Thus, student participants with a concomitant disability were observed spending more time in the resource room. For student participants with a concomitant disability receiving reading instruction in the self-contained setting, the mean time observed spent in reading instruction was 80 minutes/day with a range of 72 minutes/day to 86 minutes/day. This was 14.5 minutes more than the mean for student participants with no concomitant disability in the same setting (65.5 minutes/day). Thus, student participants with a concomitant disability were observed spending more time in the resource room and in self-contained settings than student participants with no concomitant disability. The median time observed spent in reading instruction for student participants with a concomitant disability was 79.8 minutes/day. The proportion of time actually spent on reading instruction for this subgroup was 77.8%, slightly greater than that reported for student participants with no concomitant disability (74.1%).

Table 48: Student Academic Responses of Reading Aloud, Reading Silently, and Total Reading for Student Participants with/without a Concomitant Disability

		Mean Minutes/Day (Range)			
Instructional Setting	Category	Time Observed In Reading Instruction	Time Spent Reading Aloud	Time Spent Reading Silently	Total Time Spent Reading
	Student Participants with no Concomitant Disability	77.3 (38.5-123)	6.9 (0-22.5)	5.3 (0-21.5)	12.3 (0-37.5)
	Student Participants with a Concomitant Disability	76.4 (51-90)	10 (4.5-15.5)	4.6 (.5–16.5)	14.6 (5-24.5)
General Education		-	-	-	-
General/ Resource Room		72.8 (51-90)	8.5 (4.5-13)	6.2 (.5-16.5)	14.7 (5-24.5)
	General Education	23.7 (0-47)	1.3 (0-4)	5.3 (0-15.5)	6.7 (0-15.5)
	Resource Room	49.2 (27-77.5)	7.2 (4.5-9)	.8 (.5-1)	8 (5-10)
Self-Contained		80 (72-86)	11.5 (6-15.5)	3 (1-4.5)	14.5 (9.5-17.5)

5.4.5 Student Engagement in Reading Aloud and Reading Silently

Of the mean 76.4 minutes/day observed in reading instruction, student participants with a concomitant disability spent 19.1% engaged in total reading (reading aloud and reading silently). As shown in Table 48, the mean time spent in total reading (reading aloud and/or reading silently), was 14.6 minutes/day (with a range of 5 minutes/day to 24.5 minutes/day). The mean total time spent reading was similar for both the general/resource room settings and the self-contained setting. The mean minutes engaged in total reading were 2.3 minutes/day more for these students than that of student participants with no concomitant disability.

Student participants with a concomitant disability spent 13.1% of observed time engaged in reading aloud (5.5% more than student participants with no concomitant disability, regardless of instructional setting). This translates to a mean of 10 minutes/day reading aloud (range of 4.5 minutes/day to 15.5 minutes/day). Student participants in this subgroup receiving reading instruction in the general/resource room settings spent almost 6 times more minutes in reading aloud in the resource room setting than in the general education setting. This differs from student participants with no concomitant disability where the mean time spent reading aloud in the general/resource room settings were both 3.2 minutes/day (although the ranges varied considerably from 0 minutes/day to 19 minutes/day in the general education setting to 5 minutes/day to 8 minutes/day in the resource room setting). The mean minutes spent reading aloud for this subgroup was higher than reported for student participants with no concomitant disability (5.9 minutes/day); however, it was similar to that reported for student participants with no concomitant disability receiving reading instruction in the general education setting. Student participants with a concomitant disability receiving reading instruction in the self-contained setting spent a mean of 3 minutes/day more reading aloud than those receiving reading

instruction in the general/resource room settings and almost twice that spent by student participants with no concomitant disability receiving reading instruction in the self-contained setting.

Student participants with a concomitant disability spent 6% of observed time in reading silently. A mean of 4.6 minutes/day were spent reading silently (with a range of .5 minutes/day to 16.5 minutes/day). Student participants in this subgroup receiving reading instruction in the general/resource room settings spent almost 4 times more time reading silently while in the general education setting than in the resource room setting. In addition, they spent 2 times more time reading silently than those receiving reading instruction in the self-contained setting. Student participants with no concomitant disability in the general/resource room settings spent more than 4 times more time reading silently than those receiving reading instruction in the self-contained setting. For this subgroup, regardless of instructional setting, student participants spent less time reading silently than reading aloud. In contrast, student participants with no concomitant disability receiving reading instruction in the general education setting spent almost equal times reading aloud and reading silently; those receiving reading instruction in the general/resource room settings spent more time reading silently than reading aloud; and those receiving reading instruction in the self-contained setting spent more time reading aloud than reading silently. Although differences were seen in the mean times engaged in reading between student participants with/without a concomitant disability, results of independent t-tests indicated no significant differences in the mean time spent in reading silently.

To further analyze the extent to which student participants with a concomitant disability were actually engaged in reading, data on an individual basis was examined. Unlike reading instruction for student participants with no concomitant disability, no student participants with

concomitant disabilities spent 0 minutes reading aloud; however, 1 student participant with a profound hearing loss receiving reading instruction in the general/resource room settings spent just 30 seconds/day reading silently. Another student participant with a profound hearing loss receiving reading instruction in the self-contained setting spent just 1 minute/day reading silently.

5.4.6 Ecobehavioral Analysis of the Probability of Reading Aloud and Reading Silently

The amount of time engaged in total reading, reading aloud, and reading silently was further investigated through ecobehavioral analysis, the computation of the probability of a student participant behavior given the occurrence of a specified condition (Teacher and Ecological) (see Appendices U and V). In examining the probability of total reading for student participants with a concomitant disability by Teacher Definition and Setting variables, results indicated that only working with the general education teacher *increased* the probability of total reading and reading silently to levels of significance (p=.05 and p=.001 respectively) more than the unconditional probability. These findings were similar to those for student participants with no concomitant disability. Student participants with a concomitant disability were not observed working with peer tutors at all. For student participants with no concomitant disability, working with peer tutors increased the probability of total reading and reading aloud. Working with resource room deaf education teachers significantly *decreased* the probability of reading silently (p=.01) and working with general education teachers significantly *decreased* the probability of reading aloud (p=.01) for student participants with a concomitant disability.

Additional Teacher variables of Teacher Focus and Teacher Behavior were examined in relation to reading behaviors for student participants with a concomitant disability. Teacher

Focus on the target student only significantly *increased* the probability of reading aloud in the self-contained and resource room settings (p=.001 and p=.01 respectively) and significantly *increased* the probability of total reading in the resource room setting (p=.01). Teacher focus on other students in the self-contained setting significantly *decreased* the probability of total reading and reading aloud (p=.05), similar to student participants with no concomitant disability. Teacher focus in the general education setting, as part of the general/resource room instructional settings, on the target student and other students significantly *increased* the probability of total reading and reading silently (p=.01 and p=.001) while significantly *decreasing* the probability of reading aloud (p=.01). These results were different than results for student participants with no concomitant disability for whom teacher focus on target and other decreased total reading behaviors and did not significantly affect the probability of reading silently. Results which also differed from than those found for student participants with no concomitant disability included the teacher focus on target and other in the resource room setting which *decreased* the probability of reading aloud (p=.05). Student participants in this subgroup receiving reading instruction in the resource room with teacher focus on the target student only *increased* the probability of total reading and reading aloud (p=.01 and p=.001). Data on Teacher Behavior indicated that teacher Attention *increased* the probability of total reading and reading silently above the unconditional probability (p=.01 and p=.001), similar to results obtained with student participants with no concomitant disability. Teacher Behavior of Talk Academic significantly *decreased* the probability of reading silently (p=.05). Teacher Approval variables did not reach a level of significance for any reading behaviors. In addition, examining results by Teacher Behavior and instructional setting revealed that no conditions reached levels of significance (unlike results obtained with student participants with no concomitant disability for whom Talk

Academic in the self-contained setting decreased the probability of total reading, reading aloud, and reading silently). Thus, the probability of reading behaviors given Teacher variables of Teacher Focus and Teacher Behavior varied from those reported for student participants with no concomitant disability.

Results of the ecological analysis of the subcategory of Activity and Task were also reported for student participants with a concomitant disability. The probability of total reading, reading aloud, and reading silently were significantly *increased* with Reading activities (p=.01, p=.05, and p=.05, respectively). Reading Activities were the most frequently observed Activity. Spelling Activities significantly *decreased* the probability of total reading and reading aloud (p=.001 and p=.01). Investigating the variable of Activity by instructional setting revealed that Spelling in the self-contained setting significantly *decreased* the probability of total reading and reading aloud. This was important given that 14.9% of observations in the self-contained setting were in the activity of Spelling. Results were similar to those obtained for student participants with no concomitant disability; however, Language Activities observed with student participants with no concomitant disability decreased the probability of reading aloud (p=.001) less than the unconditional probability. This was not seen with student participants with a concomitant disability. Similar to the results for student participants with no concomitant disability, results for student participants with a concomitant disability indicated that the probability of total reading, reading aloud, and reading silently occurring was significantly *increased* with the Task of Readers (45%, 28%, and 17%, respectively, p=.01) and the probability of total reading and reading silently occurring was significantly *decreased* with the Task of Other Media (12% and 1%, p=.01). The Tasks of paper and pencil significantly *decreased* total reading and reading aloud (9% and 5%, p=.001).

The conditions of Ecological Instructional Grouping and Instructional Setting were also examined. Similar to findings for student participants with no concomitant disability, student participants in this subgroup receiving reading instruction in the general education setting working in small groups and receiving reading instruction in the resource room and self-contained setting one-on-one with a teacher significantly *increased* the probability of total reading and reading aloud; however, student participants in this subgroup receiving reading instruction in the resource room working in small groups significantly *decreased* the probability of total reading, contrary to results for student participants with no concomitant disability. Although whole class Instructional Groupings in the general education setting *increased* the probability of reading silently, it *decreased* the probability of reading aloud. Both whole class Instructional Groupings in the resource room setting and one-on-one Instructional Grouping in the self-contained setting *decreased* the probability of reading silently.

5.4.7 Composite of Student Responses

Engagement in reading was coded as part of Academic Responding. Overall, student participants with a concomitant disability spent 47.6% of their time responding academically (2.5% more than reported for student participants with no concomitant disability). The percentage occurrence of time spent writing was 17.1%, reading aloud was 13.1%, talking academically was 7.3%, reading silently was 6%, and participating in tasks was 4.1%. As noted earlier, student participants with no concomitant disability spent almost equal percentages of time in reading aloud and reading silently (7.6% and 7.2% respectively). Results of an independent sample t-test indicate no significant differences in Academic Responding between groups. Both groups were

observed with the highest frequency of Academic Responding in writing (17.7% and 17.1% respectively) (see Appendix W).

The second Student category was Task Management. Student participants with a concomitant disability spent 38.1% of observations in Task Management activities (4.4% less than student participants with no concomitant disability). Specific recorded events of Task Management included: 23.8% occurrence of Attending, 5.9% occurrence of Moving, 4.5% occurrence of Talk Management, and 3.4% occurrence of Manipulating Material. Both groups were observed with the highest frequently of Task Management behavior in Attending. Although the Levene's test for variance indicate significant difference in variances of time spent in Attending Task Management ($p=.028$), results of the independent sample t-test indicate no significant differences in the mean time spent in Attending Task Management between groups.

The third Student category was Competing Responses which for this subgroup represented 15.8% of observations (2.4% more than reported for student participants with no concomitant disability), with the largest occurrences in Looking Around (7%), Self-Stimulation (3.8%), and Talk Inappropriately (3.6%). As with results for student participants with no concomitant disability, the highest occurrence of Competing Responses was in Looking Around (see Appendices P and Q for detailed information on Competing Responses for student participants with a concomitant disability). Results of an independent sample t-test indicate no significant differences in the mean time spent in Competing Responses between groups.

5.4.8 Reading Instruction

In addition to data coding by Student category, MS-CISSAR data were coded by Ecological and Teacher categories. Data collected on Ecological variables for student participants with a

concomitant disability indicated the following occurrences of Activities specific to reading instruction: Reading activities (comprehension, reading aloud, and reading silently) were observed in 56.4% of the total observations in reading instruction, Spelling activities were observed in 14.9% of total observations, Language activities (vocabulary, language structure, and creative writing) were observed in 18.3% of total observations, and Transition activities were observed in 5.3% of total observations (see Appendix X). This translates to a mean of 43.1 minutes/day spent in Reading activity, 11.4 minutes/day in Spelling activities, 14 minutes/day in Language activities, and 0 minutes/day in Phonic/phonemic awareness activities. Overall, the percentage of observed time in Reading and Spelling activities for student participants with a concomitant disability were greater than for student participants with no concomitant disability (43.2% and 13.5%) and the percentage of observed time in Language and Phonics/phonemic awareness activities were less than for student participants with no concomitant disability (24.1% and 2.1%). In fact, no time was spent on Phonic/phonemic awareness activities for student participants with a concomitant disability. In order to further examine the Activity subcategories of Reading and Language, anecdotal notes were utilized.

During observations, data were collected through anecdotal notes on components of reading instruction: fluency, vocabulary, comprehension, and phonic/phonemic awareness. Of the 15 observations of reading instruction for student participants with a concomitant disability, fluency activities were observed in 20% of observations, vocabulary activities were observed in 53.3% of observations, comprehension activities were observed in 86.7% of observations, and phonic/phonemic awareness activities were observed in 0% of observations. Fluency occurred with a greater frequency (3.3% more) and vocabulary occurred with a greater frequency (12.8% more) across instructional settings for student participants with a concomitant disability than for

student participants with no concomitant disability. Fluency activities for student participants with a concomitant disability were not recorded in the general education setting (as part of the general/resource room settings) and were more frequently observed in the self-contained setting than in the resource room setting. This contrasts to fluency activities for student participants with no concomitant disability which were observed more frequently in the general/resource room settings. There was a smaller frequency of observations of comprehension (20% less) and phonic/phonemic awareness activities observed for student participants with a concomitant disability than for student participants with no concomitant disability. Results of an independent sample t-test indicate a significant difference between groups in the mean occurrence of phonic/phonemic awareness activities ($t(2.364)=17$, $p=.030$ (2-tailed)). With 50% of student participants with a concomitant disability receiving reading instruction in the self-contained setting, the lack of any phonic/phonemic awareness activities observed may reflect the lack of phonic/phonemic awareness activities observed in the self-contained setting for student participants with no concomitant disability; however, phonic/phonemic awareness activities were observed in the resource room setting. So, instructional setting alone does not explain the lack of phonic/phonemic awareness activities for student participants with a concomitant disability. See Table 50 for a detailed analysis of components of reading instruction for student participants with a concomitant disability by instructional setting.

Table 49: Components of Reading Instruction for Student Participants with/without a Concomitant Disability

			Components of Reading Instruction							
									Phonic/ Phonemic	
Instructional Setting	Categories	Obs N	Fluency N	%	Vocabulary N	%	Comprehension N	%	Awareness/ N	%
	Student Participants with No Concomitant Disability	42	7	16.7	17	40.5	28	66.7	7	16.7
	Student Participants with a Concomitant Disability	15	3	20	8	53.3	13	86.7	0	0
General Education		-	-	-	-	-	-	-	-	-
General/ Resource Room		9	1	11.1	5	55.6	7	77.8	0	0
	General Education	3	0	0	0	0	2	66.7	0	0
	Resource Room	6	1	16.7	5	83.3	5	83.3	0	0
Self-Contained		6	2	33.3	3	50	6	100	0	0

Observational data recorded on the Ecological variables of Tasks and Instructional Groupings were also analyzed for student participants with a concomitant disability. Students spent significantly less time working with Workbook Tasks (p=.045), less time in discussion Tasks, and more time working with Readers, Paper and Pencil, and Other Media Tasks than student participants with no concomitant disability. This was important given that Readers increased the probability of total reading, reading aloud, and reading silently and Paper and Pencil and Other Media Tasks decreased the probability of reading behaviors. Also, this subgroup spent less time in Whole Class Instructional Grouping (5.6% less), about an equal percentage of time in Small Groups, and more time in One-on-One (3.2% more) and Independent (3.3% more) Instructional Groupings than student participants with no concomitant disability. Time spent in One-on-One and Independent Instructional Groupings were important because these Instructional Groupings increased the probability of total reading and reading aloud behaviors. No student participants with concomitant disabilities were observed only in Whole Class Instructional Groupings and 83.3% were observed in Small Group and One-on-One Instructional Groupings.

To further clarify what comprised whole class Instructional Grouping, observational data collected from anecdotal notes on the number of students who are deaf/hard of hearing and the number of hearing students during reading instruction were analyzed. Mean number of students across instructional settings for student participants with a concomitant disability are reported in Table 51. Data indicated that reading instruction for this subgroup occurred in somewhat smaller class sizes (3.4 students per class less) than for student participants with no concomitant disability. Thus, whole class instruction for this subgroup involved a small number of students.

Table 50: Class Size for Student Participants with/without a Concomitant Disability

Instructional Setting	Categories	Mean Number in Class Per Observation Students Who are Deaf/Hard of Hearing	Hearing Students	Adults
	Student Participants with No Concomitant Disability	3.6	5.7	1.5
	All Student Participants with a Concomitant Disability	2.6	3.9	1.3
General Education		-	-	-
General/Resource Room		1.6	6.4	1.4
	General Education	1.3	16	2
	Resource Room	1.7	1.7	1.2
Self-Contained		4.2	0	1.2

Based on MS-CISSAR data on Teacher variables, student participants with a concomitant disability spent no time working with peer tutors. This was important because working with peer

tutors had the highest probability of predicting total reading behaviors for student participants with no concomitant disability (56%, p=.001). This subgroup spent 84.3% of observed time in reading instruction working with deaf education teachers (significantly more than students with no concomitant disability, p=.091). This was important for student participants in the subgroup receiving reading instruction in the resource room setting given that deaf education teachers in the resource room decreased the probability of reading silently.

Teacher Behaviors recorded with student participants with a concomitant disability indicated a higher percentage occurrence of Teacher Command Academic, Attention, and Question Academic and lower percentage of observance of Talk Academic, Talk Management, and Reading Aloud than recorded for student participants with no concomitant disability. Similar to results for student participants with no concomitant disability, teacher participants in this subgroup were observed showing neither approval nor disapproval toward student participants (87.8%), although the frequency occurrence of disapproval was higher for this subgroup (1.5% more). Teacher Focus for this subgroup was more frequently recorded as focused on the target student only (6.6% more often) than was observed with student participants with no concomitant disability. This was important because Teacher Focus on the target student only in the self-contained setting and in the resource room setting increased the probability of reading aloud and also increased the probability of reading silently in the resource room setting. Similar to results found with student participants with no concomitant disability, teacher participants in this subgroup were most frequently positioned in front of the student participant (69.5%). See Appendix Y for detailed information on all teacher variables. There were no significant differences between groups in Teacher Behavior, Teacher Approval, Teacher Focus, or Teacher Position.

5.4.9 Summary

Overall, student participants with a concomitant disability were predominantly male and were equally distributed in receiving reading instruction in the general/resource room settings and the self-contained setting. None of the student participants in this subgroup received reading instruction in the general education setting only. They were slightly older and had slightly longer mean length of times in current instructional setting than student participants with no concomitant disability. The frequency of student participants with no concomitant disability decreased as the grade level enrolled increased; however, the frequency of student participants with a concomitant disability increased as the grade level enrolled increased. A higher percentage of student participants with a concomitant disability reported a severe-profound/profound hearing loss with prelingual onset. Furthermore, none of the student participants in this subgroup had a mild-moderate/moderate hearing loss. The frequency of student participants in this subgroup using cochlear implants was twice the frequency reported for student participants with no concomitant disability. Additionally, student participants in this subgroup were observed wearing assistive listening devices less frequently than student participants with no concomitant disability. Also, 4 times as many student participants in this subgroup as those with no concomitant disability reported the use of sign supported speech. They had the same percentage of student participants working on grade level; however, this subgroup had 3 times as many student participants working two grade levels below than that reported for student participants with no concomitant disability. For both groups, reading curriculum grade level was linked more closely to instructional setting than to level of hearing loss.

Many instructional variables observed with student participants with concomitant disability *increased* the probability of reading; more time was spent in Reading Activities and

with Reader Tasks (increasing the probability of total reading, reading aloud, and reading silently), more time was spent in One-on-One Instructional Groupings (increasing the probability of total reading and reading aloud). Teacher Focus on the target student and other students significantly increased the probability of total reading and reading silently. In addition, the effect of Instructional Grouping on total reading, reading aloud, and reading silently varied significantly by instructional setting. On the other hand, there were many instructional variables observed with student participants with a concomitant disability which *decreased* the probability of reading: more time was spent in Spelling Activities and with Paper and Pencil Tasks (decreasing the probability of total reading and reading aloud), and more time was spent with Other Media Tasks (decreasing the probability of total reading and reading silently).

There were several ways in which reading instruction for student participants with a concomitant disability was different than reading instruction for student participants with no reported concomitant disability. First, there were no instances of student participants with concomitant disabilities receiving reading instruction in the general education setting only. They had a larger percentage time engaged in reading aloud and a smaller percentage of time engaged in reading silently, regardless of instructional setting; whereas, student participants with no concomitant disability spent almost equal percentages of time in reading aloud and reading silently. Student participants in this subgroup were observed spending more time in Reading and Spelling Activities, less time in Language Activities, and no time in Phonic/phonemic awareness activities. They were observed with greater frequency in fluency and vocabulary activities and smaller frequency in comprehension activities. Student participants with a concomitant disability spent more time in Academically Responding and in Competing Responses and less time in Task Management than other student participants. They spent less time working with Workbook and

Discussion Tasks and more time working with Readers, Paper and Pencil, and Other Media Tasks. This subgroup spent less time in Whole Class Instructional Grouping and more time in One-on-One instruction and Independent work. Observational data indicated that they spent no time working with peer tutors but more time working with deaf education teachers. Although the mean time allocated to reading instruction was approximately 6.5 minutes/day less than the mean time allocated to reading instruction for student participants with no concomitant disability, student participants in this subgroup spent a mean of 3.1 minutes/day more in total reading. The mean time observed in reading instruction varied by instructional setting for this subgroup. For example, student participants with no concomitant disability spent almost an equal amount of time in the general/resource room settings (51.6% and 48.4% respectively) while student participants with a concomitant disability spent more time in the resource room setting than in the general education setting (67.6% and 32.6% respectively). In addition, student participants in this subgroup receiving reading instruction in the self-contained setting spent more time in reading instruction. Thus student participants with no concomitant disability receiving reading instruction in the self-contained setting had slightly higher proportion of time actually spent in reading instruction.

The extent to which reading instruction for student participants with a concomitant disability was similar to reading instruction for all student participants was not as extensive. The curriculum reported to be used with student participants in this subgroup by instructional setting was the same as the curriculum reported to be used with student participants with no concomitant disability by instructional setting. The most frequently reported reading modifications for student participants in this subgroup were also the most frequently reported reading modifications for student participants with no concomitant disability. Both groups spent the highest percentage of

time working in whole class instruction and an equal percentage of time working in small group instruction. As reported for student participants with no concomitant disability, the most frequently observed Academic Response was writing, the most frequently observed Task Management was Attending, and the most frequently observed Competing Response was Looking Around. Teacher participants showed neither approval nor disapproval toward student participants in either group. Teacher participants in both groups were most frequently positioned in front of the student participants. Working with general education teachers and teacher attention significantly increased the probability of total reading and reading silently. Teacher Focus on other students in the self-contained setting significantly decreased the probability of total reading and reading aloud. Reading Activities and Reader Tasks also increased the probability of total reading, reading aloud, and reading silently while Spelling and Paper and Pencil Tasks decreased the probability of total reading and reading aloud for both groups. Also, Other Media Tasks decreased the probability of total reading and reading silently for both groups. As seen with the large standard deviations for student participants in this subgroup and student participants with no concomitant disability, there was variability in allocated time to reading instruction. The mean time observed spent in reading instruction was similar between groups (77.6 minutes/day for student participants with no concomitant disability and 76.4 minutes/day for student participants with a concomitant disability).

6.0 SUMMARY

The present study sought to investigate the following research questions: a)What is the nature of reading activities during reading instruction for students who are deaf/hard of hearing in grades 1 through 4 in public school settings? b)To what extent are students who are deaf/hard of hearing actually reading during reading instruction in grades 1 through 4 in public school settings? c) To what extent is reading instruction for students who are deaf/hard of hearing in grades 1 through 4 different based on classroom setting? and d) To what extent is reading instruction for students who are deaf/hard of hearing with a concomitant disability different than reading instruction for students who are deaf/hard of hearing with no reported concomitant disability. Data obtained from teacher participant interviews, a review of student participants' school records, and observations were used to address these questions.

6.1 NATURE OF READING ACTIVITIES

Overall results on the nature of reading activities during reading instruction for student participants indicated that reading instruction was provided only by general education teachers and/or deaf education teachers; no student participants were reported to receive reading instruction from a reading specialist or speech and language pathologist. The most commonly reported modifications introduced into reading instruction were extended time, small groups,

adapted curriculum, and preferential seating with some variations reported by reading curriculum grade level and grade level enrolled. In contrast, regardless of the reading curriculum grade level or the grade level enrolled, Whole Class was the most frequently observed Instructional Grouping and for some student participants, was the only Instructional Grouping observed. The most frequently observed Teacher Behavior was Attention and, overall, teacher participants showed neither approval nor disapproval toward student participants during reading.

Analyses of reported and observed data revealed several trends in reading instruction activities by reading curriculum grade level. Student participants working with reading curriculum on grade level and student participants working with reading curriculum two grade levels below spent significantly more time in reading instruction than student participants working with reading curriculum one level below. There were significant differences in the frequency of Phonic/phonemic awareness activities by reading curriculum grade level, with activities observed only with student participants working with reading curriculum on grade level. In addition, students working with reading curriculum on grade level spent significantly more time with general education teachers and students working with reading curriculum below grade level spent significant more time with deaf education teachers. Student participants working with reading curriculum one grade level below spent significantly less time than other students with teachers in Talking Academic and less time spent with teachers showing neither approval nor disapproval. They spent less time with teachers in Talking Management than student participants working with reading curriculum on grade level. Thus, reading instruction for student participants working with reading curriculum one grade level below was significantly different than reading instruction for other students in many respects.

Reported and observed data on reading instruction activities also varied by the grade level enrolled. Student participants in third grade spent significantly more time in Spelling activities than student participants in first grade. In addition, student participants enrolled in the third grade spent significantly more time in Language activities than student participants in second or fourth grade. Also, student participants in the third grade spent significantly more time with deaf education teachers than student participants in the second grade. Furthermore, student participants in third grade spent significantly more time with teachers using Non-Verbal Prompting than student participants in second grade. Thus, reading instruction for student participants in third grade was significantly different than that in other grades in many areas.

Reading instruction activities were also investigated by the level of hearing loss reported for student participants. It appears that, for this sample, reading curriculum grade level was more strongly related to instructional setting than to level of hearing loss. The mean times allocated to reading instruction, mean time spent in total reading, reading aloud, and reading silently were not significantly different by level of hearing loss. Mean total time spent in reading instruction decreased as the level of hearing loss increased, significant at the .10 level. The mean time students spent in Academic Responses of Talk Academic varied significantly by the level of hearing loss. Student participants with mild-moderate/moderate hearing loss spent significantly more time with general education teachers than student participants with severe-profound/profound hearing loss. In analyzing results of MS-CISSAR and anecdotal data, only the teacher variable of showing neither approval nor disapproval was significantly different by the level of hearing loss. Thus there were several differences in reading instruction revealed between student participants with mild-moderate/moderate hearing loss and student participants with severe-profound/profound hearing loss.

6.2 STUDENT ENGAGEMENT IN READING

Student engagement in reading was determined by analyzing the time spent in total reading, reading aloud, reading silently, and the frequency and percent occurrence of Student variables of Academic Responding, Task Management, and Competing Responses. In summary, results indicated that writing, not reading, was the most frequently observed Academic Response during the time spent in reading. Furthermore, Academic Responses of reading aloud and reading silently comprised only a small percentage of the observed time in reading instruction, with an overall mean of 6.9 minutes/day spent in reading aloud and 5.3 minutes/day spent reading silently.

Results of student engagement were investigated by: the reading curriculum grade level, the grade level enrolled, the number of students who are deaf/hard of hearing in the classroom, and the level of hearing loss. Significant differences in the time spent in reading aloud and reading silently were found by reading curriculum grade level. Student participants working with reading curriculum on grade level spent significantly more time reading aloud and reading silently than student participants working with reading curriculum one grade level below. There was a significant differences found in time engaged in reading silently by the grade level enrolled with student participants in fourth grade reading silently for longer periods than student participants in first grade. In addition, significant differences in the mean time student participants spent writing were found by the grade level enrolled with student participants in the first grade spending significantly less time writing than students in the second and third grades. Significant differences were also found in the percentage of time spent in Academic Responses, Task Management Responses, and Competing Responses by grade level enrolled. Student participants in first grade spent significantly less time in Academic Responses and more time in

Task Management responses than student participants in fourth grade. In addition, student participants in fourth grade spent significantly less time in Competing Responses than student participants in third grade. Thus, student engagement in reading varied significantly between first and fourth grade. In addition, there was significantly more time spent in reading silently when there was one student who was deaf/hard of hearing in the classroom than when there was more than one student who was deaf/hard of hearing in the classroom.

The probability of student Academic Responses in total reading, reading aloud, and reading silently was compared with the presence of different Teacher and Ecological events. The highest probability of total reading was observed with student participants working with peer tutors. In addition, Whole Class, the most frequently observed Instructional Grouping, decreased the probability of total reading and reading silently. Teachers focus on the target only, working One-on-One with student participants increased the probability of total reading and reading aloud and student participants working Independent increased the probability of reading silently. Teacher Focus on the target and other students decreased the probability of total reading. Teachers working One-on-One with student participants and student participants working Independent were observed less frequently than Whole Class instruction. In addition, Teacher Behavior of Attention, or attending to students, increased the probability of total reading, reading aloud, and reading silently. Student participants involved in Reading Activities and Phonic/phonemic awareness activities had higher probabilities of total reading. In addition, when student participants were working with Readers, the probabilities of total reading, reading aloud, and reading silently were increased.

6.3 READING INSTRUCTION AND INSTRUCTIONAL SETTING

Findings on the nature of reading instruction and student engagement in reading were examined by instructional setting. Results by instructional setting were further examined by reading curriculum grade level and Ecology, Teacher, and Student categories. As the grade level enrolled increased, the percentage of student participants in the general education setting only decreased. One hundred percent of student participants receiving reading instruction in the general education setting were working with reading curriculum on grade level while only 50% of student participants receiving reading instruction in the general/resource room settings were working with reading curriculum on grade level. None of the student participants receiving reading instruction in the self-contained setting were working with reading curriculum on grade level.

The reading instruction observed in the general education setting only differed just slightly from that observed in the general/resource room settings. Also, significant differences were found in the time spent with general education teachers and time spent with deaf education teachers among instructional settings. Significant differences were found in the time spent in Workbook Tasks between settings.

There were considerably more areas in which the reading instruction observed in the general education setting differed from reading instruction observed in the self-contained setting. Student participants receiving reading instruction in the general education setting only spent significantly more time in reading instruction than those receiving reading instruction in the self-contained setting. Students taught in the general education setting only spent significantly more time in Reading, Fluency, and Phonic/phonemic awareness Activities and less time in Spelling Activities than students taught in the self-contained setting. They also spent significantly more

time in Workbook Tasks. Student participants taught reading in the general education setting only spent significantly more time with peer tutors and general education teachers, and significantly less time spent with deaf education teachers. Observations in the general education setting had significantly more instances of Teacher Behaviors of Talk Management, Attention, and showing neither approval nor disapproval and fewer instances of Non-Verbal Prompts. In addition, teachers in the general education only setting spent significantly more time focused on the target student and other students. Furthermore, student participants spent significantly more time reading silently when they were taught reading instruction in the general education setting.

Significant differences were also observed during reading instruction between student participants receiving reading instruction in the general/resource room settings and student participants receiving reading instruction in the self-contained setting. Students taught reading in the self-contained setting had a significantly greater frequency of comprehension activities. Students taught reading in the general/resource room setting had a significantly greater frequency of fluency activities and spent significantly more time with Readers than students taught reading in the self-contained setting. There were significant differences in the time spent with general education teachers and the time spent with deaf education teachers between groups. The time teachers spent in Talk Management varied significantly between these instructional settings, as did the time student participants spent reading silently (at the .10 level of significance).

6.4 READING INSTRUCTION FOR STUDENT PARTICIPANTS WITH A CONCOMITANT DISABILITY

Findings on the nature of reading instruction and student engagement in reading were examined in order to investigate the extent to which reading instruction for student participants with a concomitant disability was different than or similar to reading instruction for student participants with no concomitant disability. In this sample, the frequency of student participants with a concomitant disability increased as the grade level enrolled increased and, as a group, student participants with a concomitant disability were 3 times more likely to be working with reading curriculum two grade levels below than that reported for student participants with no concomitant disability. For both groups, reading curriculum grade level was linked more closely to instructional setting than to level of hearing loss.

Results of statistical analyses indicated that the only Ecology variables which were significantly different between those students with and those without a concomitant disability was that student participants with a concomitant disability spent less time working with Workbook Tasks and a greater frequency with fluency and vocabulary activities. There were no significant differences reported in Student responses or Teacher activities.

Many Teacher and Ecology events observed during reading instruction with student participants with a concomitant disability significantly *increased* the probability of reading more than the unconditional probability. For example, these students spent more time in Reading Activities and working with Reader Tasks (increasing the probability of total reading, reading aloud, and reading silently) and more time was spent in One-on-One Instructional Groupings (increasing the probability of total reading and reading aloud). The effect of Instructional Grouping on total reading, reading aloud, and reading silently varied significantly by

instructional setting. There were many Teacher and Ecology events observed with student participants with a concomitant disability which significantly *decreased* the probability of reading. For example, students with a concomitant disability spent more time in Spelling Activities and working with Paper and Pencil Tasks (decreasing the probability of total reading and reading aloud) and more time was spent working with Other Media Tasks (decreasing the probability of total reading and reading silently).

Results of independent t-tests indicated no significant differences in the time allocated to reading instruction, time spent in reading instruction, and time spent in total reading, reading aloud, or reading silently between student participants with and without a concomitant disability.

7.0 DISCUSSION

The present study sought to investigate the following research questions: a)What is the nature of reading activities during reading instruction for students who are deaf/hard of hearing in grades 1 through 4 in public school settings? b) To what extent are students who are deaf/hard of hearing actually reading during reading instruction in grades 1 through 4 in public school settings? c) To what extent is reading instruction for students who are deaf/hard of hearing in grades 1 through 4 different based on classroom setting? and d) To what extent is reading instruction for students who are deaf/hard of hearing with a concomitant disability different than reading instruction for students who are deaf/hard of hearing with no reported concomitant disability. Data obtained from teacher participant interviews, a review of student participants' school records, and observations were used to examine these questions. Results of several analyses indicated that reading activities varied by reading curriculum grade level, grade level enrolled, level of hearing loss, instructional setting, and presence of a concomitant disability.

7.1 NATURE OF READING ACTIVITIES

Overall results on the nature of reading activities during reading instruction for student participants indicated that reading instruction was provided only by general education teachers

and/or deaf education teachers using a variety of curriculum. Analyses of reported and observed data revealed several trends in reading instruction activities by the reading curriculum grade level, the grade level enrolled, and the level of hearing loss.

Data from teacher interviews and/or a review of student participants' school records indicated that reading instruction was provided only by general education teachers and/or deaf education teachers. No student participant received reading instruction by a reading specialist even though 21 of the 24 students were in schools where a reading specialist was available and a large percentage of these student participants were working with reading curriculum below grade level. Eligibility for services in special education does not exclude these students from receiving services from a reading specialist, so these results are puzzling. Also, no student participant reported receiving reading instruction from a speech/language pathologist and no teachers in deaf education reported or were observed co-teaching students who are deaf/hard of hearing in the general education setting.

Results of demographic data on the deaf education teachers were compared to results of demographic data reported in prior survey research. Results of the present study indicated that a higher percentage of deaf education teachers held Master's degrees (66.6%) compared to that reported in the Coley and Bockmiller (1980) survey study (56.2%); however, a higher percentage of deaf education teachers reported taking 0 or 1 reading courses (33.3%) compared to the survey study (20%). It is not known if these differences were due to comparing results of an older study to a more recent study where current political initiatives might have impacted this data; to variation in sampling differences (the Coley and Bockmiller survey was sent only to teachers in residential schools) where a possible difference in educational demographics may have existed between the samples; or reflect a combination of these two factors. What is known is that

although a large percentage of deaf education teachers are pursing higher degrees, many are still not receiving instruction specifically in how to teach reading.

Data from the present study on reading curricula differed from data obtained in survey studies conducted 10 or 20 years ago. The present study found that teachers working with students who are deaf/hard of hearing used a variety of reading curricula, contrary to reading instruction curriculum reported in the longitudinal surveys by LaSasso (1997). Only deaf education teachers teaching reading instruction in the self-contained setting used similar curriculum to those earlier findings (Reading Milestones and Focus). Although the LaSasso survey was sent to teachers of the deaf/hard of hearing in various settings, the results did not include input from general education teachers. Therefore, the difference in findings on curriculum may be the influence of including data from general education teachers or it may reflect more recent political initiatives designed to promote access of the general education curriculum to all students.

Results reported on Ecological variables were compared to findings from other studies involving hearing students with and without a disability. Edmonds and Briggs (2003), using the ICE observational tool, also reported that the most frequently observed instructional pattern was whole group, but that first grade students were more engaged when working in small groups. Greenwood et al. (2003), using the MS-CISSAR observational instrument, also indicated that the most frequently observed Instructional Grouping was whole class. In studies involving students with a mild disability, Wallace, et al. (2002), and Logan et al. (1997), also using the MS-CISSAR, reported that the most frequently observed Instructional Grouping was whole class. Results of the present study were similar in that whole class instruction was the most frequently

observed Instructional Grouping and that it decreased the probability of total reading and reading silently.

The present study reported on the time allocated to reading instruction, the time spent in reading instruction, and the proportion of time spent in reading instruction. There were typical and atypical reasons for the time observed in reading instruction differing from the time allocated to reading instruction. Typical reasons included: transitioning or physically moving from class to class and restroom or snack breaks (out of the room). Some atypical reasons included: a tornado drill, technical difficulties with the coding instrument, unanticipated school activities or programs which altered the daily schedule, and student participant behavior problems or illnesses which resulted in a physical removal from the classroom.

Other research studies reported similar differences in the time allocated to reading instruction and the time observed in reading instruction. Although Limbrich et al. (1992) reported similar results in the proportion of allocated time spent in reading instruction for students who are deaf/hard of hearing in schools for the deaf or resource rooms in New Zealand as that reported in this study, results of the present study indicated higher mean times allocated to reading instruction and higher mean times spent in reading instruction. In addition, although the proportion of allocated time spent in reading instruction for hearing students (Thurlow et al., 1984) was similar to that reported in the present study, the time allocated to reading instruction and time observed in reading instruction were higher for hearing students than those reported in the present study. Although other studies reported various times allocated or spent in reading instruction, they reported similar proportions of time. Thus, this researcher was confident in the proportion of time reported in the present study.

Results reported on the Ecological variables of Activity were also compared to results of other studies involving hearing students with no disability. Results of the study conducted by Florida State University Center for Reading Research (2004), using the ICE observational instrument, indicated markedly less time spent in Spelling activities (3.2% for second grade students) than reported in the present study both for all student participants (13.8%) and for student participants enrolled in the second grade (20%) in the present study. Results of the present study and results of Greenwood, Abbott, and Tapia (2003), using the MS-CISSAR, were similar in the percentage of time spent in Spelling Activities (11%). Also, Florida State University Center for Reading Research (2004) and Edmonds and Briggs (2003) reported considerably higher percentages of time spent in phonics/phonemic awareness activities (7 to 20 times higher) than reported in the present study with students who are deaf/hard of hearing. The researchers reported a trend of decreasing percentage of time spent in phonics/phonemic awareness activities as the grade level increased. Other studies using the MS-CISSAR instrument did not isolate data on phonic/phonemic awareness activities, but rather coded these activities as Reading, thus results of similar studies using the same observation instrument as used in the present study with students who are deaf/hard of hearing were not comparable. The high percentage of time spent in Spelling and low percentage of time spent in phonic/phonemic awareness activities reported are important findings since results of the present study indicated that Spelling Activities significantly decreased the probability of reading and phonics/phonemic awareness activities significantly increased the probability of reading. Phonic/phonemic awareness activities were observed in only 1.6% of observations and were observed in students who had hearing losses ranging from a unilateral severe loss to bilateral moderate-severe hearing loss. Past research has shown that skilled readers who are deaf/hard of hearing make better use of

phonological information than average readers who are deaf/hard of hearing (Hanson & Fowler (1987); Hanson, Goodell, & Perfetti (1991); Kelly (1993); Schaper & Reitsma (1993); Conrad (1970); Dodd (1980)). Also, researchers report that the use of phonological coding does not seem to be directly related to level of hearing loss (Dodd (1980); Hanson, Shankeweiler, & Fischer (1983)). Given prior research on phonic/phonemic awareness activities with students who are deaf/hard of hearing and the frequency of these activities observed with hearing students, one might expect that a higher frequency of phonic/phonemic awareness activities would have been observed in the present study with students who are deaf/hard of hearing.

Several findings of the present study were surprising. First, there were many activities other than Reading that occurred during reading instruction (Math, Science, Self-Care, Arts/crafts, and Transitioning). In addition, many atypical interruptions occurred during observations which reduced the amount of time available to reading instruction. For example, teachers in all settings had to be flexible in their instruction with a number of students leaving or entering the classroom during instruction and a number of interruptions occurring during instruction. Therefore, it is important to provide training to teachers in ways to maximize student engagement in the time allocated to reading instruction. Secondly, there was no assessment of student signing skills, even when such assessment was available as part of the curriculum. Researchers have reported a relationship between ASL ability and reading comprehension (Padden and Ramsey, 1997). Thus, an assessment of sign ability would have provided useful information in relation to the reading curriculum grade levels and any possible relationship to the emphasis of Language in reading instruction. This may be an area to explore for future research.

During reading instruction for student participants in grades 1-4 in public school settings, reading activities varied by reading curriculum grade level, grade level enrolled, and level of

hearing loss. In comparison to results obtained from other observational studies, instructional grouping was similar, however, the instructional emphasis during reading instruction for student participants was different from that for hearing students or students with a mild disability.

7.2 STUDENT ENGAGEMENT IN READING

Results of the present study reported time engaged in reading (reading aloud and reading silently) by the grade level enrolled and reading curriculum grade level. Time engaged in reading for hearing students with no disability was reported by the grade level enrolled in a study conducted by the Florida State University's Center for Reading Research (2004). Researchers reported results by reading text (text read by students and text read to students). Analyzing data in a similar fashion, results of the present study indicated lower levels of reading text across the grade levels enrolled than those reported for hearing students in the Florida State University study; however, both studies show that student participants in first grade have the highest percentage of reading text. Limbrich et al. (1992) reported that high progress readers spent more time engaged in reading than low progress readers. The present study reported similar trends in results by reading curriculum grade level.

This researcher found no other studies reporting student engagement in reading by the level of hearing loss, thus a comparison of results obtained in the present study to prior research was not possible. Results of this study indicated that although the mean times spent in total reading, reading aloud, and reading silently decreased as the level of hearing loss increased, none of the results were at the .05 level of significance. Therefore, results of student engagement may be generalized across levels of hearing loss for this sample.

In summary, findings of the present study are similar to findings of other studies in that student participants enrolled in first grade had the highest percentage of reading text (compared to other grade levels). Student participants working with reading curriculum on grade level spent more time engaged in reading than student participants working with reading curriculum two grade levels below. Results suggest that the "Matthew effect" (Walberg, as cited in Stanovich, 1986) applies to this sample as well. Given that the percentage of student participants working with reading curriculum on grade level decreased as the grade level enrolled increased, but that less time was spent engaged in reading instruction for student participants working with reading curriculum below grade level, one questions how these students will ever close the gap or reduce the discrepancy of working with reading curriculum on grade level.

Results of the present study indicated that the highest probability of total reading was observed when student participants were working with peer tutors. These results support the findings of Abbott et al. (1999), Greenwood (1991), and Greenwood et al. (2003) who also found that reading texts with peer tutors best supported reading behaviors. However, in the current study, students working with reading curriculum below grade level and/or enrolled in grades beyond second grade were not observed working with peer tutors. Structuring instruction to include the use of peer tutors is advantageous in that it decreases the time spent in whole class instruction and allows the teacher to focus on individual students, all factors found to increase the probability of time engaged in reading.

7.3 READING INSTRUCTION AND INSTRUCTIONAL SETTING

The extent to which reading instruction was different based on instruction setting was documented through an analysis of data on demographics, reading curriculum, reading modifications, the use of peer tutors, Teacher Focus, and Teacher Behavior which indicated that results of all variables varied by instructional setting.

The mean time allocated to reading instruction varied by instructional setting. In addition, significant differences were found in the mean time observed spent in reading instruction between the general education setting only and the self-contained setting. The mean time engaged in total reading varied by instructional setting with student participants in the self-contained setting spending the least amount of time and student participants in the general education setting only spending the most amount of time. The mean time engaged in reading aloud also varied by instructional setting. Also, the mean time engaged in reading silently varied significantly by instructional setting between the general education setting and the self-contained setting. Thus, significant differences were reported between the reading instruction provided in the general education setting and the self-contained setting.

Results of the present study on time engaged in reading by instructional setting were similar to other observational studies involving students with a mild disability. Hayes and Jenkins (1986) reported that participants read more in the general education classroom than in the resource classroom. O'Sullivan et al. (1990) also reported significant difference in the proportion of total allocated time and time spent reading aloud by instructional setting for students with a mild disability. Time spent reading aloud was greater in the special education setting than in the general education setting; this trend was not found in the present study.

Limbrich et al. (1992) reported mean times engaged in reading for students who are deaf/hard of hearing in the resource room and school for the deaf that were twice as great as the mean times engaged in reading reported in the present study for all student participants, and greater than the mean time engaged in reading for student participants receiving reading instruction in the general/resource room settings in the present study. Results of the Limbrich et al. study were not reported by specific instructional setting and no student participants in the present study reported to receive reading instruction in the resource room only or in a school for the deaf. In addition, the two studies used different observation instruments, so comparison of results is limited. One area of future research may involve using the MS-CISSAR to observe reading instruction in schools for the deaf to determine if results would be more similar to those obtained in a similar setting (i.e., Limbrich et al., 1991) or if results would be more similar to those using a similar observation instrument (i.e., the present study).

Studies reporting time engaged in reading for hearing students involved reading instruction in the general education setting. For example, Allington (2002) reported that time engaged in reading ranged from 10 minutes/day to 15 minutes/day. This coincides with the mean minutes/day engaged in reading for all student participants of the present study; however, student participants receiving reading instruction in the general education setting only reported a higher mean time engaged in reading (20.7 minutes/day) than that reported by Allington.

Overall results of the present study indicated that the frequency of Academic Responses varied by instructional setting. The highest percentage of Academic Responding was reported for student participants receiving reading instruction in the resource room setting (of the general/resource room settings) and that the lowest percentage of Academic Responding was reported for student participants receiving reading instruction in the self-contained setting. Given

that student participants in fourth grade spent significantly more time in Academic Responding than student participants in the first grade, the high percentage of Academic Responding in the resource room setting may be a result of the high percentage of student participants in the resource room setting in fourth grade (50%). Results of the present study indicated that writing was the most frequently observed Academic Response across instructional settings. These findings were similar to those reported by Thurlow et al. (1984) who reported that reading silently and writing were the most frequently observed student responses and Greenwood et al. (2003) who reported that writing occurred 14% of the time. Thus, results of the present study on Academic Responding were similar to other observational studies involving hearing students with no disability.

Findings of the present study indicated significant differences in reading instruction for student participants receiving reading instruction in the self-contained setting. Student participants receiving reading instruction in the self-contained setting had the highest incidence of students working with reading curriculum below grade level, the lowest mean time allocated to reading instruction, the lowest mean time observed in reading instruction, the lowest mean time spent reading aloud, the lowest mean time spent reading silently, and the lowest mean time engaged in total reading (although these mean times tended to increase as the grade level enrolled increased). The instructional focus, or emphasis of Activities, during reading instruction varied from that in other instructional settings. In addition, there were no observations of student participants in the self-contained setting working with peer tutors. This is unfortunate because working with peers increased the probability of reading behaviors.

As the present study is not experimental in design, it is not suggesting that receiving reading instruction in the self-contained setting caused student participants to work with

curriculum below level or caused students to spend less time engaged in reading. Nor is the present study suggesting that because student participants receiving reading instruction in the general education setting were working with reading curriculum on grade level that the general education setting is the appropriate setting for reading instruction for all students. Perhaps the reason that student participants were receiving reading instruction in the self-contained setting was because they were not working with reading curriculum on grade level, however, that too cannot be answered from the present study. The present study was observational and reported simply what was observed.

Overall results of the present study indicated that reading instruction provided to student participants in the general education setting was significantly different than the reading instruction provided to student participants in the self-contained setting. The reading instruction provided to student participants in the self-contained setting appears similar to the reading instruction reported by previous studies with hearing students with a mild disability in the self-contained setting.

7.4 STUDENT PARTICIPANTS WITH A CONCOMITANT DISABILITY

This study examined the extent to which reading instruction for students who are deaf/hard of hearing with a concomitant disability was different than reading instruction for students who are deaf/hard of hearing with no reported concomitant disability. Results indicated that although there were some differences, reading instruction was very similar for both groups.

Results indicated that student participants with a concomitant disability tended to work with curricula two grade levels below that reported for student participants with no concomitant

disability. Yet, the reading instruction provided to both groups was similar in many respects. There were no significant differences in the time allocated to reading instruction, time spent in reading instruction, and time spent in total reading, reading aloud, or reading silently. The same curriculum was used with similar reading modifications being reported for both groups. Student responses were similar with the highest frequency observed in writing Academic Responses, attending Task Management, and looking around Competing Responses. Although the solution to improving curriculum reading levels is not as simple as just spending more time in reading instruction doing the same things, this researcher questions if it makes sense for those students with such a gap in reading levels to spend the same amount of time in reading instruction at the same level of engagement.

Results further indicate that the instructional focus during reading instruction, however, differed for student participants with a concomitant disability. Student participants in this subgroup spent more time in Spelling Activities and were observed with a greater frequency in fluency and vocabulary activities. Time spent in comprehension activities was less and no time was spent in Phonic/phonemic awareness activities. Although the most frequently observed Instructional Grouping was Whole Class, they spent more time in One-on-One instruction with the teacher than student participants with no concomitant disability.

The areas of similarity and difference have implications for practice. It is important to have highly trained professionals working with this subgroup; teachers working with student participants with concomitant disability had a higher percentage of Master's degrees held and attended more reading in-services than other teachers. Several areas of instruction which were observed to have a high probability of reading behaviors based on ecobehavioral analysis should be continued. Teachers can continue to provide instruction in reading with readers and provide

one-on-one instruction with students. They can continue to incorporate fluency activities as part of reading instruction. Also, several areas which were not observed with this subgroup, but were observed with student participants with no concomitant disability to have increased the probability of reading behaviors could be incorporated into instruction. For example, teachers could begin to provide opportunities for students to work with peer tutors (both hearing and deaf peers). They could explore appropriate means of incorporating phonic/phonemic awareness activities and comprehension activities into instruction. Teachers might also incorporate activities to increase time spent reading silently. Teachers working with students can make every effort to ensure that assistive listening devices are worn more frequently. Also, teachers can control the proportion of time spent in reading instruction (increasing the percentage to above 75%). Results of the present study indicate that reading instruction provided to student participants with a concomitant disability looks similar to reading instruction provided to student participants with no concomitant disability. Based on the limited published research out there involving students who are deaf/hard of hearing with a concomitant disability, educators may not know what to do differently in terms of providing reading instruction. Also, teacher responses and comments during the interview and observations lead this researcher to believe that constraints of the service delivery systems within the school district may contribute to the provision of similar services to students with and without a concomitant disability.

7.5 SUMMARY

This research yielded considerable data on what activities occurred during reading instruction for student participants in grades 1-4 in public school settings. Results indicated that reading

activities varied by reading curriculum grade level, grade level enrolled, level of hearing loss, instructional setting, and presence of a concomitant disability. In comparison to results obtained from other observational studies involving hearing students, the instructional emphasis during reading instruction for student participants who are deaf/hard of hearing differed from hearing students.

Possibly the most important findings of the present study were twofold. Not only did student characteristics vary by reading ability, the reading instruction provided by teachers varied significantly by reading curriculum grade level and instructional setting. There was a strong influence of instructional setting on the reading instruction experience. Students were not randomly assigned to settings; as students were no longer able to work with curriculum on grade level (including students with a concomitant disability), they received reading instruction in the resource room or self-contained setting. Also, the present study documented the small amount of time students spent engaged in any type of reading and the large variability in time spent engaged in reading among students. In addition, the present study identified certain conditions that make reading likely to occur.

7.5.1 Limitations

This descriptive study utilized both survey/interview research and observational research designs. The interviews were conducted in conjunction with observations, thus certain common threats to validity associated with survey/interview research were minimized (i.e. mortality threat). Threats involving the interview instrument were minimized with close-ended questions and verification of open-ended questions (for example, teacher interview data on reading instruction setting and times were verified with data collected on the student participant data

form and curriculum information was collected both through interviews and observations). Observational studies, by definition, have the limitation in that presence of an observer in the classroom may have affected the behavior of teachers and/or students. The present study attempted to minimize this observee bias by having the observer sit in an unobtrusive area within the classroom and arrive before class started. The observer(s) did not interact with student participants during observations. Also, a second observer observed at most sites, minimizing observer bias. The present study, as with other observational studies, had ecological validity in that it observed what actually happened during reading instruction rather than reports of what happened.

Further reliability of the instrument was established by the developers and inter-observer percentage agreement was good (91.6%). It should be noted, however, that the MS-CISSAR observational tool measures the quantity of engagement, not the quality of engagement.

There were some limitations in the sample of the present study. The sample size was small. Therefore, in analysis, some cells in the cross-tabulations were empty (e.g., student participants with severe-profound/profound hearing loss receiving reading instruction in the general education setting and student participants with moderate-severe/severe hearing loss receiving reading instruction in the general/resource room settings; student participants with a concomitant disability receiving reading instruction in the general education setting; and student participants with a concomitant disability with a mild-moderate/moderate hearing loss). This limits generalizability of results. Although the sample size was small, the demographics of the sample were more similar than dissimilar to those reported in the Annual Survey. In some areas, where differences were noted, the Annual Survey categories were not mutually exclusive.

Several demographic characteristics of student participants with a concomitant disability were compared to survey results from the Annual Survey (Gallaudet Research Institute, 2005) and special tabulations on students with a concomitant disability identified in the survey (Gallaudet Research Institute, 2004). First, the percentage of student participants with a concomitant disability from the sample in the present study was smaller than that reported for the population of students who are deaf/hard of hearing in the Annual Survey; however, several teachers noted that after their school district qualified students for services in the deaf/hard of hearing program, additional diagnosis of concomitant disabilities was not pursued. Second, concomitant disabilities of a specific learning disability and mental retardation were the most frequently reported concomitant disability for both this sample and the survey sample. In addition, demographics of both this sample and the survey sample indicated a higher ratio of male to female students with a concomitant disability. A comparison of data on instructional setting was difficult given that the present study reported data by general education setting in two categories: general education setting only and the general/resource room settings. It was not possible to determine if the categories of general/resource room settings were mutually exclusive in the survey. Data from both the present study and the survey, however, indicate a high percentage of students with a concomitant disability in self-contained settings. There were two ways in which demographic data on student participants in this sample differed from demographic data reported from the special tabulation. In the present study, teacher-reported data on the primary method of communication for student participants indicated a higher percentage use of sign only and a lower percentage use of speech only; however, during observations the student participant reporting the use of sign only was observed using sign and speech. The second area in which demographic data varied was by the level of hearing loss. No student

participants with a concomitant disability in this sample had a mild-moderate/moderate hearing loss while 12% of students with a concomitant disability reported a mild hearing loss in the Annual Survey. Therefore, although this sample of student participants with a concomitant disability was small, this researcher believes that overall the demographic characteristics were fairly representative of the population.

Although there were some limitations in the sample, the sample appeared to adequately represent the demographics of students who are deaf/hard of hearing.

7.5.2 Implications for Practice

The present study has several implications for practice. First, results reported from the present study makes teachers aware of the nature of reading activities and the ways in which reading instruction varies by reading curriculum grade level, grade level enrolled, level of hearing loss, instructional setting, and presence of a concomitant disability. Secondly, in reporting variables and their corresponding probability to reading behaviors, teachers can promote activities which significantly increase desired behaviors. For example, teachers can consider ways to minimize whole class instruction to obtain the high levels of student engagement found in Instructional Groups other than whole class. One way to do this would be to increase or incorporate the use of peer tutors across grade levels. In addition, teachers can make use of available resources in the school (i.e., reading specialists). Finally, by reporting the low amount of time that students spent engaged in reading, teachers will be prompted to investigate their own practices in reading instruction to increase the amount of time students are engaged in reading instruction. These might include increasing the opportunities for silently reading, using repeated reading to practice fluency, incorporating phonic/phonemic awareness activities, etc. Students cannot learn to read if

they do not practice reading. The time students spend in reading instruction and the time they are engaged in reading can be controlled by the teacher and can positively impact student reading levels in an effort to reduce the discrepancy of working with curriculum on level.

7.5.3 Further Study

Based on the results of the present study, there are several suggestions for future research. First, a similar study, utilizing the MS-CISSAR, to observe reading instruction in schools for the deaf is proposed to investigate if and/or how reading instruction in this setting differs from reading instruction provided in the public school setting. Results from this type of study could fill in the gaps to complete the picture of reading instruction in grades 1-4 in all instructional settings for students who are deaf/hard of hearing.

Secondly, further study involving an experimental design, pre and post test, investigating student engagement and reading achievement using peer tutors is proposed.

In addition, a longitudinal study of the time engaged in reading and reading achievement for students who are deaf/hard of hearing as they progress through grades 1 to 4 would be of benefit. The present study describes reading instruction by grade level enrolled and reading curriculum grade level. A longitudinal study could describe the development and progression of student engagement through these levels.

Finally, this study reported on the curricula observed in use and the reading curriculum grade level of student participants. An additional study of interest would investigate the reading difficulty level of the curriculum used with this population (instructional, independent, or frustration) to explore the match between curriculum material and the reading achievement level of students.

APPENDIX A

MS-CISSAR HEIRARCHY

Ecology Variables

SETTING	ACTIVITY	TASK	PHYSICAL ARRANGEMENT	INSTRUCTINAL GROUPING
1=ReglarCls 2=SpecialEd 3=ResrceRm 4=Chapt1Lab 5=Library 6=MusicRm 7=ArtRoom 8=TherapyRm 9=Hall 10=Auditori 11=Other	1=Reading 2=Math 3=Spelling 4=HndWrtng 5=Language 6=Science 7=SocStud 8=PreVocat 9=GrssMotor 10=DailyLiv 11=Self-Care 12=Arts/Crft	1=Readers 2=Workbooks 3=Worksheet 4=Paper&Pen 5=LstnLect 6=OthMedia 7=Discussn 8=Fetch/Put 9=NoTask	1=EntireGrp 2=DivideGrp 3=Individual	1=WholeClss 2=SmallGrp 3=OneonOne 4=Independent 5=NoInstrct

	13=FreeTime 14=BusMgmnt 15=Transit 16=Music 17=TimeOut 18=NoActvty 19=Cn'tTell 20=Other			

Student Variables

ACADEMIC RESPONDING	TASK MANAGEMENT	COMPETING RESPONSE
1=Writing 2=TskPartic 3=ReadAloud 4=RdSilent 5=TalkAca 6=NoAcaRsp	1=RaiseHand 2=PlayAppro 3=ManipMtrl 4=Move 5=TalkMgmnt 6=Attention 7=NoMgmnt	1=Aggression 2=Disrupt 3=TalkInapp 4=LookArnd 5=NonComply 6=Self-Stim 7=SelfAbuse 8=NoInappro

Teacher Variables

TEACHER DEFINITION	TEACHER BEHAVIOR	TEACHER APPROVAL	TEACHER FOCUS	TEACHER POSITION
1=Regular	1=QuestAca	1=Approval	1=Target	1=InFront
2=SpecialEd	2=QuestMgmt	2=DISapprov	2=Target+Oth	2=AtDesk
3=Aide/Para	3=QstDscpln	3=Neither	3=NoOne	3=OutofRoom
4=StudntTch	4=CmndAca		4=Other	4=Side
5=Volunteer	5=CmndMgmnt			5=Back
6=RelatdSrv	6=CmdDscpln			
7=Substitut	7=TalkAca			
8=PeerTutor	8=TalkMgmnt			
9=NoStaff	9=TlkDscpln			
	10=TlkNonAca			
	11=NonVbPrmt			
	12=Attention			
	13=ReadAloud			
	14=Sing			
	15=NoRespons			

APPENDIX B

OPENING AND CLOSING COMMENT GUIDELINES

Opening Comments

1. Observer's Name
2. Total Number of Adults in the Room and their Role
3. Total Number of Students in the Room
4. Total Number of Students who are Deaf/Hard of Hearing in Room
5. Time of Observation

Closing Comments

1. What were the specific reading materials observed in use?

2. Did oral reading (signing in the air) occur for the purpose of developing fluency?

    If so, what were the fluency activities?

3. Did language activities include vocabulary instruction?

    If so, what were the vocabulary activities?

4. Were reading comprehension activities observed?

    If so, what were the reading comprehension activities?

5. What, if any, type of phonic/phonemic awareness activities occurred?

6. What type of communication mode was observed between student and teacher?

7. Were assistive listening devices worn during observation?

8. Include any additional observation notes.

APPENDIX C

TEACHER PARTICIPANT INTERVIEW FORM

Teacher's Code: _____

School: _____

Type of instructional setting in which reading is taught:

_____ general education classroom

_____ resource classroom (30 minutes to 3 hours/day)

_____ self-contained special education classroom

Grades Taught: _____

Time(s) Allocated to Reading Instruction: _____

Teacher's Background: _____ Degree(s)/Certification(s)

_____ Total Years Teaching Experience

_____ Years of Teaching Experience with Students who are Deaf/ Hard of Hearing

_____ Hearing Status

_____ Number of Reading Courses Taken

_____ Number of Reading In-Services Attended within the Last 5 Years

Curriculum used: _____ Material(s) Used with

_____ Students who are Deaf/Hard of Hearing

_____ Material(s) Used in General

_____ Education

_____ Material(s) Used in Special

_____ Education

_____ Availability of Reading Specialist

Code of students who are deaf/hard of hearing for whom this teacher is responsible for teaching reading on a daily basis, reading grade level of curriculum, and method of communication used with the student.

Student's Code	**Reading Curriculum Grade Level**	**Communication Method Used with the Student**
_____	_____	_____
_____	_____	_____
_____	_____	_____

APPENDIX D

STUDENT PARTICIPANT DATA FORM

Student's Code: _____ Gender: _____
School: _____ Age: _____ Grade: _____
Length of Time in Placement: _____

1. Audiological information:
   Date of last audiological examination/screening: _____
   Hearing loss:
   Right ear ❒Normal ❒Mild ❒Moderate ❒Severe ❒Profound
   Left ear ❒Normal ❒Mild ❒Moderate ❒Severe ❒Profound
   Onset of hearing loss (age): _____
   Etiology:_____

2. Assistive listening devices used by the student in the school setting: (3Check all that apply)
   - ❒ Hearing Aid(s) ❒left ❒right ❒both
   - ❒ Personal FM system
   - ❒ Classroom Amplification System
   - ❒ Cochlear Implant Date student received implant: _____
   - ❒ None
   - ❒ Other: _____

3. Student's method of communication: (3Check all that apply, then circle the primary method)
   - ❒ Speech
   - ❒ Cued speech
   - ❒ Lipreading
   - ❒ Tactile signs
   - ❒ Sign Supported Speech:
     - ❒ Signed English
     - ❒ Pidgin Signed English/Contact Signing
   - ❒ American Sign Language
   - ❒ Other: _____

4. Services used as indicated by the IEP: (3Check all that apply)
❒Notetaker
❒Educational interpreter using:
❒ Oral Interpreting
❒ Cued Speech
❒ Signed English
❒ Pidgin Signed English/Contact Sign
❒ American Sign Language
❒Reading Modifications (please list):_____
_____

5. Current reading level: _____Based on: _____
_____
_____

6. Sign language ability/level: _____Based on: _____
_____
_____

7. Identification of a concomitant disability: _____
_____
_____

8. Female Guardian's Hearing Status: Hearing❒ Hard of Hearing❒ Deaf❒ Not Known❒
Male Guardian's Hearing Status: Hearing❒ Hard of Hearing❒ Deaf❒ Not Known❒

9. Type of instructional setting(s) for reading and frequency/duration of setting:
_____
_____
_____
_____
_____

10. Time period(s) for reading: _____
_____
_____

APPENDIX E

INTER-OBSERVER RELIABILITY CHECK REPORT – MS-CISSAR

Overall Percentage Agreement: 91.61% Overall Kappa: 0.763

CATEGORY	N	FREQ AGREE	PCT AGREE	KAPPA
SETTING	77	77	100.00%	1.000
ACTIVITY	77	76	98.70%	0.976
TASK	77	71	92.21%	0.906
PHYSICAL ARRANGEMENT	77	69	89.61%	0.840
INSTRUCTIONAL GROUPING	77	68	88.31%	0.831
TEACHER DEFINITION	77	75	97.40%	0.000
TEACHER BEHAVIOR	77	65	84.42%	0.824
TEACHER APROVAL	77	69	89.61%	0.709
TEACHER FOCUS	77	64	83.12%	0.717
TEACHER POSITION	77	67	87.01%	0.660
ACADEMIC RESPONDING	77	72	93.51%	0.900
TASK MANAGEMENT	77	70	90.91%	0.844
COMPETING RESPONSE	77	74	96.10%	0.709

DISAGREEMENT REPORT - ACTIVITY

PRIMARY	RELIAB	FREQ
Reading	Math	1

DISAGREEMENT REPORT - TASK

PRIMARY	RELIAB	FREQ
Paper&Pen	Readers	1
Paper&Pen	OthMedia	1
LstnLect	Readers	2
Discussn	OthMedia	1
Fetch/Put	Readers	1

DISAGREEMENT REPORT - PHYSICAL ARRANGEMENT

PRIMARY	RELIAB	FREQ
DivideGrp	EntireGrp	1
DivideGrp	Indvdual	6
DivideGrp	(Missing)	1

DISAGREEMENT REPORT - INSTRUCTIONAL GROUPING

PRIMARY	RELIAB	FREQ
Indepndnt	SmallGrp	3
Indepndnt	OneOnOne	2
Indepndnt	NoInstrct	1
Indepndnt	(Missing)	1
(Missing)	WholeClss	1
(Missing)	SmallGrp	1

DISAGREEMENT REPORT - TEACHER DEFINITION

PRIMARY	RELIAB	FREQ
SpecialEd	Aide/Para	1
SpecialEd	StudntTch	1

DISAGREEMENT REPORT - TEACHER BEHAVIOR

PRIMARY	RELIAB	FREQ
QuestAca	TalkAca	1
CmndAca	TalkAca	1
CmndMgmnt	TalkMgmnt	1
CmdDscpln	CmndAca	1
CmdDscpln	CmndMgmnt	3
CmdDscpln	(Missing)	1
TalkAca	CmdDscpln	1

NonVbPrmt	ReadAloud	1
Attention	TalkAca	1
ReadAloud	TalkAca	1

DISAGREEMENT REPORT - TEACHER APPROVAL

PRIMARY	RELIAB	FREQ
Approval	Neither	1
DISapprov	Neither	4
Neither	DISapprov	3

DISAGREEMENT REPORT - TEACHER FOCUS

PRIMARY	RELIAB	FREQ
Target	Targt+Oth	1
Target	Other	1
Targt+Oth	Target	2
Targt+Oth	Other	2
Other	Target	1
Other	Targt+Oth	4
Other	(Missing)	2

DISAGREEMENT REPORT - TEACHER POSITION

PRIMARY	RELIAB	FREQ
InFront	Side	1
InFront	(Missing)	1
Side	InFront	1
Back	InFront	3
(Missing)	InFront	3
(Missing)	Back	1

DISAGREEMENT REPORT - ACADEMIC RESPONDING

PRIMARY	RELIAB	FREQ
Writing	RdSilent	1
Writing	NoAcaRsp	1
ReadAloud	NoAcaRsp	1
TalkAca	NoAcaRsp	1
NoAcaRsp	TalkAca	1

DISAGREEMENT REPORT - TASK MANAGEMENT

PRIMARY	RELIAB	FREQ
ManipMtrl	Move	1
Attention	NoMgmnt	2
NoMgmnt	Move	1
NoMgmnt	Attention	3

DISAGREEMENT REPORT - COMPETING RESPONSE

PRIMARY	RELIAB	FREQ
NoInappro	LookArnd	2
NoInappro	Self-Stim	1

APPENDIX F

SAMPLE RECRUITMENT E-MAIL

As a professor at the university training teachers of the deaf/hard of hearing, I am writing you in hopes of your assistance.

I am a doctoral student working on my dissertation at the University of Pittsburgh, School of Education. I will be conducting a research study to investigate the nature of reading instruction for students who are deaf/hard of hearing in public school settings in grades 1-4 in the tri-state area of OH, PA, and WV (general education, resource rooms, and/or special education classroom settings). As part of this study, I will be conducting observations of reading instruction using an established observation protocol (MS-CISSAR). In addition, a short, informal interview will be conducted with the reading classroom teacher. The study protocol will be submitted to the Institutional Review Board at the University of Pittsburgh. Confidentiality of participant information will be maintained.

Do you know of any classroom teachers and/or students who are deaf/hard of hearing who would be interested in participating? If so, could you please forward this e-mail. I would greatly appreciate your help. If you have any questions or would like to discuss this matter

further, please feel free to contact me at VDonne9349@comcast.net or 724-695-2468. Thank you for your time in considering this matter and I look forward to hearing from you soon.

Vicki Donne

Teacher of the Deaf/Hard of Hearing, RESA-6, WV

Doctoral Student, University of Pittsburgh

APPENDIX G

STUDENT PARTICIPANT CONSENT FORM

University of Pittsburgh
Institutional Review Board
Approval Date: January 5, 2006
Renewal Date: January 4, 2007
IRB Number: 0512067

CONSENT TO ACT AS A PARTICIPANT IN A RESEARCH STUDY

TITLE: An Observational Study of Reading Instruction of Students who are Deaf/Hard of Hearing

PRINCIPAL INVESTIGATOR: Vicki Donne

Doctoral Student, Special Education
University of Pittsburgh
403 Walden Way
Imperial, PA 15126
Telephone: 724-695-2468

CO-INVESTIGATORS: Dr. Naomi Zigmond
University of Pittsburgh
Posvar Hall
Pittsburgh, PA 15260
Telephone: 412-648-7082

SOURCE OF SUPPORT: No Support

Why is this research being done?

Your child is being asked to participate in a research study that will examine the nature of reading instruction of students who are deaf/hard of hearing in grades 1-4 in public school settings.

Who is being asked to take part in this research study?

Students who are deaf/hard of hearing in grades 1-4 receiving reading instruction in public school settings and the general education and/or special education teachers who provide reading instruction to these students are being invited to take part in this research study. A total of 25 students, and their teachers, from the tri-state area of OH, PA, and WV will participate in this study.

What procedures will be performed for research purposes?

If you decide your child will take part in this research study, a one time review of your child's school records will be conducted to obtain information regarding your child's hearing loss and background information. The daily period(s) of reading instruction for your child will be observed twice using an established instructional code. The observer(s) will not be directly involved with or interact with your child in any way.

What are the possible risks, side effects, and discomforts of this research study?

Breach of confidentiality is a possible risk of your child's participation in this study. However, measures will be taken to ensure that this does not occur. Otherwise, all instruments have been designed to be appropriate for your child, thus no risks are anticipated.

What are possible benefits from taking part in this study?

No direct benefits will be received from your child taking part in this research study.

Will my child be paid if my child takes part in this research study?

Neither you nor your child will receive monetary payment as a result of your child's participation in this study.

Are there any costs to me or my child for my child's participation in this study?

Neither you, nor your child, will be charged for any costs associated with your child's participation in this research study.

Who will know about my child's participation in this research study?

Any information about your child obtained from this research will be kept as confidential (private) as possible. All records related to your child's involvement in this research study will be stored in a locked file cabinet at the University of Pittsburgh. Your child will not be identified by name in any publication of the research results unless you and/or your child sign a separate consent form giving your permission (release). Participants will be assigned a numeric code in order to maintain confidentiality. All data referring to each participant will be marked with this code. Links will be maintained between the participants' identities and the numeric code assigned to them. The paper recording these links will only be seen by the principal investigator and will be locked in a cabinet when not in use.

Who will have access to identifiable information related to my child's participation in this research study?

In addition to the investigators listed on the first page of this authorization (consent) form and their research staff, the following individuals will or may have access to identifiable information related to your child's participation in this research study:

Authorized representatives of the University of Pittsburgh Research Conduct and Compliance Office may review your child's identifiable research information for the purpose of monitoring the appropriate conduct of this research study.

In unusual cases, the investigators may be required to release identifiable information related to your child's participation in this research study in response to an order from a court of law. If the investigators learn that your child or someone with whom your child is involved is in serious danger or potential harm, they will need to inform, as required by law, the appropriate agencies.

For how long will the investigators be permitted to use and disclose identifiable information related to my child's participation in this research study?

The investigators may continue to use and disclose, for the purposes described above, identifiable information related to your child's participation in this research study for a minimum of five years after final reporting or publication of a project.

Is my child's participation in this research study voluntary?

Your child's participation in this research study, to include the use and disclosure of your child's identifiable information for the purposes described above, is completely voluntary. (Note, however, that if you do not provide your consent for the use and disclosure of your child's identifiable information for the purposes described above, your child will not be allowed to participate in the research study.) Whether or not you provide your consent for your child's participation in this research study will have no effect on your child's current or future relationship with the University of Pittsburgh and/or your child's school.

May I withdraw, at a future date, my consent for my child's participation in this research study?

You may withdraw, at any time, your consent for your child's participation in this research study, to include the use and disclosure of your child's identifiable information for the purposes described above. To formally withdraw your consent for your child's participation in this research study, you should provide a written and dated notice of this decision to the principal investigator of this research study at the address listed on the first page of this form.

****

VOLUNTARY CONSENT

The above information has been explained to me and all of my current questions have been answered. I understand that I am encouraged to ask questions about any aspect of this research study during the course of this study, and that such future questions will be answered by the investigator(s) listed on the first page of this consent document at the telephone number(s) given.

I understand that I may contact the Human Subjects Protection Advocate of the University of Pittsburgh Institutional Review Board (IRB) Office, University of Pittsburgh (1-866-212-2668) to discuss problems, concerns, and questions; obtain information; offer input; or discuss situations in the event that the research team is unavailable.

By signing this form, I agree for my child to participate in this research study. A copy of this consent form will be given to me.

"I voluntarily consent to have my child participate in this project."

University of Pittsburgh
Institutional Review Board
Approval Date: January 5, 2006
Renewal Date: January 4, 2007
IRB Number: 0512067

_____ _____
Participant (Child's) Name (Print) Date

I understand that, as a minor (less than 18 years of age), the above-named child is not permitted to participate in this research study without my consent. Therefore, by signing this form, I give my consent for his/her participation in this research study.

_____ _____
Parent's or Guardian's Name (Print) Relationship to Participant (Child)

_____ _____
Parent's or Guardian's Signature Date

The child is a subject in this study and must provide assent, verbal or written depending on their developmental ability.

CHILD ASSENT (for children who are developmentally able to sign)

This research has been explained to me, and I agree to participate.

_____ _____
Signature of Child-Subject Date

_____
Printed Name of Child-Subject

VERIFICATION OF EXPLANATION (for children not developmentally able to sign)

I certify that I have carefully explained the purpose and nature of this research to _____ (name of child) in age appropriate language. He/she has had an opportunity to discuss it with me in detail. I have answered all his/her questions and he/she provided affirmative agreement (i.e., assent) to participate in this research.

_____ _____
Parent's Signature Date

_____
Parent's Printed Name

****

University of Pittsburgh
Institutional Review Board
Approval Date: January 5, 2006
Renewal Date: January 4, 2007
IRB Number: 0512067

CERTIFICATION of INFORMED CONSENT

I certify that I have explained the nature and purpose of this research study to the above-named individual(s), and I have discussed the potential benefits and possible risks of study participation. Any questions the individual(s) have about this study have been answered, and we will always be available to address future questions as they arise. I further certify that no research component of this protocol was begun until after this consent form was signed.

_____ _____
Printed Name of Person Obtaining Consent Role in Research Study

_____ _____
Signature of Person Obtaining Consent Date

Parent's or Guardian's Initials ____

APPENDIX H

INTRODUCTORY LETTER TO PARENTS

January 5, 2006

Dear Parent or Guardian:

I would like to take this opportunity to introduce myself. I am a doctoral student working on my dissertation at the University of Pittsburgh, School of Education. I will be conducting a research study to investigate the nature of reading instruction for students who are deaf/hard of hearing in public school settings in grades 1-4 in the tri-state area of OH, PA, and WV (general education, resource rooms, and/or special education classroom settings). Your school has consented to be a site for this research study. I would like you to consider allowing your child to participate in this study.

As part of this study, I will be conducting observations of reading instruction using an established observation protocol. In addition, a one time review of your child's school records will be conducted to obtain background information on your child and details on the instructional setting(s) where your child receives reading instruction.

Please take a moment to read the Informed Consent Documents attached. Discuss these with your child. Please indicate your consent and your child's consent by completing and returning the attached consent forms to the school. If you have any questions regarding your child's participation in this study, please feel free to contact me at 724-695-2468, 412-401-6468, or VDonne9349@comcast.net. Thank you so much for your time and consideration.

Sincerely,

Vicki Donne

Principal Investigator

Doctoral Student, University of Pittsburgh

Attachments

APPENDIX I

TEACHER PARTICIPANT CONSENT FORM

University of Pittsburgh
Institutional Review Board
Approval Date: January 5, 2006
Renewal Date: January 4, 2007
IRB Number: 0512067

CONSENT TO ACT AS A PARTICIPANT IN A RESEARCH STUDY

TITLE: An Observational Study of Reading Instruction of Students who are Deaf/Hard of Hearing

PRINCIPAL INVESTIGATOR: Vicki Donne
Doctoral Student, Special Education
University of Pittsburgh
403 Walden Way
Imperial, PA 15126
Telephone: 724-695-2468

CO-INVESTIGATORS: Dr. Naomi Zigmond
University of Pittsburgh
Posvar Hall
Pittsburgh, PA 15260
Telephone: 412-648-7082

SOURCE OF SUPPORT: No Support

Why is this research being done?

You are being asked to participate in a research study that will examine the reading instruction of students who are deaf/hard of hearing in grades 1-4 in public school settings.

Who is being asked to take part in this research study?

Students who are deaf/hard of hearing in grades 1-4 receiving reading instruction in public school settings and the general education and/or special education teachers who provide reading instruction to these students are being invited to take part in this research study. A total of 25 students, and their teachers, from the tri-state area of OH, PA, and WV will participate in this study.

What procedures will be performed for research purposes?

If you decide to take part in this research study, an informal interview will be conducted to obtain background information and information on the reading curriculum used with students who are deaf/hard of hearing. Two daily period(s) of reading instruction for each participating student who is deaf/hard of hearing will be observed using the mainstream version of the *Code for Instructional Structure and Student Academic Responses (MS-CISSAR).* The observer(s) will not be directly involved with or interact with the student(s) and/or teacher(s) in any way.

What are the possible risks, side effects, and discomforts of this research study?

Breach of confidentiality is a possible risk of participation in this study. However, measures will be taken to ensure that this does not occur. Otherwise, all instruments have been designed to be appropriate for you and your students, thus no risks are anticipated.

What are possible benefits from taking part in this study?

No direct benefits will be received from taking part in this research study.

Will I be paid if I take part in this research study?

Neither you nor your students will receive monetary payment as a result of participation in this study.

Are there any costs to me for participating in this study?

Neither you, nor your students, will be charged for any costs associated with your participation in this research study.

Who will know about my participation in this research study?

Any information about you obtained from this research will be kept as confidential (private) as possible. All records related to your involvement in this research study will be stored in a locked file cabinet at the University of Pittsburgh. You will not be identified by name in any publication of the research results unless you sign a separate consent form giving your permission (release). Participants will be assigned a numeric code in order to maintain confidentiality. All data referring to each participant will be marked with this code. Links will be maintained between the participants' identities and the numeric code assigned to them. The paper recording these links will only be seen by the principal investigator and will be locked in a cabinet when not in use.

Who will have access to identifiable information related to my participation in this research study?

In addition to the investigators listed on the first page of this authorization (consent) form and their research staff, the following individuals will or may have access to identifiable information related to your participation in this research study:

Authorized representatives of the University of Pittsburgh Research Conduct and Compliance Office may review your identifiable research information for the purpose of monitoring the appropriate conduct of this research study.

In unusual cases, the investigators may be required to release identifiable information related to your participation in this research study in response to an order from a court of law. If the investigators learn that you or someone with whom you are involved is in serious danger or potential harm, they will need to inform, as required by law, the appropriate agencies.

For how long will the investigators be permitted to use and disclose identifiable information related to my participation in this research study?

The investigators may continue to use and disclose, for the purposes described above, identifiable information related to your participation in this research study for a minimum of five years after final reporting or publication of a project.

Is my participation in this research study voluntary?

Your participation in this research study, to include the use and disclosure of your identifiable information for the purposes described above, is completely voluntary. (Note, however, that if you do not provide your consent for the use and disclosure of your identifiable information for the purposes described above, you will not be allowed to participate in the research study.) Whether or not you provide your consent for participation in this research study will have no effect on your current or future relationship with the University of Pittsburgh or with your employer/ school.

May I withdraw, at a future date, my consent for participation in this research study?

You may withdraw, at any time, your consent for participation in this research study, to include the use and disclosure of your identifiable information for the purposes described above. To formally withdraw your consent for participation in this research study, you should provide a written and dated notice of this decision to the principal investigator of this research study at the address listed on the first page of this form.

****

VOLUNTARY CONSENT

The above information has been explained to me and all of my current questions have been answered. I understand that I am encouraged to ask questions about any aspect of this research study during the course of this study, and that such future questions will be answered by the investigator(s) listed on the first page of this consent document at the telephone number(s) given.

I understand that I may contact the Human Subjects Protection Advocate of the University of Pittsburgh Institutional Review Board (IRB) Office, University of Pittsburgh (1-866-212-2668) to discuss problems, concerns, and questions; obtain information; offer input; or discuss situations in the event that the research team is unavailable.

By signing this form, I agree to participate in this research study. A copy of this consent form will be given to me.

"I voluntarily consent to participate in this project."

 Participant's Initials _____

University of Pittsburgh
Institutional Review Board
Approval Date: January 5, 2006
Renewal Date: January 4, 2007
IRB Number: 0512067

Participant's Name (Print)

_____ _____
Participant's Signature Date

****

CERTIFICATION of INFORMED CONSENT

I certify that I have explained the nature and purpose of this research study to the above-named individual(s), and I have discussed the potential benefits and possible risks of study participation. Any questions the individual(s) have about this study have been answered, and we will always be available to address future questions as they arise. I further certify that no research component of this protocol was begun until after this consent form was signed.

_____ _____
Printed Name of Person Obtaining Consent Role in Research Study

_____ _____
Signature of Person Obtaining Consent Date

APPENDIX J

ECOLOGICAL VARIABLES BY READING CURRICULUM GRADE LEVEL

Variable	Category	All Student Participants		On Grade Level		-1 Grade Level Below		-2 Grade Levels Below	
		N	%	N	%	N	%	N	%
Total		3711		1392		1278		1041	
Activity	Reading	1723	46.4	714	51.3	630	49.3	379	36.4
	Math	121	3.3	121	8.7				
	Spelling	513	13.8	57	4.1	244	19.1	212	29.4
	Handwriting	21	.6	16	1.2	5	.4		
	Language	840	22.6	271	19.5	300	23.5	269	25.8
	Science	12	.3	11	.8	1	.1		
	Self-Care	80	2.2					80	7.7
	Arts/Craft	11	.3					11	1.1
	FreeTime	30	.8	12	.8	18	1.4		

	BusMgmnt	31	.8	19	1.4			12	1.2
	Transit	239	6.4	111	8	78	6.1	50	4.8
	NoActivity	13	.4					12	1.2
	Can't Tell	17	.5	1	.1	1	.1	16	1.5
	Phonics/PA	59	1.6	59	4.2				
Task	Readers	893	24.1	372	26.7	241	18.9	280	26.9
	Workbooks	199	5.4	157	11.3	18	1.4	24	2.3
	Worksheets	434	11.7	180	12.9	137	10.7	117	11.2
	Paper&Pencil	637	17.2	192	13.8	283	22.1	162	15.6
	LstnLect	103	2.8	31	2.2	36	2.8	36	3.5
	OtherMedia	676	18.2	178	12.8	281	22	217	20.9
	Discussion	418	11.3	162	11.6	155	12.1	101	9.7
	Fetch/Put	242	6.5	102	7.3	82	6.4	58	5.6
	No Task	100	2.7	14	1.0	42	3.3	44	4.2
Physical Arrange-ment	Entire Group	2226	60.0	839	60.3	812	63.5	575	55.2
	Divided Group	1175	31.7	382	27.4	412	32.2	381	36.6
	Individual	297	8.0	169	12.1	48	3.8	80	7.7

Instructional Grouping	Whole Class	2157	58.1	836	60.1	814	63.7	507	48.7
	Small Group	622	16.7	205	14.7	193	15.1	224	21.5
	One-on-One	498	13.4	261	18.8	128	10.0	109	10.5
	Independent	410	11.1	86	6.2	132	10.3	192	18.4

APPENDIX K

ECOLOGICAL VARIABLES BY INSTRUCTIONAL SETTING

Variable	Category	All Student Participants		General Education		General/ Resource Room		Self-Contained	
		N	%	N	%	N	%	N	%
Total		3711		948		974		1789	
Activity	Reading	1723	46.4	501	52.9	502	51.5	720	40.3
	Math	121	3.3	121	12.8				
	Spelling	513	13.8	17	1.8	72	7.4	424	23.7
	Handwriting	21	.6	16	1.7			5	.3
	Language	840	22.6	154	16.2	178	18.3	508	28.4
	Science	12	.3	11	1.2			1	.1
	Self-Care	80	2.2			80	8.2		
	Arts/Craft	11	.3			11	1.1		
	FreeTime	30	.8	12	1.3			18	1.0
	BusMgmnt	31	.8	5	.5	23	2.4	3	.2
	Transit	239	6.4	81	8.5	50	5.1	108	6.0

	NoActivity	13	.4			12	1.2	1	.1
	Can't Tell	17	.5	1	.1	16	1.6		
	Phonics/PA	59	1.6	29	3.1	30	3.1		
Task	Readers	893	24.1	227	24.0	353	36.2	313	17.5
	Workbooks	199	5.4	157	16.6	3	.3	39	2.2
	Worksheets	434	11.7	158	16.7	93	9.6	183	10.2
	Paper&Pencil	637	17.2	80	8.4	203	20.8	354	19.8
	LstnLect	103	2.8	14	1.5	20	2.1	69	3.9
	OtherMedia	676	18.2	130	13.7	104	10.7	442	24.7
	Discussion	418	11.3	91	9.6	125	12.8	202	11.3
	Fetch/Put	242	6.5	83	8.8	36	3.7	123	6.9
	No Task	100	2.7	4	.4	35	3.6	61	6.4
Physical Arrange-ment	Entire Group	2226	60.0	562	59.3	725	74.4	939	52.5
	Divided Group	1175	31.7	363	38.3	88	9.0	724	40.5
	Individual	297	8.0	21	2.2	158	16.2	118	6.6
Instruc-tional Grouping	Whole Class	2157	58.1	565	59.6	652	66.9	940	52.5
	Small Group	622	16.7	187	19.7	89	9.1	346	19.3
	One-on-One	498	13.4	106	11.2	169	17.4	223	12.5
	Independent	410	11.1	86	9.1	59	6.1	265	14.8

APPENDIX L

TEACHER VARIABLES BY CURRICULUM READING LEVEL

Variable	Category	All Student Participants		On grade level		-1 Level Below		-2 Levels Below	
		N	%	N	%	N	%	N	%
Total		3711		1392		1278		1041	
Teacher Definition	Regular Educator	1103	29.7	916	65.8	94	7.4	93	8.9
	Special Educator	2212	59.6	234	16.8	1050	82.2	928	89.2
	Aid/Para-professional	117	3.2	98	7.0	4	.3	15	1.44
	Student Teacher	35	.9	34	2.4			1	.1
	Substitute	170	4.6	48	3.5	122	9.6		
	Peer Tutor	62	1.7	62	4.5				

Teacher	QuestAca	612	16.5	193	13.9	254	19.9	165	15.9
Behavior	QuestMgt	75	2.0	23	1.7	27	2.1	25	2.4
	QuestDscpln	21	.6	7	.5	5	.4	9	.9
	CmndAca	150	4.0	49	3.5	53	4.2	48	4.6
	CmndMgmnt	178	4.8	50	3.6	70	5.5	58	5.6
	CmndDscpl	64	1.7	14	1.0	38	3	12	1.2
	TalkAca	785	21.2	298	21.4	232	18.2	255	24.5
	TalkMgmt	396	10.7	205	14.7	101	7.9	90	8.65
	TalkDscpln	78	2.1	38	2.7	17	1.3	23	2.21
	TalkNonAca	35	.9	10	.7	10	.8	15	1.44
	NonVbPrmt	180	4.9	35	2.5	82	6.4	63	6.1
	Attention	814	21.9	334	24	251	19.6	229	22
	ReadAloud	226	6.1	117	8.4	88	6.9	21	2.0
	Sing								
	NoResponse	79	2.1	18	1.3	38	3	23	2.2
Teacher	Approval	160	4.3	58	4.2	56	4.4	46	4.4
Approval	DISapprov	187	5.0	55	4	73	5.7	59	5.7
	Neither	3343	90.1	1277	91.7	1138	89.1	928	89.2
Teacher	Target	809	21.8	360	25.9	243	19.0	206	19.8
Focus	Target+Other	1652	44.5	698	50.1	580	45.4	374	35.9
	NoOne	135	3.6	20	1.4	75	5.9	40	3.8
	Other	1082	29.2	309	22.2	367	28.7	406	39.0

APPENDIX M

TEACHER VARIABLES BY GRADE LEVEL ENROLLED

Variable	Category	1st Grade		2nd Grade		3rd Grade		4th Grade	
		N	%	N	%	N	%	N	%
Total		1369		1008		893		441	
Teacher Definition	Regular Educator	427	31.2	441	43.8	94	10.5	141	32
	Special Educator	712	52.0	422	41.9	794	88.9	284	64.4
	Aid/Para-professional	98	7.2	3	.3	1	.1	15	3.4
	Student Teacher	34	2.5					1	.2
	Substitute	37	2.7	133	13.2				
	Peer Tutor	53	3.9	9	.9				

Teacher	QuestAca	215	15.7	171	17	153	17.1	73	16.6
Behavior	QuestMgt	18	1.3	30	3	9	1.0	18	4.1
	QuestDscpln	7	.5	5	.5	5	.6	4	.9
	CmndAca	45	3.3	48	4.8	45	5	12	2.7
	CmndMgmnt	52	3.8	59	5.9	62	6.9	5	1.1
	CmndDscpl	24	1.8	25	2.5	14	1.6	1	.2
	TalkAca	275	20.1	203	20.1	211	23.6	96	21.8
	TalkMgmt	150	11	123	12.2	59	6.6	64	14.5
	TalkDscpln	38	2.8	13	1.3	24	2.7	3	.7
	TalkNonAca	12	.9	4	.4	8	.9	11	2.5
	NonVbPrmt	86	6.3	24	2.4	63	7.1	7	1.6
	Attention	257	18.8	238	23.6	184	20.6	135	30.6
	ReadAloud	143	10.5	48	4.8	28	3.1	7	1.6
	Sing								
	NoResponse	37	2.7	14	1.4	24	2.7	4	.9
Teacher	Approval	62	4.5	49	4.9	41	4.6	8	1.8
Approval	DISapprov	60	4.4	60	6.0	57	6.4	10	2.3
	Neither	1238	90.4	895	88.8	790	88.5	420	95.2

Teacher	Target	382	27.9	134	13.3	179	20.0	114	25.9
Focus	Target+Other	663	48.4	441	43.8	364	40.8	184	41.7
	NoOne	77	5.6	11	1.1	44	4.9	3	.7
	Other	236	17.2	415	41.2	296	33.2	135	30.6

APPENDIX N

TEACHER VARIABLES BY INSTRUCTIONAL SETTING

Variable	Category	All Student Participants		General Education		General/ Resource Room		Self-Contained	
		N	%	N	%	N	%	N	%
Total		3711		948		974		1789	
Teacher Definition	Regular Educator	1103	29.7	726	76.6	377	38.7		
	Special Educator	2212	59.6			560	57.5	1652	92.3
	Aid/Paraprofessional	117	3.2	86	9.1	28	2.9	3	.2
	Student Teacher	35	.9	34	3.6	1	.1		
	Substitute	170	4.6	48	5.1			122	6.8
	Peer Tutor	62	1.7	54	5.7	8	.8		

Teacher	QuestAca	612	16.5	117	12.3	172	17.7	323	18.1
Behavior	QuestMgt	75	2.0	19	2.0	24	2.5	32	1.8
	QuestDscpln	21	.6	3	.3	8	.8	10	.6
	CmndAca	150	4.0	23	2.4	37	3.8	90	5.0
	CmndMgmnt	178	4.8	44	4.6	20	2.1	114	6.4
	CmndDscpl	64	1.7	10	1.1	8	.8	46	2.6
	TalkAca	785	21.2	198	20.9	200	20.5	387	21.6
	TalkMgmt	396	10.7	148	15.6	144	14.8	104	5.8
	TalkDscpln	78	2.1	21	2.2	22	2.3	35	2.0
	TalkNonAca	35	.9	8	.8	17	1.8	10	.6
	NonVbPrmt	180	4.9	18	1.9	29	3.0	133	7.4
	Attention	814	21.9	240	25.3	231	23.7	343	19.2
	ReadAloud	226	6.1	82	8.7	52	5.3	92	5.1
	Sing								
	NoResponse	79	2.1	16	1.7	9	.9	54	3.0
Teacher	Approval	160	4.3	40	4.2	27	2.8	93	5.2
Approval	DISapprov	187	5.0	29	3.1	42	4.3	116	6.5
	Neither	3343	90.1	877	92.5	902	92.6	1564	87.4

Teacher	Target	809	21.8	170	17.9	283	29.1	356	19.9
Focus	Target+Other	1652	44.5	497	52.4	467	48.0	688	38.5
	NoOne	135	3.6	16	1.7	14	1.4	105	5.9
	Other	1082	29.2	260	27.4	205	21.1	617	34.5

APPENDIX O

STUDENT ACADEMIC RESPONSES BY CURRICULUM GRADE LEVEL

Variable	Category	All Student Participants		On Grade level		-1 Grade Level Below		-2 Grade Levels Below	
		N	%	N	%	N	%	N	%
Total		3711		1392		1278		1041	
Academic Responding	Writing	651	17.5	182	13.1	250	19.6	219	21.0
	TskPartic	129	3.5	64	4.6	40	3.1	25	2.4
	ReadAloud	333	9.0	176	12.6	64	5.0	93	8.9
	ReadSilently	255	6.9	139	10	49	3.8	67	6.4
	TalkAcademic	328	8.8	92	6.6	136	10.6	100	9.6
	NoAcaRsp	1994	53.7	737	53	725	56.7	532	51.1
Task Manage-ment	RaiseHand	57	1.5	32	2.3	17	1.3	8	.8
	PlayApr	16	.4	5	.4	11	.9		
	ManipMtrl	158	4.3	75	5.4	47	3.7	36	3.5
	Move	199	5.4	75	5.4	76	6	48	4.6

	TalkMgmnt	132	3.6	51	3.7	41	3.2	40	3.8
	Attention	975	26.3	373	26.8	358	28.0	244	23.4
	NoMgmnt	2147	57.9	778	55.9	712	55.7	657	63.1
Competing	Disrupt	7	.2	2	.1			5	.5
Responses	TalkInapp	121	3.3	28	2.0	56	4.4	37	3.6
	LookAround	283	7.6	83	6	118	9.2	82	7.9
	NonComply	11	.3	1	.1	3	.2	7	.7
	Self-Stim	91	2.5	50	3.6	20	1.6	21	2.0
	SelfAbuse	3	.1	2	.1			1	.1
	NoInappro	3164	85.3	1222	87.8	1064	83.3	878	84.3
Composite	Acad.Resp.		45.7		46.9		42.2		48.4
	Task Mgmt		41.4		43.9		43.0		36.1
	Comp.Resp.		13.9		11.9		15.4		14.7

APPENDIX P

INDIVIDUAL RESULTS

Student	Time Allocated to Reading Instruction/Day	Time Spent in Reading Instruction/Day	Time Spent Reading Aloud/Day	Time Spent Reading Silently/Day	Total Time Spent Reading/Day
1	91	48.5	0	2	2
2	91	38.5	0	0	0
3	91	72.5	0	2	2
4	91	70	0	.5	.5
5	119	70.5	5	6.5	11.5
6	119	49.5	0	3	3
7	112	86	13	4.5	17.5
8	112	100	3	3.5	6.5
9	112	83	8	2.5	10.5
10	78	72	6	3.5	9.5
11	78	64	11	.5	11.5
12	78	82	15.5	1	16.5
13	95	74	5	12.5	17.5

14	90	102	22.5	15	37.5
15	125	95.5	3	6.5	9.5
16	140	90	13	1.5	14.5
17	134	123	22.5	5	27.5
18	115	77.5	4.5	.5	5
19	115	92	2.5	21.5	24
20	60	59	7	0	7
21	120	104	3	11.5	14.5
22	120	71	.5	6	6.5
23	122	81	13.5	1.5	15
24	66	51	8	16.5	24.5

APPENDIX Q

ALL STUDENT PARTICIPANTS: CONDITIONAL PROBABILITY AND SIGNIFICANCE OF STUDENT BEHAVIORS OF READING ALOUD, READING SILENTLY, AND READING ALOUD OR READING SILENTLY BY ECOLOGICAL CATEGORIES

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Activity												
Reading	.17	.25	7.086	.001	.09	.15	6.493	.001	.07	.1	3.342	.001
Language		.09	-5.051	.001		.05	-3.363	.001		.05	-1.947	
Spelling		.08	-4.303	.001		.04	-4.016	.001		.03	-3.827	.001
Phonics (Other)		.24	1.374			.15	1.492			.08	.383	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Activity & Setting												
Reading & General Education	.18	.33	8.057	.001	.10	.15	3.552	.001	.08	.17	8.231	.001
Reading & Self-Contained		.17	-.328			.14	2.629	.01		.03	-3.566	.001
Spelling & Self-Contained		.08	-4.387	.001		.04	-3.904	.001		.04	-2.187	.05
Language & Self-Contained		.06	-5.577	.001		.04	-4.107	.001		.03	-3.778	.001
Task												
Readers	.17	.34	10.543	.001	.1	.21	8.38	.001	.07	.13	5.862	.001
Worksheet		.18	.548			.09	-.883			.1	1.917	
Other Media		.12	-2.824	.01		.09	-1.195			.04	-2.979	.01
Paper & Pencil		.07	-5.811	.001		.04	-4.739	.001		.03	-3.39	.001
Discussion		.05	-5.871	.001		.01	-5.264	.001		.03	-2.853	.01

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Task & Setting												
Readers & General Education	.25	.38	4.263	.001	.14	.19	1.949		.11	.19	4.264	.001
Other Media & Self-Contained		.13	-4.224	.001		.10	-1.931			.03	-4.225	.001
Instruc-tional Grouping												
Whole Class	.16	.12	-3.768	.001	.09	.05	-4.884	.001	.07	.07	-.131	
Small Group		.18	1.502			.1	.719			.09	1.461	
One-on-One		.31	7.897	.001		.29	13.859	.001		.02	-3.881	.001
Indepen-dent		.15	-.372			.04	-2.967	.01		.11	2.838	.01

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Instruc-tional Grouping & Setting												
General Education & Whole Group					.09	.04	-4.004	.001	.07	.13	5.882	.001
General Education & Small Group	.16	.32	5.728	.001		.2	5.289	.001		.12	2.667	.01
General Education & One-on-One		.47	7.811	.001		.42	11.118	.001				
General Education & Indepen-dent						.0	-3.455	.001		.18	4.851	.001
Resource Room & One-on-one						.17	3.598	.001				

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance
Self Contained & Whole Group		.06	-6.428	.001		.04	-4.092	.001		.02	-5.075	.001
Self-Contained & Small Group		.1	-2.373	.05		.04	-2.676	.01				
Self-Contained & One-on-One		.28	4.598	.001		.28	9.508	.001		.0	-3.806	.001
Teacher Focus												
Target	.16	.27	7.032	.001	.09	.25	12.851	.001	.07	.02	-4.254	.001
Target & Other		.13	-2.515	.05		.06	-4.199	.001		.08	1.054	
Other		.13	-2.597	.01		.04	-5.268	.001		.09	2.184	.05

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance
Teacher Focus & Setting												
Target & Other & General Education	.12	.19	4.391	.001	.05	.05	.376		.07	.13	5.388	.001
Target & Other & Self-Contained		.08	-2.650	.01		.06	.864			.02	-4.154	.001
Other & Self-Contained		.09	-2.137	.05		.04	-1.353			.05	-1.654	
Teacher Behavior												
Attention	.16	.26	6.411	.001	.09	.14	4.495	.001	.07	.12	4.581	.001
Talk Academic		.12	-2.157	.05		.07	-1.115			.05	-1.968	.05
Talk Manage-ment		.11	-2.498	.05		.04	-3.039	.01		.07	-.399	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance
Question Academic		.10	-3.174	.001		.06	-1.686			.04	-2.849	.01
Teacher Behavior & Setting												
Talk Academic & Self-Contained	.10	.10	.0		.07	.07	.0		.02	.02	.0	

Note: When levels of significance did not reach significance, no data were entered in this column.

Unless noted, models were constructed with at least 10% of the data. However, some two level analyses used 1% of the data, i.e. setting and teacher definition, setting and instructional grouping, and some one level analysis used 1% of the data, i.e. activity.

In Instructional Grouping, model was conducted and only those groupings with significance were included in the appendices.

APPENDIX R

ECOLOGICAL VARIABLES BY GRADE LEVEL ENROLLED

Variable	Category	1st Grade		2nd Grade		3rd Grade		4th Grade	
		N	%	N	%	N	%	N	%
Total		1369		1008		893		441	
Activity	Reading	706	51.6	461	45.7	308	34.5	248	56.2
	Math	46	3.4	75	7.4				
	Spelling	82	6	202	20.0	214	24	15	3.4
	Handwriting			21	2.1				
	Language	352	25.7	132	13.1	318	35.6	38	8.6
	Science			12	1.2				
	Self-Care							80	18.1
	Arts/Craft							11	2.5
	FreeTime	18	1.3	12	1.2				
	BusMgmnt	14	1.0	4	.4	3	.3	10	2.3
	Transit	112	8.2	66	6.6	50	5.6	11	2.5

	NoActivity	1	.1					12	2.7
	Can't Tell			1	.1			16	3.6
	Phonics/PA	38	2.8	21	2.1				
Task	Readers	387	28.3	142	14.1	156	17.5	208	47.2
	Workbooks	70	5.1	105	10.4	21	2.4	3	.7
	Worksheets	137	10.0	136	13.5	92	10.3	69	15.7
	Paper& Pen	215	15.7	169	16.8	211	23.6	42	9.5
	LstnLect	57	4.2	10	1	33	3.7	3	.7
	OtherMedia	197	14.4	249	24.7	175	19.6	55	12.5
	Discussion	168	12.3	100	9.9	121	13.6	29	6.6
	Fetch/Put	102	7.5	70	6.9	65	7.3	5	1.1
	No Task	34	2.5	22	2.2	19	2.1	25	5.7
Physical Arrange-ment	Entire Group	883	64.5	541	53.7	485	54.3	317	71.9
	Divided Group	353	25.8	429	42.6	336	37.6	57	12.9
	Individual	131	9.6	32	3.2	70	7.8	64	14.5
Instructional Grouping	Whole Class	873	63.8	551	54.7	482	54	251	56.9
	Small Group	191	14.0	195	19.4	177	19.8	59	13.4
	One-on-One	267	19.5	68	6.8	95	10.6	68	15.4
	Independent	33	2.4	185	18.4	133	14.9	59	13.4

APPENDIX S

STUDENT ACADEMIC RESPONSES BY GRADE LEVEL ENROLLED

Variable	Category	1st Grade		2nd Grade		3rd Grade		4th Grade	
		N	%	N	%	N	%	N	%
Total		1369		1008		893		441	
Academic	Writing	155	11.3	234	23.2	182	20.4	80	18.1
Responding	TskPartic	69	5.0	34	3.4	4	.5	22	5
	ReadAloud	157	11.5	61	6.1	85	9.5	30	6.8
	ReadSilently	55	4.0	87	8.6	36	4.0	77	17.5
	Talkacademic	152	11.1	53	5.3	72	8.1	51	11.6
	NoAcaRsp	771	56.3	533	52.9	509	57	181	41.0
Task	RaiseHand	22	1.6	24	2.4	11	1.2		
Manage-	PlayApr	11	.8	5	.5				
ment	ManipMtrl	56	4.1	60	6.0	31	3.5	11	2.5
	Move	75	5.5	66	6.6	35	3.9	23	5.2

	TalkMgmnt	50	3.7	30	3	38	4.3	14	3.2
	Attention	412	30.1	240	23,7	230	25.8	93	21.1
	NoMgmnt	732	53.5	576	57.1	540	60.5	299	67.8
Competing	Disrupt	2	.2			5	.6		
Responses	TalkInapp	50	3.7	25	2.5	44	4.9	2	.5
	LookAround	100	7.3	63	6.3	113	12.7	7	1.6
	NonComply	4	.3			7	.8		
	Self-Stim	61	4.5	5	.5	19	2.1	6	1.4
	SelfAbuse	1	.1	1	.1			1	.2
	NoInappro	1139	83.2	906	89.9	696	77.9	423	95.9
Composite	Acad.Resp.		43		46.5		42.4		59
	Task Mgmt		46		42.2		38.6		32
	Comp.Resp.		16		9.3		21.1		3.6

APPENDIX T

TEACHER VARIABLES GENERAL/RESOURCE ROOM

Variable	Category	All Student Participants		General/ Resource Room		General Education		Resource Room	
		N	%	N	%	N	%	N	%
Total		3711		974		419		555	
Teacher Definition	Regular Educator	1103	29.7	377	38.7	377	90.0	-	-
	Special Educator	2212	59.6	560	57.5	6	1.4	554	99.8
	Aid/Para-professional	117	3.2	28	2.9	28	6.7	-	-
	Student Teacher	35	.9	1	.1	-	-	1	.2
	Substitute	170	4.6	-	-	-	-	-	-
	Peer Tutor	62	1.7	8	.8	8	1.9	-	-

Teacher	QuestAca	612	16.5	172	17.7	60	14.3	112	20.2
Behavior	QuestMgt	75	2.0	24	2.5	5	1.2	19	3.4
	QuestDscpln	21	.6	8	.8	1	.2	7	1.3
	CmndAca	150	4.0	37	3.8	8	1.9	29	5.2
	CmndMgmnt	178	4.8	20	2.1	10	2.4	10	1.8
	CmndDscpl	64	1.7	8	.8	2	.5	6	1.1
	TalkAca	785	21.2	200	20.5	80	19.1	120	21.6
	TalkMgmt	396	10.7	144	14.8	79	18.9	65	11.7
	TalkDscpln	78	2.1	22	2.3	8	1.9	14	2.5
	TalkNonAca	35	.9	17	1.8	3	.7	14	2.5
	NonVbPrmt	180	4.9	29	3.0	8	1.9	21	3.8
	Attention	814	21.9	231	23.7	114	27.2	117	21.1
	ReadAloud	226	6.1	52	5.3	36	8.6	16	2.9
	NoResponse	79	2.1	9	.9	4	1.0	5	.9
Teacher	Approval	160	4.3	27	2.8	11	2.6	16	2.9
Approval	DISapprov	187	5.0	42	4.3	19	4.5	23	4.1
	Neither	3343	90.1	902	92.6	388	92.6	514	92.6
Teacher	Target	809	21.8	283	29.1	64	15.3	219	39.5
Focus	Target+Other	1652	44.5	467	48.0	261	62.3	206	37.1
	NoOne	135	3.6	14	1.4	9	2.2	5	.9
	Other	1082	29.2	205	21.1	82	19.6	123	22.2

APPENDIX U

STUDENT PARTICIPANTS WITH A CONCOMITANT DISABILITY: CONDITIONAL PROBABILITY AND SIGNIFICANCE OF STUDENT BEHAVIORS OF READING ALOUD, READING SILENTLY, AND READING ALOUD OR READING SILENTLY BY ECOLOGICAL CATEGORIES

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Activity												
Reading	.19	.26	2.925	.01	.13	.17	2.172	.05	.06	.09	2.009	.05
Language		.17	-.497			.14	.395			.03	-1.470	
Spelling		.07	-3.128	.001		.04	-2.848	.01		.03	-1.372	
Activity & Setting												
Reading & Resource Room	.20	.19	-.191		.17	.17	.149		.03	.02	-.822	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Reading & Self-Contained		.25	1.554			.21	1.401			.04	.674	
Spelling & Self-Contained		.08	-2.564	.05		.05	-2.730	.01		.03	-.151	
Task												
Readers	.23	.45	6.098	.001	.16	.28	4.230	.001	.07	.17	4.596	.001
Worksheet		.20	-.587			.16	.162			.04	-1.246	
Other Media		.12	-2.939	.01		.10	-1.672			.01	-2.750	.01
Paper & Pencil		.09	-3.577	.001		.05	-3.296	.001		.04	-1.486	
Task & Setting												
Readers & Self-Contained	.20	.45	4.834	.001		.39	5.016	.001		.06	.764	
Other Media & Self-Contained		.12	-1.609			.10	-1.490			.03	-.616	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Paper& Pencil Self-Contained		.05	-3.113	.001		.01	-3.416	.001		.04	-.117	
Instruc-tional Grouping												
Whole Class	.19	.18	-.396		.13	.10	-1.698		.06	.09	1.801	
Small Group		.12	-1.836			.09	-1.383			.03	-1.238	
One-on-One		.33	3.553	.001		.32	5.725	.001		.01	-2.119	.05
Indepen-dent		.15	-.922			.10	-.770					
Instruc-tional Grouping & Setting												

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
General Education & Whole Group	.19	.27	1.808		.13	.02	-3.218	.001	.06	.24	7.978	.001
General Education & Small Group		.45	1.963	.05		.45	2.921	.01		.0	-.812	
Resource Room & Whole Group		.13	-1.680			.12	-.502			.02	-2.255	.05
Resource Room & Small Group		.03	-2.213	.05		.03	-1.691					
Resource Room & One-on-one		.33	2.435	.05		.30	3.609	.001		.03	-.988	
Self Contained & Whole Group		.17	-.622			.13	-.054			.04	-1.029	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance
Self-Contained & Small Group		.12	-1.641			.07	-1.676			.05	-.452	
Self-Contained & One-on-One		.33	2.709	.01		.33	4.684	.001		.00	-2.087	.05
Self-Contained & Indepen-dent		.16	-.777			.11	-.650			.05	-.426	
Teacher Focus												
Target	.19	.30	3.359	.001	.13	.28	5.601	.001	.06	.02	-2.401	.05
Target & Other		.20	.179			.09	-1.972	.05		.11	3.321	.001
Other		.10	-3.157	.001		.07	-2.764	.01		.03	-1.543	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance
Teacher Focus & Setting												
Target & Other & General Education	.20	.34	2.720	.01	.14	.02	-2.983	.01	.06	.32	9.214	.001
Target & Resource Room		.35	2.991	.01		.33	4.718	.001		.02	-1.615	
Target & Other & Resource Room						.06	-2.289	.05		.02	-1.640	
Target & Other & Self-Contained		.20	-.149			.17	.793			.03	-1.429	
Target & Self-Contained		.25	1.061			.23	2.697	.01		.02	-1.429	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance
Other & Self-Contained		.12	-2.335	.05		.08	-2.110	.05		.04	-1.050	
Teacher Behavior												
Attention	.21	.32	2.745	.01	.14	.17	.876		.07	.15	3.517	.001
Talk Academic		.16	-1.423			.14	-.066			.02	-2.370	.05
Question Academic		.14	-1.794			.11	-.980			.03	-1.722	
Teacher Behavior & Setting												
Talk Academic & Self-Contained	.19	.25	1.087		.16	.21	1.072		.04	.04	.279	
Question Academic & Self-Contained		.14	-1.038			.11	-1.022			.03	-.266	

Notes: When levels of significance did not reach significance, no data were entered in this column.

Unless noted, models were constructed with at least 10% of the data. However, some two level analyses used 1% of the data, i.e. setting and teacher definition, setting and instructional grouping, and some one level analysis used 1% of the data, i.e. activity.

In Instructional Grouping, model was conducted and only those groupings with significance were included in the appendices.

APPENDIX V

STUDENT PARTICIPANTS WITH NO CONCOMITANT DISABILITIES: CONDITIONAL PROBABILITY AND SIGNIFICANCE OF STUDENT BEHAVIORS OF READING ALOUD, READING SILENTLY, AND READING ALOUD OR READING SILENTLY BY ECOLOGICAL CATEGORIES

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Activity												
Reading	.16	.24	5.490	.001	.09	.14	4.701	.001	.07	.10	2.982	.01
Language		.06	5.608	.001		.03	-4.481	.001		.03	-3.403	.001
Spelling		.09	-3.369	.001		.03	-3.337	.001		.03	-1.328	
Activity & Setting (1%)												
Reading & Resource Room	.15	.24	2.327	.05	.08	.10	.887		.07	.14	2.422	.05

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Reading & Self-Contained		.13	-.974			.10	1.578			.03	-3.008	.01
Spelling & Self-Contained		.08	-2.813	.01		.03	-2.550	.05		.05	-1.416	
Reading & General Education		.31	9.578	.001		.16	7.267	.001		.15	6.268	
Language & Special Education		.05	-4.771	.001		.03	-3.211	.001		.02	-3.540	.001
Language & Resource Room		.04	-2.078	.05		.0	-1.990	.05		.04	-.937	
Task												
Readers	.16	.30	8.019	.001	.09	.18	7.373	.001	.07	.12	3.798	.001
Worksheet		.18	.953			.08	-.627			.05	-1.837	
Other Media		.13	-1.696			.08	-.627			.05	-1.837	
Paper & Pencil		.06	-4.942	.001		.03	-3.657	.001		.03	-3.175	.001

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Discussion		.05	-4.858	.001		.01	-4.427	.001		.04	-2.346	.05
Task & Setting												
Readers & General Education	.24	.34	3.094	.001	.16	.20	1.832		.09			
Other Media & Self-Contained		.13	-3.406	.001		.10	-2.016	.05				
Instruc-tional Grouping												
Whole Class	.15	.10	-4.097	.001	.08	.04	-4.665	.001	.07	.06	-1.064	
Small Group		.21	2.976	.01		.10	1.947			.10	2.267	.05
One-on-One		.30	6.997	.001		.28	12.830	.001		.02	-3.226	.001
Indepen-dent		.15	.094			.02	-3.445	.001		.13	3.708	.001

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Instruc-tional Grouping & Setting												
General Education & Whole Group	.15	.15	.543		.07	.05	-2.363	.05	.07	.11	3.165	.001
General Education & Small Group		.31	5.913	.001		.19	5.622	.001		.13	2.723	.01
Resource Room & Whole Group		.13	-.411			.05	-.942			.08	.370	
Resource Room & Small Group		.38	3.294	.001		.14	1.275			.24	3.398	.001
Resource Room & One-on-one		.12	-.702	.05		.09	.410			.03	-1.415	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Self Contained & Whole Group		.04	-6.79	.001		.02	-4.503	.001		.02	-5.112	.001
Self-Contained & Small Group		.10	-1.837			.03	-2.246	.05		.07	-.339	
Self-Contained & One-on-One		.26	3.393	.001		.26	7.871	.001		.0	-3.142	.001
Self-Contained & Indepen-dent		.12	-.674			.03	-1.703			.09	.766	
General Education & One-on-One		.47	8.396	.001		.42	12.650	.001		.05	-.860	
General Education & Indepen-dent		.18	1.015			.0	-3.128	.001		.18	4.612	.001

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signifi-cance
Teacher Focus												
Target	.15	.26	6.045	.001	.08	.23	11.568	.001	.07	.03	-3.464	.001
Target & Other		.14	-1.020			.05	-3.506	.001		.07	-.428	
Other		.11	-2.845	.01		.03	-4.640	.001		.11	3.438	.001
Teacher Focus & Setting												
Target & Other & General Education	.14	.16	1.156		.07	.06	-1.401		.07	.11	3.093	.001
Target & General Education		.37	8.167	.001		.32	12.275	.001		.05	-.890	
Other & General Education						.04	-2.061	.05		.16	5.717	.001
Target & Resource Room		.13	-3.82			.10	.963			.03	-1.534	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance
Target & Other & Resource Room		.13	-.284			.06	-.457			.07	.062	
Other & Resource Room										.22	3.947	.001
Target & Other & Self-Contained		.05	-5.189	.001		.03	-3.345	.001		.02	-4.001	.001
Target & Self-Contained		.20	2.102	.05		.20	6.432	.001		.0	-3.586	.001
Other & Self-Contained		.07	-3.730	.001		.01	-4.160	.001		.06	-1.076	
No One & Self-Contained		.04	-2.631	.01		.0	-2.635	.01		.04	-1.066	

	Reading Aloud and Reading Silently				Reading Aloud				Reading Silently			
	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance	Un-conditional Proba-bility	Condi-tional Proba-bility	Z Score	Level of Signif-icance
Teacher Behavior												
Attention	.15	.24	5.285	.001	.07	.13	4.530	.001	.08	.12	2.977	.01
Talk Academic		.12	-1.323			.05	-1.494			.06	-1.137	
Question Academic		.09	-2.936	.01		.05	-1.743			.04	-2.397	.05
Talk Manage-ment		.12	-1.323			.04	-2.196	.05		.08	.275	
Teacher Behavior & Setting												
Talk Academic & Self-Contained	.20	.08	-4.063	.001	.11	.05	-2.587	.01	.09	.02	-3.202	.001
Attention & General Education		.34	4.09	.001		.18	2.604	.01		.16	3.224	.001

Notes: When levels of significance did not reach significance, no data were entered in this column.

Unless noted, models were constructed with at least 10% of the data. However, some two level analyses used 1% of the data, i.e. setting and teacher definition, setting and instructional grouping, and some one level analysis used 1% of the data, i.e. activity.

In Instructional Grouping, model was conducted and only those groupings with significance were included in the appendices.

APPENDIX W

STUDENT VARIABLES FOR STUDENT PARTICIPANTS WITH/WITHOUT A CONCOMITANT DISABILITY

Variable	Category	Student Participants with No Concomitant Disability		Student Participants with a Concomitant Disability	
		N	%	N	%
Total		2794		917	
Academic Responding	Writing	494	17.1	157	17.1
	Task Participation	91	3.3	38	4.1
	Read Aloud	213	7.6	120	13.1
	Read Silently	200	7.2	55	6
	Talk Academic	1519	54.4	67	7.3
Task Management	Raise Hand	52	1.9	5	.6
	Play Appropriately	16	.6		

	Manipulate Material	127	4.6	31	3.4
	Move	145	5.2	54	5.9
	Talk Management	91	3.3	41	4.5
	Attention	757	27.1	218	23.8
	No Management	1585	56.7	562	61.3
Competing Response	Disruption	1	.0	6	.7
	Talk Inappropri-ately	88	3.2	33	3.6
	Look Around	219	7.8	64	7.0
	Non Compliance	5	.2	6	.7
	Self-Stimulation	56	2.0	35	3.8
	Self-Abuse	2	.1	1	.1
	No Inappropriate	2398	85.8	766	83.5

APPENDIX X

ECOLOGICAL VARIABLES FOR STUDENT PARTICIPANTS WITH/WITHOUT A CONCOMITANT DISABILITY

Variable	Category	Student Participants with No Concomitant Disability		Student Participants with a Concomitant Disability	
		N	%	N	%
Total		2794		917	
Setting	Regular Class	1225	43.8	142	15.5
	Special Education	1309	46.9	480	52.3
	Resource Room	260	9.3	295	32.2
Activity	Reading	1206	43.2	517	56.4
	Math	121	4.3		
	Spelling	376	13.5	137	14.9
	Handwriting	21	.8		
	Language	672	24.1	168	18.3
	Science	12	.4		
	Self-Care	80	2.9		

	Arts/Craft	11	.4		
	FreeTime	30	1.1		
	BusMgmnt	13	.5	18	2.0
	Transit	190	6.8	49	5.3
	NoActivity	1	.0	12	1.3
	Can’t Tell	1	.0	16	1.7
	Phonics/PA	59	2.1		
Task	Readers	662	23.7	231	25.2
	Workbooks	194	6.9	5	.6
	Worksheets	329	11.8	105	11.5
	Paper&Pencil	462	16.5	175	19.1
	LstnLect	78	2.8	25	2.7
	OtherMedia	472	16.9	204	22.3
	Discussion	342	12.2	76	8.3
	Fetch/Put	187	6.7	55	6.0
	No Task	60	2.2	40	4.4
Physical	Entire Group	1717	61.5	509	55.5
Arrange-	Divided Group	904	32.4	271	29.6
ment	Individual	162	5.8	135	14.7

APPENDIX Y

TEACHER VARIABLES FOR STUDENT PARTICIPANTS WITH/WITHOUT A CONCOMITANT DISABILITY

Variable	Category	Student Participants with No Concomitant Disability		Student Participants with a Concomitant Disability	
		N	%	N	%
Total		2794		917	
Teacher Definition	Regular Educator	973	34.8	130	14.2
	Special Educator	1439	51.5	773	84.3
	Aide/ Para-professional	105	3.8	12	1.3
	Student Teacher	35	1.3		
	Substitute	170	6.1		
	Peer Tutor	62	2.2		
Teacher Behavior	QuestAca	448	16.0	164	17.9
	QuestMgt	56	2.0	19	2.1
	QuestDscpln	12	.43	9	1.0

	CmndAca	76	2.7	74	8.1
	CmndMgmnt	134	4.8	44	4.8
	CmndDscpl	46	1.7	18	2.0
	TalkAca	607	21.8	178	19.4
	TalkMgmt	330	11.8	66	7.2
	TalkDscpln	62	2.2	16	1.7
	TalkNonAca	20	.7	15	1.6
	NonVbPrmt	140	5.0	40	4.4
	Attention	595	21.3	219	23.9
	ReadAloud	183	6.6	43	4.7
	Sing				
	NoResponse	71	2.5	8	.9
Teacher	Approval	111	4.0	49	5.3
Approval	DISapprov	130	4.7	57	6.2
	Neither	2538	90.8	805	87.8
Teacher	Target	563	20.2	246	26.8
Focus	Target & Other	1302	46.6	350	38.2
	NoOne	124	4.4	11	1.2
	Other	781	28.0	301	32.8

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