5-1-1996

Learning Style Adaptations and the Effect on Sight Word Recognition Achievement of Students with Learning Disabilities

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Learning Style Adaptations and the Effect on
Sight Word Recognition Achievement of Students
with Learning Disabilities
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Date of Approval: May 1, 1996

Running head: LEARNING STYLES
Abstract

The purpose of the study was to investigate the sight word recognition of two students with learning disabilities from a private school in Virginia, after adaptations to their learning styles had been made. The experimental design used to assess the effects of learning style adaptations on sight word recognition was a multiple probe across word groups. A combination of the Dolch and Fry Sight Word Lists determined the unmastered sight words for both subjects. The Dunn and Dunn Learning Style Inventory was used to identify the subjects' preferred learning style. The results of the study indicated that when adaptations were made for individual learning styles (i.e., auditory, visual, tactile, and kinesthetic) sight word recognition increased for both subjects.
Acknowledgments

I would like to thank my faith in God for providing me strength to accomplish all my dreams.

To my committee members Dr. Ruth Meese (Chair), Dr. Rachel Mathews, and Dr. Terry Overton; for reading and re-reading my thesis, and providing me with your expert advice. I appreciate all your time, patients, and concern. Dr. Meese, I will never forget how to spell the word maintenance!! THANKS.

To my family and friends. To my only brother Matt, I Love You! To my sister Rae Ann and future brother in-law Alex, for helping me relax and have fun on the few weekends when I came home and could actually go out. To Mrs. Kelly, for giving me permission to conduct this research, and for allowing me to borrow your book on learning styles. To Jane, for listening to me complain and making me laugh when I needed to the MOST! To Lori, for being there to talk & listen, and for being a great friend. To Gina, Liz, and Claire, for your friendship and support over the past five years. To Allie (Squirt), for listening to me vent my frustrations (not just about school), and for being my walking dictionary!! You have been a True Friend! And to Linda, you have been a great, supportive roommate! THANKS TO ALL OF YOU!!

I would especially like to THANK Wheezer and Pop-Pop (My Mom and Dad). The two of you have always been there for me, both financially and emotionally. You believed in me a long time before I believed in myself. I am everything I am because you love me! THANK YOU, I LOVE YOU!!!
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Learning Style Adaptations and the Effect on

Sight Word Recognition Achievement of Students

with Learning Disabilities

Learning styles based instruction is becoming one of the most important issues when it comes to the impact on an individual's learning achievement in the classroom. The idea of learning styles was proposed as early as 1886, when Charcot observed that individuals have a predilection for one perceptual input avenue over others (Lerner, 1989). Everyone has a different learning style. Learning styles are unique to a person's individual characteristics. A style is a combination of both biological and experiential variables that promote learning. Identifying a person's learning style should be based on the individual's multidimensional characteristics (Dunn, 1990). A person's multidimensional characteristics are those that hold a student's concentration, and allow for long-term memory (Dunn, 1990).

Learning styles are either considered genetic, biological or developmental. Over three fifths of learning styles are genetic (Dunn, 1990). Biological responses include sound, light, perceptual strengths, and mobility. Developmental issues include sociological preferences, responsibility, and structure versus self direction (Carbo, Dunn & Dunn, 1986). People in general tend to learn and remember information better and enjoy learning more when they are taught through their own strengths and preferences (Dunn, 1990).
Educators, especially special educators, have tried to match classroom instruction to meet the needs of their students. According to Arter and Jerkins (1977), 99% of the special education teachers surveyed believed that the student's modality strengths and weaknesses were their major consideration for educational programming. Special educators believe this the most when working with individuals with learning disabilities.

**LEARNING DISABILITIES**

Numerous definitions of learning disabilities exist; however, the definition most widely used by professionals is the Federal definition that is incorporated with Public Law 94-142 or The Education for All Handicapped Children Act (1975). This definition states:

"Specific learning disabilities means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantages" (cited in Lerner, 1988, p. 7).

A second important part to the definition, that is considered operational and appears in a separate section of the regulations applying to Public Law 94-142, states that a student
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has a specific learning disability if "1) The student does not achieve at proper age and
ability levels in one or more of several specific areas when provided with appropriate
learning experiences, and 2) The student has a severe discrepancy between achievement
and intellectual ability in one or more of these 7 areas: oral expression, listening
comprehension, written expression, basic reading skills, reading comprehension,
mathematics calculations, and mathematic reasoning" (cited in Lerner, 1988, p. 9).

Several definitions of learning disabilities exist because of different disciplines, and
widely accepted and recognized programs. These definitions also include individuals and
groups. A definition is required that is broad enough to include all the conditions under
the label and, at the same time, sufficiently distinguish learning disabilities from all other
disabling conditions (Myers & Hammill, 1990). However, criticism has been posed
against using one definition for such a unique group of individuals. Under the definition
used in Public Law 94-142 there is no mention of how severe the disability must be in
order for an individual to receive services. In addition, the discrepancies that appear in
Batemans' (1965) definition are not included, and the term "basic psychological processes"
lacks clarity for professional use (Mercer, 1987). Also, professionals such as educators
and psychologists have not reached a consensus concerning the definition of learning
disabilities (Myers & Hammill, 1990).

Learning disabilities is a heterogeneous category of special education. Each individual
is unique and he/she may exhibit difficulties in one area and not another area (Mercer,
1987). Characteristics refer to those traits or behaviors that are observed in individuals
who are known to have learning disabilities. Notable characteristics were
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listed by Clements (1966). They included impairments of concept formation and academic problems (cited in Myers & Hammill, 1990). This list no longer presents an accurate description of the characteristics of individuals with learning disabilities (Mercer, 1987). Clements ranked hyperactivity as the most frequently occurring characteristic, and academic failure as eighth; however, since 1977 the Federal Register lists discrepancies as the primary characteristic (Mercer, 1987). These characteristics can affect an individual at all stages in life, but to be diagnosed with a learning disability the characteristics must be present for a period of time.

Elementary school students with learning disabilities, grades 2 through 6, exhibit academic learning problems, and achievement discrepancies. The characteristics that may appear include: 1) disorder of attention (e.g., poor concentration ability, short attention span); 2) failure to develop and mobilize cognitive strategies (e.g., lacking organization); 3) poor motor abilities (e.g., spatial problems); 4) perceptual and information processing problems (e.g., difficulty in discrimination of auditory and visual stimuli); 5) oral language difficulties (e.g., problem in listening, vocabulary); 6) reading difficulties (e.g., decoding, basic reading skills, comprehension); 7) written language difficulties (e.g., spelling, handwriting); 8) mathematic difficulties (e.g., quantitative thinking, calculation facts); and 9) inappropriate social behavior (e.g., social perception, emotional behaviors) (Mercer, 1988).

Two subtypes exist under the characteristics of learning disabilities. The first subtype is developmental learning disabilities. In this subtype, the individual exhibits deficits in the prerequisite skills that he/she needs to learn academic subjects; motor, perceptual,
language, and social skills. The second subtype is academic learning disabilities, deficits the individual can exhibit in school subjects such as reading, writing, spelling, and mathematics. Developmental learning disabilities may affect the child's academic learning. An example of this is when an individual is learning to write, which requires proficiency in many motor skills (Lerner, 1988).

Learning disabilities may affect between 1 to 30% of the individuals in the school systems. The diagnosis of these individuals depends on the definition and characteristics used. Learning disabilities is now considered the largest category of special education under Public Law 94-142. Students with learning disabilities have a tendency to be less motivated than their peers and to prefer to learn new information from an adult (Yong & McIntyre, 1992). They learn best when a formal classroom design is used and they also do their best "learning" in the late morning or early afternoon (Yong & McIntyre, 1992).

According to Wheeler (1983), research on students with learning disabilities has shown that their reading achievement scores increased when their learning styles were matched with a complementary approach (cited in Yong & McIntyre, 1992). Students with learning disabilities; therefore, need a match of their learning style with that of the teacher's style to achieve.

TEACHING STYLES

To understand learning styles there is also a need to understand fully what teaching styles are. Teaching styles as defined by Fisher and Fisher (1979) are "a pervasive way of approaching the learners that might be consistent with several methods of teaching" (cited in Dunn & Frazier, 1990, p. 348). According to Gregore (1979) a "teaching style is
more than a methodology. It places subjective demands upon the learners who may or may not have the abilities to match such demands" (cited in Dunn & Frazier, 1990, p.349). Teachers approach teaching in different ways. The teacher could be task oriented, a cooperative planner, child centered, learning centered, or subject centered.

Several research studies have been conducted to assess teaching styles and their cognitive affect on student achievement. The studies were classified into two categories. The first category was to match a student’s learning style with the teacher’s teaching style on personal traits. The second focused on the instructional strategies that the teacher used to meet the characteristics of the individual student (Dunn & Frazier, 1990). The research based on these two categories showed that when teachers matched their style with that of the learning style of their students, academic achievement increased (Carbo, 1992; Dunn & Frazier, 1990).

The way in which teachers can match their teaching style to the learning style of their students is first to identify that student’s preferred learning style. Learning styles may be identified through observations, personal interviews, and/or administration of learning style tests (Dunn, 1992). Once the teacher has identified their students' preferred learning styles, the teacher can practice behaviors that will allow the student to grasp the material. If the teacher knows the student is a global learner, for example, he or she can explain the lesson in terms of what directly needs to be learned. The teacher should also allow the student to have interaction with peers, and allow for breaks and snacks. On the other hand when the teacher is working with an analytic learner, tasks should be explained directly to the point and not repeated. The lesson should begin with facts, then guided to
understanding the concepts (Dunn, 1992). When planning lessons for either type of learner, the teacher should use the methods of curriculum based assessment. The teacher will then be able to determine what instructional methods will be successful for each learner.

**CURRICULUM BASED ASSESSMENT**

Curriculum based assessment (CBA) is one performance assessment approach that has become increasingly popular, particularly among special educators (Fuchs & Deno, 1994). CBA is a procedure that can directly assess a student's performance using the course content of the school to determine the student's instructional needs (Mercer, 1987). A more specific definition of curriculum based assessment was given by Blankenship and Lilly (1981) which states that "the teacher obtains direct and frequent measures of a student's performance by using a series of sequentially arranged objectives derived from the curriculum" (cited in Mercer, 1987).

Curriculum based assessments allow the teacher to take short, frequent and continuous measures of the student's performance on specific tasks. The teacher then charts the performance of the student to note any changes that occur over time (Lerner, 1989). CBA is individually-referenced, so that the teacher is allowed to make instructional judgements based solely for that individual student. Teachers who use this approach in their classroom report an increase in the student's mastery of specific tasks (Mercer, 1987). The teacher is allowed to gain further information on the student that allows educators to understand the specific problems and teach to that problem (Lerner, 1989).
Curriculum based assessment is carried out in two ways. The first way is analyzing the student's abilities that are needed for the task. The second is analyzing what is to be learned; the task itself.

Several curriculum based assessment's, each addressing different questions pertaining to the evaluation of academic performance, are used. The most radical model is curriculum based measurement, which was developed by Deno and his colleagues (Yell, Deno, & Marston, 1992). This model offers an alternative to assessing individual needs, while also addressing psychometric notions (Mehrens & Clarizio, 1993). Curriculum based measurement has several advantages. It is sensitive to small but important gains in the student's performance over a short period of time such as days or weeks, and it is frequent and continuous (Mehrens & Clarizio, 1993). The second curriculum based assessment is direct instruction. Direct instruction is a systematic plan used by teachers for the teaching of academic strategies (Ariel, 1992). It is a step by step approach in which students are provided direct instruction based on their learning needs (Ariel, 1992).

Task analysis falls under the curriculum based assessment of direct instruction (Mercer, 1987). It is the greatest contributor of Applied Behavior Analysis to the field of learning disabilities (Ariel, 1992). The purpose of task analysis is to analyze the task in terms of a sequence, and the goal is to move the student to the desired levels of skill achievement (Lerner, 1989). It consists of dividing the task into smaller parts in order to identify the skills that are needed later for that task (Mercer, 1987). Four steps in the curriculum skills approach to task analysis exist. Step one states that the teacher should clearly define the learning task for that specific skill. In step two, the teacher must list all components
necessary to meet the objectives and place these components in a logical teaching sequence. Step three is where the teacher tests informally to determine what components the students can already perform. The last step is where the teacher begins teaching in a sequential order (Lerner, 1989). Task analysis provides a framework for the teacher and uses the "building block" theory (Myers & Hammill, 1990). The "building block" theory states that the skills one must acquire in learning a specific task are to be developed in a sequential order. The students must first learn "A" before "B" and "B" before "C" (Myers & Hammill, 1990).

Task analysis is time consuming. It requires that the teacher pinpoint the students' skills and delineate the specific objectives of instruction by setting achievable goals that are observable and measurable (Ariel, 1992). However, after the task analysis has been completed, it does not have to be done for each child. Special adaptations might have to be made according to how the student works, and his or her individual learning style should be considered (Myers & Hammill, 1990). Also the process of task analysis allows the teacher to know what they want to teach, where to begin, when the students have succeeded, and what step should be next. Task analysis is useful with the teaching of sight words. The teacher is able to determine when the student is ready to move to the next set of words, and when mastery of the words has occurred.

**SIGHT WORDS**

Teaching reading is a difficult task for many teachers. The relationship between the letters and sounds in a word are not always predictable. For example, the letter "a" is
given a different sound in each of these words: at, ball, father, was, saw, and are. The long "i" is another example, such as in the words: I, eye, ice, tie, high, and sky. Sight words appear in many first grade readers, and often have irregular spelling patterns and sounds such as those listed previously. Sight words must be taught to individuals as whole words (Lerner, 1989). Sight words are those words that an individual is able to recognize without the use of structural or phonetic analysis (Schloss, Alexander, Horning, Parker, & Wright, 1993). To be a fluent reader, an individual must learn sight words alone, and in the context of reading and writing. This is because most reading selections are made of sight words (Manning, 1994).

Sight words are grouped according to their difficulty at a certain grade level, and the best way to teach sight words is by actually having the individual read. The basal reader method is an accurate way of providing sight word instruction. Basal readers consist of sequential and interrelated sets of books that only introduce a small number of sight words at a time (Lerner, 1989). Sight words appear many times through the basal readers, so that they are learned visually through much review and through the context of the story (Lerner, 1989).

Chambers (1965) stated that sight word vocabulary falls under the broad category of word recognition (cited in Dawson, 1973). Word recognition is either classified as a code emphasis approach or a meaning emphasis approach. The code emphasis approach stresses decoding which is "the act of translating written symbols into sounds" (Myers & Hammill, 1990). This approach primarily teaches symbol sound associations and letter sound relationships, such as phonic analysis, linguistics, and sound blending. A code
emphasis tends to produce better overall reading achievement, according to Dykstra (1968). This is because it does not require the individual to have mature reading performance immediately (cited in Dawson, 1973). A meaning emphasis approach begins with words that appear frequently, are familiar to the individual, and are easier to learn. This approach is not restricted to the methods of decoding. An example of this approach is the whole word method (Myers & Hammill, 1990).

When using error correction while teaching sight words, a whole word approach (i.e., meaning emphasis) was more effective than a phonetic prompt (i.e., code emphasis) approach. Whole word error correction is where the teacher states the whole word and the student then repeats the whole word. While using the phonetic prompt, the teacher only provides the first sounds of the sight word (Barbetta, Heward, Bradley, & Miller, 1994). It is well documented that providing any type of feedback to the students when they make errors in sight words is important (Barbetta et al., 1993).

Word recognition involves the ability of an individual to recognize sight words as they appear in the context of a story. According to Chambers (1965), if the individual does not have an adequate sight word vocabulary, that individual is without word recognition skills (cited in Dawson, 1973). Word recognition skills exhibit a correlation with reading comprehension. Reading comprehension, the ultimate goal for reading instruction, involves having the individual recognize sight words immediately in context (Barbetta et al, 1993). When the student is learning the sight words with the match of their learning style, the success rate of the recognition of these words will increase.
LEARNING STYLES

Several definitions are used to classify what learning styles are. The first definition was developed by Keefe (cited in De Bello, 1990). He stated that learning styles are a group of characteristics that include cognitive, affective, and psychological behaviors. These characteristics serve as indicators of how learners perceive, interact with, and respond to the environment (De Bello, 1990). According to Perry (1994), learning styles are not characteristics, but rather how the learner learns new material (Perry, 1994). The Council for Exceptional Children defines learning styles as “approaches to assessment or instruction emphasizing the variations in temperament, attitude and preferred matter of tackling a task...” (cited in Perry, 1994 p. 10). All these definitions try to correlate the way individuals learn best for themselves. There is no right or wrong definition or a right or wrong learning style.

Several different types of learners also exist. The term global/analytic, right/left, sequential/simultaneous and inductive/deductive have been used interchangeably throughout the literature (Dunn, 1990). The types of learners fall into the psychological elements of the learning style models that exist (Carbo, Dunn & Dunn, 1986). A global or momentum learner is a learner who prefers learning with the use of music, soft lighting, informal seating, snacks, and mobility. These learners usually skip over words, flip back and forth when working in workbooks, and can work in almost any setting (Carbo, 1992). Analytic or accountability learners prefer learning in quiet, well lit, formal settings. These learners guess at words or will wait until they receive help. These learners have a strong need to complete the task at hand before they take a break or begin work on a new task
According to Chittenden, analytic learners have a linear sequencing of thought (cited in Carbo, 1992). Analytic learners use left processing styles and learn “backwards,” whereas global learners exhibit right processing styles and learn “forward” (Dunn, 1992). Research demonstrates that when students are allowed to use their preferred learning style, their work improves and their attitudes about learning also improve (Neely & Alm, 1993). Learning styles are the manner in which cognitive motivation and physiological elements affect an individual’s ability to interact with and respond to the learning environment (Griggs, 1990).

Several comprehensive learning style models exist. Each of these models has a related instrument that was designed to measure the individuals’ learning style (Dunn, 1990). The first model was designed by Dunn and Dunn, and is classified as a multidimensional model (De Bello, 1990). The multidimensional model includes elements such as environmental, emotional, sociological, physical and psychological. The environmental element includes sound, light, temperature, and design. The emotionality element includes the individual’s motivation, persistence, and responsibility to a certain task. The sociological element is where the individual prefers to learn alone, in a pair, with peers, or in a team. Physical elements include perceptual modalities such as auditory, visual, tactual, or kinesthetic as well as the individuals’ need for intake of information while learning including, time of day in which the individual learns best and the need for mobility versus passivity (De Bello, 1990). Auditory learners are those learners who learn best by listening to the information. They remember what they have heard and can remember by recreating the information previously given to them. Visual learners learn through sight.
Tactual learners learn by being able to touch and manipulate the materials of the lesson, and kinesthetic learners learn by actually being able to experience the given task (Carbo, Dunn & Dunn, 1986). The Dunn and Dunn model also includes the elements of psychological dimensions. Included under this dimension are global/analytic, hemisphericity and impulsive/reflective characteristics (De Bello, 1990). The Dunn and Dunn learning style instrument, the Learning Style Inventory (LSI), has the most accurate reliability and validity of all similar instruments (Dunn, 1990).

The Kolb model (De Bello, 1990) focused on experiential learning. It has a four stage cycle that included converger, diverger, assimilator, and accommodator. All these types are similar to the elements in the Dunn and Dunn model (De Bello, 1990). A strong overlap is apparent between the different models. The psychological element is the most common, but those models that include multidimensional elements tend to diversify how an individual actually learns (De Bello, 1990).

Learning styles have long been under attack because the research on the subject has not been convincing. According to Snider (1992), the learning style approach is very similar to the discredited process approach and Differential Diagnosis-Prescriptive Teaching approach (DD-PT). These approaches were found not to increase academic achievement of the student. Both the learning style approach and the process approach are based on the assumption that an individual processes information according to his or her own characteristics (Snider, 1992). The DD-PT approach refers to the process of assessing the individual's learning characteristics so that a match can be made toward the instructional needs of that individual (Arter & Jenkins, 1979). Criticism with the DD-PT
approach occurred because professionals disagreed as to the definition of processing abilities. In addition the validity of the instruments used to measure these abilities proved to be low (Arter & Jenkins, 1979). Criticism also includes the lack of an adequate definition of what learning styles are. This lack of a clear definition makes research conclusions difficult (Kavale & Forness, 1987).

The presumption of matching instructional methods to the individual's modality preferences to enhance learning has great appeal, but little empirical support has been found to support any aptitude achievement interaction (Kavale & Forness, 1987). Also because all modalities are involved in the learning process, focusing on just one is virtually impossible for academic achievement (Kavale & Forness, 1987). In assessing learning styles one must also keep in mind the teachers' styles. When the teacher is under stress, no matter what instructional design is used, the matching of two styles will not be successful (Gentle & McMillan, 1989).

**STATEMENT OF THE PURPOSE**

The literature suggested that matching 'how' students learn to 'which' instructional methods are used increases academic achievement and motivation in students with learning disabilities. However, there is little empirical evidence to suggest that when there is a match between learning styles and instructional methods academic achievement and motivation increase. Therefore, the purpose of this study will be to investigate the sight word recognition achievement of students with learning disabilities after adaptations to their learning styles have been made.
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Method

Subjects and Setting

The subjects were two second grade elementary school students who had not been labeled with a learning disability, but who had shown a discrepancy between ability and achievement on the Woodcock-Johnson-Revised-Test of Achievement. The subjects were one male and one female from a private school in the state of Virginia. The setting for the study was a resource classroom that the subjects attended three times a week.

Instruments

The Dunn and Dunn Learning Style Inventory (LSI) (Dunn, Dunn & Price, 1989) was used to determine the students' learning style. The LSI adult version was completed by the classroom teacher. It measures 22 different elements and has 100 Likert scale questions. The LSI is the most widely used standardized learning style assessment instrument, and is rated as having strong reliability and validity (See Appendix D).

The Dunn and Dunn Learning Style Inventory version for children has 104 questions for the students to answer and measures 22 separate elements. The reliabilities in this version are equal to or greater than .60 for the Likert scale in grades 3 and 4. The areas with the highest reliabilities include: sound, temperature, design, persistent, responsibility, structure, learning alone/peer oriented preferences, authority figures present, learn in several ways, auditory, visual, tactile, kinesthetic, requires intake, evening/morning, and needs mobility (See Appendix E).
A combination of 130 words taken from the Dolch Sight Word List (i.e., primer to grade three) and Fry's Sight Word List (i.e., third to fifth) was used to determine what sight words had not yet been mastered by each subject at the time the study began (See Appendix D).

**Procedure**

In January, 1996, permission was obtained from the private school dean, and a letter to both sets of parents was sent home to receive parental permission to conduct this research. The parents were told what procedures would be used, and they were assured full confidentiality. They were also told that weekly progress reports would be sent home (See Appendix A).

After receiving parental permission, the subjects were given the combination list of Dolch and Fry Sight Words to determine the words that the subjects had not yet mastered. The regular classroom teacher provided information regarding each student's mastery level. This information was used to determine the appropriate length of each word group list given to the students. A maximum of five word groups was structured for each subject.

The learning style for each student was then determined using the Dunn and Dunn Learning Style Inventory for teachers and for students. The researcher then matched the teaching styles to the subjects' learning style by using the Dunn and Dunn Profile Sheet. Adaptations were made for teaching the sight words according to the individual's learning style (i.e., through the use of a phonics approach, visual approach, or a combination of all modalities) (See Appendix E).
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**Experimental Design and Intervention**

An experimental multiple probe across word groups design was used for this study. A probe was given for each set of word groups for each student. Then intervention began for group one words for both subjects. After the subject approached between 80% to 90% mastery of word group one, probes for the other word groups were given. Intervention for word group two then began. When the mastery level for that word group was reached, probes for the remaining groups were given. Intervention and probes continued for all remaining word groups. In addition, after mastery level of word group two had been reached, the maintenance level for word group one was determined. Maintenance level for all words groups was conducted in the same manner. This intervention occurred three days a week. The number of correct words were scored and reported as percentage correct per word group. Extraneous variables were controlled by using instructional approaches (i.e., the learning and teaching styles adaptations) that had not been previously used in the regular classroom.

The words for each word group were placed on construction paper note cards by the teacher. When the subjects came into the classroom, they were given the choice of where they wanted to learn the words for that week. Both subjects preferred the carpet that was placed in the classroom at the beginning of the study. After the subjects became comfortable, they were given the first five words. The teacher explained to the subjects that each week they would receive five new words and that the goal was to read the words as soon as they saw what the word was on the note card. The instructions were kept short and simple, because both subjects showed a preference in that method of
learning. A chart was placed in the room and the subjects were told that once they had mastered the words they would be able to write the words on the chart. This procedure was used because both subjects preferred to see their learning progress. The subjects were then able to review the words by themselves and with each other.

The word groups were all taught using the match of preferred learning for each subject. For the visual and kinesthetic preferences the subjects drew pictures on the cards that would give them cues in identifying the word. The words were also discussed with the teacher for real life meanings. For the tactile preference, the subjects were given shaving cream and sand in which to write the words, and they then read the words aloud. After these instructional methods were used, the teacher read the words aloud and the subjects repeated the words. The visual, kinesthetic, and auditory methods were used together for each word group on the first day of intervention. For example, the students were shown the sight word cards with the pictures and the words were discussed with the teacher for the real life meanings. This was done by having the subjects use the word in a sentence. Finally the teacher would say the sight word and the subject would repeat it after the teacher. On the second day of intervention, tactile and auditory instructional methods were combined. Finally, on the third day of intervention, only the auditory instructional method was used. On the third day of intervention of word group one, word group two was probed. This procedure was followed for all five word groups.

After the subjects reached 80 percent mastery of word group two, maintenance level for word group one was acquired. This maintenance procedure was conducted by showing each word separately each subject, and if they read the word aloud within five
seconds of being shown the word, it was classified as mastered. The same maintenance procedure was followed for all word groups, after 80 percent mastery of the previous word groups had been reached. When the subjects reached 100 percent mastery of the word group, they were able to write the words on the chart that was in the classroom. On the last day of research the subjects were given 24 sentences that contained the 25 sight words. Some of the sentences were the same for the subjects, but some specific sentences were written based on the subject’s personal experience (See Appendix I & Appendix J). Each subject read the sentences aloud and was told any words he/she did not know except the sight words.
Results

After receiving parental permission, the Dunn and Dunn Learning Style Inventory (LSI) was read aloud to each subject. The subjects were told to mark how they felt about each question and were given further explanation of each question if needed. The LSI completed data sheets were then mailed to Price Systems Inc. where they were scored by computer to obtain each subject’s individualized learning style. The completed profiles were returned in two weeks.

During the two week period of time, a list of 130 sight words was given to each subject. The sight words were listed in columns and each subject read the words aloud, while the teacher made tally marks next to the unmastered words. Unmastered words were determined if the subject could not say the word within five seconds from being shown the word. Of the 130 sight words presented, Subject A had 45 unmastered words. Subject B had 42 unmastered sight words. As stated in the procedure section, five word groups were constructed using 25 unmastered words for each subject. These 25 unmastered words were the same for both subjects (See Appendix F).

When learning styles were computer analyzed for Subject A, the student obtained a standard score of below 40 on all elements measured. The adaptations suggested for the subject are found in Appendix G. Subject B’s preference summary indicated that some of the elements measured were unimportant to his/her learning style preference. Those that did show preference were: noise level, unmotivated/motivated, prefers learning through several ways, tactile, intake, functions best in afternoon, and parent figure motivated. The adaptations for Subject B are found in Appendix H.
The subjects preferred similar methods of learning and these similarities were used in making adaptations in the sight word instruction.

A probe was given for all the word groups at the beginning of the study to Subject A, indicating a 0 percent mastery level of all 25 words. A probe was given again for word group one before intervention procedures were used. An increase to the 60 percent level was reached after the first day of intervention. An increasing trend to 80 percent occurred on the second day of intervention, and on the third day of intervention the subject reached the 100 percent mastery level (See Figure 1).

Once 80 percent mastery was reached for word group one, word group two was probed. The subject reached the 60 percent level with an increasing trend from 80 percent on the second day of intervention. One hundred percent mastery was achieved on the third day. On the first day for word group two, the maintenance probe for word group one was also conducted and showed a mastery level of 100 percent.

The third word group for Subject A was probed when he/she had reached the 80 percent level for word group two. The subject continued for two days at the 60 percent level, and on the third day of intervention reached the 100 percent mastery level. Maintenance probes for word groups one and two continued to be at 100 percent at this time in the study.

For word group four, the subject immediately increased to the 80 percent level after the intervention began. This 80 percent level continued for two days, while the maintenance levels for word groups one, two, and three remained at 100 percent.
The final word group was probed on the third day of intervention for the fourth word group. An increasing trend from 80 percent to 100 percent occurred on the first two days of intervention. The maintenance levels for all other word groups continued at the 100 percent mastery level for Subject A.

The results for Subject B are shown on Figure 2. The subject immediately increased from the 0 percent probe, to the 80 percent mastery level after the first day of intervention. The 80 percent level continued for the three days of intervention for word group one. On the third day of intervention of word group one, word group two was probed. An immediate increase occurred to the 80 percent level. On the third day of intervention, Subject B reached the 100 percent mastery level for word group two. At the same time, word group three was probed.

The subject reached the 60 percent level for word group three on the first day of intervention, but the subject immediately increased to the 100 percent level on the second day and remained at that level. Maintenance probes showed that the subject was also at the 100 percent mastery level for both word groups one and two. For word group four, the subject had an increase in trend over the days of intervention. The subject went from the 60 percent level to the 100 percent mastery level across the three sessions, and remained there during the maintenance probe.

Subject B was immediately at the 80 percent mastery level after the first day of intervention for word group five. The second and third days of intervention showed the subject to be at the 100 percent mastery level. At this time, the maintenance probes for word groups one, two, three, and four were still at the 100 percent mastery level.
Each subject obtained 100 percent mastery of all 25 sight words at the end of the study (See Figure 1 & Figure 2). Both subjects were able to generalize their recognition for the sight words on note cards and in sentences.
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Discussion

The results of this study are consistent with the literature on individual learning styles and sight word recognition. When a match was made by the teacher for instructional methods based on the individual’s preferred learning style, sight word recognition increased. In addition the students seemed to enjoy the intervention. The students seemed eager to learn new words using the tactile intervention techniques. Both subjects also showed an increase in their self-esteem each week when they were able to place five new mastered words on the chart in the classroom. At the beginning of the study the researcher told the subjects that they would be playing a game to learn new words. By the end of the study, both subjects said the word game was so much fun that they wished they could learn everything that way.

Limitations

Some unexpected events occurred that may have affected the results of this study. For example, some inclement weather occurred creating time gaps in the data collection. Spring Break and a week of Intersession also fell between the maintenance probes for word groups one and two and the intervention for word group three. This did not, however effect the maintenance level of the first two word groups or the beginning intervention procedures for word groups three, four, and five (See Figures 1 & 2).

This study is also limited because it only involved two subjects who attended a private school. Moreover, only a limited time period was allowed for the study to be conducted. Additional time and word groups may be needed to ensure the effect of the intervention.
Recommendations

More research needs to be conducted on individual learning styles and meeting the instructional needs of individuals with learning disabilities across different subject areas in the school curriculum and in different classrooms. The researcher also believes that the intervention and maintenance level of the five word groups reached and remained at the 100 percent level due to the fact that the subjects were enjoying themselves. They were learning the words in a manner which was comfortable for them. Future research should investigate the relationship of learning styles and motivation to the subject’s performance. In addition, the researcher also believes that future investigations need to be conducted with larger groups of subjects rather than one-on-one instruction to determine if skills learned will generalize into the regular classroom. Furthermore, more research should be conducted on subjects from the public school setting.
References


Carbo, M., Dunn, K., & Dunn, R. (1986). *Teaching students to read through their individual learning style.* New Jersey: Prentice Hall.


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Appendix A
Sample Letter to Parents
Sample Letter to Parents

January XX, 1996

Dear Parents,

I am a graduate student from Longwood College in Farmville, Virginia. I am currently working toward a Masters Degree in Special Education and hope to teach in the school system soon. In order to complete my graduate work, I must complete a thesis in which I propose and conduct original research.

I have submitted a research proposal to the Longwood Human Subjects Research Review Committee and they have approved this proposal. In addition, I have permission from ________ at ________. I am interested in individual learning styles. Learning styles are those characteristics that indicate how the learner perceives, interacts with, and responds to the environment. Examples include if the individual learns best sitting at a desk with bright light, or if they prefer sitting in a bean bag chair with soft lighting. More specifically, I would like to know if adaptations made for an individual's learning style will increase sight word recognition. This will be done by determining what sight words (those words that should be recognized in reading material without hesitation) the individual has not yet mastered, then adjusting instructions for the student's learning style. Learning styles will be found through the Dunn and Dunn Learning Style Inventory for teachers, and a learning style inventory for the students. This adaptation to the learning style of the individual will hopefully increase the student's recognition of sight words.

I would like your permission to conduct this research with your child. The name of your child will be kept entirely confidential, and weekly reports will be provided to you so that you may see your child's progress yourself. At any time you may withdraw your child from this study. Enclosed is the permission form and the weekly progress reports that will be sent home to you. If you have any further questions, please call me at 392-7507 or write to 611 'B' Buffalo Street, Farmville, Virginia, 23901. Thank you for your time and consideration, and again all names are held confidential.

Sincerely,

Andrea Wollett
Longwood College
Appendix B
Parental Consent Form
Longwood College
Consent for Participation in
Social and Behavior Research

I, _______________________, consent to participate (or to allow my child or legal subject to participate) in the research project entitled: Learning Style Adaptations and the Effects on Sight Word Recognition Achievement of Students with Learning Disabilities.

I acknowledge that the purpose of this study, the procedures to be followed, and the expected duration of my participation have been explained to me. Possible benefits of this project have been described to me, as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding this research project, and that any questions I have raised have been answered to my full satisfaction. Further, I understand that my (or my child's or legal subject's) participation in this research is voluntary, and I am free to withdraw my consent at any time and to discontinue participation in this project without prejudice. I understand that no information will be presented which will identify me (or my child or legal subject) as the subject of this study unless I give my permission in writing.

I understand that if I have concerns or complaints about my (or my child's or legal subject's) treatment in this study, I am encouraged to contact the Office of Academic Affairs at Longwood College at (804) 395-2010.

Finally, I acknowledge that I have read and fully understand this consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: ________________ Signed: ____________________
(Parent)

Date: ________________ Signed: ____________________
(Witness)
Appendix C.
Sample Weekly Progress Reports
Sample Weekly Progress Reports

Date:

_______ Students Name ______ has mastered ______ Number of Sight Words ______ this week by the adaptations made for their specific learning style. The sight words mastered for this week were:

Sincerely,

Andrea Wollett
Appendix D.
Combination of Dolch and Fry Sight Word Lists
Grades Three to Five
### Combination of Dolch and Fry Sight Word Lists
**Grades Three to Five**

The words used to determine unmastered words:

<table>
<thead>
<tr>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
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</thead>
<tbody>
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<td>Miss</td>
<td>table</td>
<td>land</td>
<td>story</td>
<td></td>
</tr>
<tr>
<td>interest</td>
<td>sometimes</td>
<td>government</td>
<td>I'm</td>
<td>feet</td>
<td>tired</td>
<td></td>
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<td>horse</td>
<td>done</td>
<td>something</td>
<td>country</td>
<td>brought</td>
<td></td>
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<tr>
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<td>shoes</td>
<td>bad</td>
<td>time</td>
<td>across</td>
<td>yet</td>
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<td>true</td>
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<td>even</td>
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<td>still</td>
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<td>together</td>
<td>need</td>
<td>since</td>
<td></td>
</tr>
<tr>
<td>sun</td>
<td>mean</td>
<td>number</td>
<td>life</td>
<td>late</td>
<td>state</td>
<td></td>
</tr>
<tr>
<td>street</td>
<td>half</td>
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<td>party</td>
<td>fight</td>
<td>line</td>
<td></td>
</tr>
<tr>
<td>suit</td>
<td>enough</td>
<td>remember</td>
<td>word</td>
<td>feet</td>
<td>large</td>
<td></td>
</tr>
<tr>
<td>almost</td>
<td>during</td>
<td>few</td>
<td>thought</td>
<td>gone</td>
<td>hit</td>
<td></td>
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<tr>
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<td>between</td>
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<td>being</td>
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<td>held</td>
<td>stay</td>
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</tr>
<tr>
<td>front</td>
<td>won't</td>
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<td>built</td>
<td>paper</td>
<td>against</td>
<td></td>
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<td>family</td>
<td>hour</td>
<td>wear</td>
<td>began</td>
<td>glad</td>
<td>Mr.</td>
<td></td>
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<td>young</td>
<td>company</td>
<td>poor</td>
<td></td>
</tr>
<tr>
<td>ago</td>
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<td>world</td>
<td>begin</td>
<td>outside</td>
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<td>what</td>
<td>when</td>
<td>that</td>
<td></td>
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<td>---</td>
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<td>---</td>
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<tr>
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<td>may</td>
<td>were</td>
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<td>went</td>
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<td>made</td>
<td>cost</td>
<td></td>
</tr>
<tr>
<td>always</td>
<td>together</td>
<td>with</td>
<td>first</td>
<td></td>
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</tr>
</tbody>
</table>
Appendix E.
Teacher Adaptations Made According to Individual Learning Styles
Teacher Adaptations Made According to Individual Learning Styles

These adaptations will be made according to the subject's responses to the 22 questions that they will answer. Depending on the standard score achieved (60 or higher, 40 or higher) the adaptations are as follows:

1. **Noise Level**: Standard score of 60 or higher; provide soft music on earphones (to avoid distraction for those who need quiet); create conversation areas, or an activity oriented, learning or working environment separate from individuals who need quiet. For standard score of 40 or higher; establish silent areas; provide private dens or alcoves with carpeted sections; sound proof areas; suggest earphones without sound to insulate against activity and noise.

2. **Light**: Standard score of 60 or higher; place individual near window or adequate illumination; add table or desk lamp. For standard score of 40 or higher; create learning spaces under indirect or subdued light away from windows; use dividers or plants to block or diffuse illumination.

3. **Temperature**: Standard score of 60 or higher; provide adequate thermal environment, enclosures, screens, and supplemental heaters; place in warm areas toward center of room; allow sweaters and jackets. For standard score of 40 or higher; provide adequate air conditioning and ventilation; place in comparatively cool areas; permit short sleeved shirts or shorts.

4. **Design**: Standard score of 60 or higher; create a formal setting with wooden, plastic, or steel desks and straight chairs with tables such as those normally found in a library or conventional classroom or work setting. For standard score of 40 or higher; design an informal environment with soft chairs and couches, pillows, lounge furniture, and a carpeted section; allow individuals to study or work on the floor or on steps.

5. **Unmotivated/Motivated**: Standard score of 60 or higher; encourage use of self designed objectives, procedures, and evaluation; permit self pacing and rapid achievement. For standard score of 40 or higher; design short uncomplicated assignments or tasks that permit frequent supervision by the teacher; provide several, easily understood options based on the individual's interests.

6. **Persistent**: Standard score of 60 or higher; design long term assignments; provide supervision and assistance only when necessary; suggest where help may be obtained if needed; praise at completion of assignment or task. For standard score of 40 or higher; provide short term, limited assignments, check and log progress frequently; provide options based on individual's interests; experiment with short range motivator and
reinforcements; encourage peer relationships with able, persistent individuals; praise during process of completing tasks; encourage self design of short assignments; permit periodic breaks.

7. **Responsible**: Standard score of 60 or higher; begin by designing short term assignments; as these are completed successfully, gradually increase their length and scope; challenge the individual at the level of his or her functional ability or slightly above. For standard score of 40 or higher; design short term, limited assignments with only single or dual goals; provide a few options and frequent checking by teacher; directions should be simple; responsible peers working on same project should be placed into the immediate environment.

8. **Structure**: Standard score of 60 or higher; be precise about every aspect of each assignment; permit no options unless individual is also highly motivated; use clearly stated objectives in a very simple form; list and itemize as many things as possible; leave nothing for interpretation; clearly indicate specific tasks, time requirements, and the resources that may be used. For standard score of 40 or higher; establish clearly stated objectives but permit choices of resources, procedures, time lines, reporting and checking; permit choices of environmental, sociological, and/or physical elements.

9. **Learning Alone/Peer Oriented Learner**: Standard score of 60 or higher; encourage peer meetings and planning; permit these individuals to assist each other in pairs and in groups; seek group suggestions and recommendations; use small group strategies. For standard score of 40 or higher; permit individual to study alone; encourage use of self selected objectives, procedures, and evaluations before the teacher assess effort.

10. **Authority Figures Present**: Standard score of 60 or higher; place these individuals near appropriate teacher and schedule periodic meetings with him/her; supervise and check assignments often; provide feedback. For standard score of 40 or higher; identify the individual's sociological characteristics and permit isolated study if self oriented and peer grouping if peer oriented, or multiple options if learning in several ways is indicated.

11. **Prefers Learning Through Several Ways**: Standard score of 60 or higher; provide opportunities for a variety of learning patterns and experiences; i.e., working alone, with peers, with teachers or supervisors, adults, or computers. For standard score of 40 or higher; permit the person to learn only in the sociological patterns indicated above 60. Maintain basic routines and patterns; avoid frequent and extensive change.

12. **Auditory Preferences**: Standard score of 60 or higher; use tapes, videotapes, lectures, discussions, records, radio, stereo, television, and precise oral directions when giving assignments, or setting tasks. For standard score of 40 or higher; use resource prescribed under the perceptual preferences that are strong.
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13. **Visual Preferences**: Standard score of 60 or higher; use pictures, filmstrips, graphs, single concept loops, drawings, and books; provide resources that require reading and seeing; use programmed learning. Reinforce knowledge through tactile, kinesthetic, and then auditory resources. For standard score or 40 or higher; use resources prescribed under the perceptual preferences that are strong.

14. **Tactile Preferences**: Standard score of 60 or higher; use manipulative and three dimensional materials; resources should be touchable and moveable as well as readable; allow such individual to plan, demonstrate, report, and evaluate with model and other real object. For standard score of 40 or higher; use resources prescribed under the perceptual preferences that are strong.

15. **Kinesthetic Preferences**: Standard score of 60 or higher; provide opportunities for real and active experiences in planning and carrying out objectives; visits, projects, acting, and floor games are appropriate activities for such individuals. For standard score of 40 or higher; use resources prescribed under the preferences that are strong.

16. **Intake**: Standard score of 60 or higher; provide frequent opportunities for nutritious foods, drinks and snacks at individual's learning station. For standard score of 40 or higher; no special arrangements are needed.

17. **Evening/Morning**: Standard score of 60 or higher; permit scheduling of difficult tasks, assignments or subjects in early morning. Take advantage of the strong energy curve by allowing self scheduling of learning activities. For standard score of 40 or higher; permit scheduling of difficult assignments in the evening. Take advantage of the strong energy curve by allowing self scheduling later in the day.

18. **Functions Best in Late Morning**: Standard score of 60 or higher; permit scheduling of difficult assignments or subjects in the late morning. For standard score of 40 or higher; permit scheduling of difficult assignments in the strongest time segment of the individual's energy curve.

19. **Functions Best in Afternoon**: Standard score of 60 or higher; permit scheduling of difficult assignments or subjects in afternoon. For standard score of 40 or lower; permit scheduling of difficult assignments in the strongest time segment.

20. **Mobility**: Standard score of 60 or higher; provide frequent breaks, assignments that require movement to different locations, and schedules that permit mobility in the learning environment. For standard score of 40 or lower; provide stationary desk or learning station where most of the individual's responsibilities can be completed without requiring excessive movement.
21. **Parent Figure Motivated**: Standard score of 60 or higher; establish den or work area near teacher; praise often, send communications home (notes, individual's work). For standard score of 40 or lower; allow individual to study by him/herself. Do not require individual to work with parent.

22. **Teacher Motivated**: Standard score of 60 or higher; establish den or work area near teacher; praise often; incorporate reporting to teacher into the individual's prescription; include him or her in small group instructional techniques when teacher is involved. For Standard score of 40 or lower, allow individual to study with peers (if peer motivated) or by him/herself. Do not require the individual to work directly with the teacher too often.
Appendix F
Unmastered Sight Word Groups
<table>
<thead>
<tr>
<th>Week One Words:</th>
<th>Interest</th>
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<tbody>
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<tr>
<td></td>
<td>Garden</td>
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<tr>
<td></td>
<td>Done</td>
</tr>
<tr>
<td></td>
<td>Winter</td>
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<tr>
<td>Week Two Words:</td>
<td>Brought</td>
</tr>
<tr>
<td></td>
<td>Above</td>
</tr>
<tr>
<td></td>
<td>Since</td>
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<tr>
<td></td>
<td>State</td>
</tr>
<tr>
<td></td>
<td>Large</td>
</tr>
<tr>
<td>Week Three Words:</td>
<td>Suit</td>
</tr>
<tr>
<td></td>
<td>Word</td>
</tr>
<tr>
<td></td>
<td>Receive</td>
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<tr>
<td></td>
<td>Half</td>
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<tr>
<td></td>
<td>Enough</td>
</tr>
<tr>
<td>Week Four Words:</td>
<td>During</td>
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<tr>
<td></td>
<td>Hundred</td>
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<tr>
<td></td>
<td>Between</td>
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<tr>
<td></td>
<td>Answer</td>
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<td>Learn</td>
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<td>Held</td>
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</table>
Appendix G
Adaptations Made for Subject A
Based on LSI Preference Summary
Adaptations Made for Subject A
Based on LSI Preference Summary

Adaptations based on a Standard Score of below 40 on all elements measured. Some elements were unable to be controlled.

1. **Noise**: A silent area of learning was provided with as little talking as possible during the review of sight words.

2. **Light**: Subject preferred indirect light or soft lighting. This was accomplished by pulling down the shades in the windows.

3. **Temperature**: Subject preferred a cool area of learning. This was uncontrolled element, due to a set thermostat in the classroom.

4. **Design**: Preferred soft chairs or carpeted areas. This was accomplished by placing a small area carpet in the classroom.

5. **Unmotivated/Motivated**: Subject preferred short uncomplicated assignments with frequent supervision, and provided reinforcements. This was accomplished by having the subject only review five sight words per week, and placing the mastered words on a chart in the classroom.

6. **Persistent**: Subject preferred short term objectives and check logged assignments. Again the words were kept to five per week, and a progress chart was in the classroom.

7. **Responsible**: Subject preferred single objectives with few options and directions that were kept simple. This was accomplished by explaining to the subject that goal was to read the word as soon as they saw it. Positive reinforcement was given immediately following the response.

8. **Structure**: Subject preferred clearly stated objectives, with a time line provided for progress. This was accomplished by only giving the subject five words per week, for five weeks.

9. **Learning Alone/Peer Oriented Learner**: Subject preferred to learn alone. This was accomplished by allowing the subject to review each word group alone in a quiet area.

10. **Authority Figure Present**: Subject preferred isolated study. This was accomplished by leaving the subject alone while reviewing the word groups.
11. **Preferred Learning Through Several Ways:** Subject preferred to learn with peers or with the teacher. This was accomplished by reviewing the words alone, followed by discussion with peer and teacher.

12. **Auditory:** Subject preferred multisensory learning by ways of verbal prompts or tapes. This was accomplished by having the teacher say the words followed by the student repeating the words.

13. **Visual:** Subject preferred pictures or drawings as cues. This was accomplished by allowing the subject to draw pictures of the words to cue them into the meaning of the word.

14. **Tactile:** Subject preferred touchable cues that were readable. This was accomplished by allowing the subject to write the words in shaving cream and sand. After the subject wrote the word, they would then read the word aloud.

15. **Kinesthetic:** Subject preferred to learn through real/active life experiences. This was accomplished by writing sentences using real life experiences with the sight words.

16. **Intake:** Subject had no special preference to this element.

17. **Evening/Morning:** Subject preferred to learn in the evening. Unfortunately this was uncontrollable.

18. **Functions Best in the Morning:** This was uncontrollable due to the fact that the subject preferred learning in the evenings.

19. **Functions Best in Afternoon:** This was uncontrollable due to the fact that the subject preferred learning in the evening.

20. **Mobility:** Subject preferred a stationary work area without excessive movement. This was accomplished by allowing the subject to select where they would like to review the words (i.e., carpet or desk). Once the subject choose the area, the procedures for sight word recognition continued in this setting.

21. **Parent Motivated:** Subject preferred to learn without parents. This did not affect the subject because parents were not directly involved in the research.

22. **Teacher Motivated:** Subject preferred to learn with peers and only the teacher when reinforcement of a task was needed.
Appendix H
Adaptations Made for Subject B
Based on LSI Preference Summary
Adaptations Made for Subject B
Based on LSI Preference Summary

Most of the elements measured for Subject B were measured as unimportant to the subject’s preferred learning style.

1. **Noise:** Subject preferred a quiet area to learn. This was accomplished by keeping the classroom as quiet as possible.

2. **Light:** Subject had a standard score of 53, which indicated that the element of light was unimportant.

3. **Temperature:** The subject had a standard score of 51, indicating an unimportant preference to this element.

4. **Design:** The standard score for this element was 54, which indicated its unimportance.

5. **Unmotivated/Motivated:** The subject preferred short uncomplicated assignments with frequent supervision and provided reinforcement. This was accomplished by having the subject only review five sight words per week, and placing the mastered words on a chart in the classroom.

6. **Persistent:** The standard score of 49, indicated its unimportance to the subject’s learning style.

7. **Responsible:** The standard score of 42, indicated its unimportance to the subject’s learning style.

8. **Structure:** The standard score of 52, indicated the unimportance of this element to the subject’s learning style.

9. **Learning Alone/Peer Oriented:** The standard score of 42, indicated the unimportance of this element to the subject’s learning style.

10. **Auditory:** The standard score of 43, indicated the unimportance of this element to the subject’s learning style.

11. **Prefers Learning Through Several Ways:** The subject preferred to learn with peers or the teacher. This was accomplished by reviewing the words alone, followed by discussion with peer and teacher.
12. **Auditory**: The standard score of 57 which was close to a score of 60, so verbal prompts by the teacher was used.

13. **Visual**: The standard score of 56, indicated that picture cues might be useful to the subject. This was accomplished by allowing the subject to draw pictures of the word meanings on the note cards.

14. **Tactile**: The subject preferred touchable cues that were readable. This was accomplished by allowing the subject to write the words in shaving cream and sand. After the subject wrote the word, an auditory cue was used.

15. **Kinesthetic**: The subject had a standard score of 47, indicating that the element was unimportant to the subject's learning style.

16. **Intake**: The subject preferred frequent opportunities for food and snacks, however, this element was not matched due to the fact that snack time in the classroom was just before research was conducted.

17. **Evening/Morning**: The subject had a standard score of 42, indicating its unimportance.

18. **Functions Best in Late Morning**: The subject had a standard score of 50, indicating its unimportance.

19. **Functions Best in Afternoon**: The subject showed the preference of learning in the afternoon. This was accomplished as best it could by conducting research in late morning, just before 12 noon.

20. **Mobility**: The subject preferred a stationary work area without excessive movement. This was accomplished by allowing the subject to select where they would like to review the words (i.e., carpet or desk). Once the subject choose the area, the procedures for sight word recognition continued in this area.

21. **Parent Motivated**: The subject preferred to learn without parents. This did not affect the subject because parents were not directly involved in the research.

22. **Teacher Motivated**: The subject preferred to learn near the teacher with frequent praise given. This was accomplished by shorting the time the subject worked alone, allowing for one on one instruction with the teacher.
Appendix I
Maintenance Sentences for Subject A
1. My interest is dancing.
2. I like the government book.
3. My mom has pretty flowers in her garden.
4. It is very cold in the winter and it snows.
5. I brought a new pencil for school.
6. There is a shelf above my jacket.
7. We did not school today, since it snowed.
8. I live in the state of Texas.
9. I have done all my homework, may I go outside?
10. There is a large hole in the grass.
11. My father has a new suit.
12. I like to learn new words.
13. I will receive money from the tooth fairy.
14. I ate half the pizza last night.
15. I have enough money to buy a new toy.
16. The lights went out during the thunderstorm.
17. I counted a hundred dollars.
18. I ate lunch between music and art.
19. I know the right answer to the question.
20. The sand I sat on was course.
21. I was sitting against the wall, watching the movie.
22. On the side of the house, I lost my glasses.
23. I like to learn new things.
24. I held my baby brother today.
Appendix J
Maintenance Sentences for Subject B
Learning Styles 63

Maintenance Sentences for Subject B

1. My interest in soccer.
2. I like to learn about government.
3. My mom has a beautiful garden.
4. It is cold in the winter and sometimes snows.
5. I brought a new pencil for school.
6. There is a shelf in the classroom for my lunch box.
7. We did not have school today, since it snowed.
8. I live in the state of Texas.
9. I have done all my homework, may I go outside?
10. There is a large hole in the grass.
11. My father has a new suit.
12. I like to learn new words.
13. I will receive money for my tooth.
14. I ate half the pizza last night.
15. I have enough money to buy a new toy.
16. The lights went out during the thunderstorm.
17. I counted a hundred dollars in my bank.
18. I ate lunch between music and art.
19. I know the right answer to the question.
20. The sand I sat on was course.
21. I was sitting against the wall, watching the movie.
22. On the side of the house, I lost my glasses.
23. I like to learn new things.
24. I held the baby puppy today.
Figure 1: Multiple Probe for Subject A
Figure 2: Multiple Probe for Subject B

Percent Correct

Word Group One
Word Group Two
Word Group Three
Word Group Four
Word Group Five

Sessions
Biography of the Author

Andrea Elizabeth Wollett was born in California, and moved to Virginia Beach, Virginia when she was two years old. She was raised in Virginia Beach; in a loving environment, by both her parents. She was the youngest child in a family of three children. She attended Green Run Elementary School, where she was labeled with a learning disability. It was at that time when she knew she wanted to become a special education teacher herself. She went on to become an honor graduate from her high school, Salem. In the Fall of 1991, she began attending Longwood College in Farmville, Virginia. It was there that she became a member of Alpha Sigma Alpha Social Sorority. In the Fall of 1995, Andrea earned her Bachelors of Science Degree in Psychology, and she received her Masters of Science Degree in Special Education in May, 1996. She hopes to obtain a teaching position for the Fall of 1996, so that she can begin her teaching career. Andrea also hopes to continue her education, and receive her Ph. D. in Special Education in the future years.