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A STUDY TO DETERMINE THE EFFECTS OF NILD EDUCATIONAL
THERAPY ON STANDARDIZED TEST RESULTS
AND CLASSROOM PERFORMANCE

by
Deborah A. Dower

A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree in the Graduate Division
of Rowan University
May 1, 1997

Approved by _____
Professor

Date Approved 5/1/97

ABSTRACT

Deborah A. Dower

*A Study to Determine the Effects of NILD Educational
Therapy on Standardized Test Results
and Classroom Performance*

1997

Dr. S. Jay Kuder

Master of Arts Degree

The purpose of this study is to determine if the gains evidenced on standardized tests as a result of intensive intervention using the NILD educational therapy model are reflected in functional classroom performance. Twenty-two students who had been diagnosed as learning disabled and enrolled in the NILD educational therapy program participated in this study. Pre- and post-test measures on standardized tests were compared to determine progress of the students in the NILD program. Report cards were analyzed to determine progress in grade point averages in language and mathematics. In addition, information was gathered through initial test reports and anecdotal records in order to evaluate students' work habits prior to and during NILD educational therapy. Results of the study showed that, although students made improvements on standardized tests, grade point averages did not reflect this improvement. The students' work habits as measured by performance in the classroom; (i.e. consistency on homework and classwork, and ability to complete assignments) varied between subjects and from one

marking period to another. Improvement was noted, however, in the students who needed modifications in their instructional programs prior to NILD educational therapy. By the completion of the NILD program, none of the students were relying on program modifications.

MINI-ABSTRACT

Deborah A. Dower

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Dr. S. Jay Kuder

Master of Arts Degree

The purpose of this study is to determine if the gains evidenced on standardized tests as a result of intervention using the NILD educational therapy model are reflected in functional classroom performance. Results of the study revealed that grade averages did not reflect positive gains as seen on the students' standardized test scores. Students needing program modifications at the time of enrollment in the NILD program, however, were functioning in the classroom without modifications within an average of two years.

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Chapter One

Statement of the Problem

Introduction

Throughout the history of the field of learning disabilities, three major theoretical perspectives have been presented as methods of remediation for the learning disabled population. These three perspectives are the ability-deficit perspective, the skill-deficit perspective, and the inactive-learner perspective, also known as metacognition. Studies have been conducted to test the validity and effectiveness of each program. Research has shown that each method of intervention has strengths and weaknesses and that no one program in isolation is sufficient in addressing the multiple needs of learning disabled (LD) students. When viewing the strengths and weaknesses of each method of intervention, it is apparent that the weaknesses of one perspective is compensated for by the strength of another perspective. It appears, therefore, that a program which could integrate the strengths of each perspective would be the optimum program for learning disabled students.

The National Institute for Learning Disabilities (NILD) has been established to meet the specific needs of the learning disabled population through an individualized program which integrates aspects of all three perspectives. The NILD philosophy in working with learning disabled students is based upon stimulating areas which are deficient in

perceiving and processing information. Rather than learning compensatory techniques, students receive individual, intense educational therapy provided during two 80-minute therapy sessions. This therapeutic intervention approach is designed to improve academic performance through the integration of perceptual, cognitive, and metacognitive skills. Emphasis is placed on the stimulation of cognitive functioning through interactive language between students and educational therapists. The goal for the students enrolled in the program is independent functioning at grade level. To accomplish this goal, techniques have been designed to improve perception, cognition, and basic skills.

Purpose of the Study

The purpose of this study is to determine if the gains evidenced on standardized tests as a result of intensive intervention using the NILD educational therapy model are reflected in functional classroom performance.

Need for the Study

Although research investigating the NILD model showed aptitude and academic gains as measured by standardized test results, there has been a lack of data regarding concurrent classroom performance of students under investigation. Statistical and anecdotal data need to be gathered from classroom teachers and parents describing student progress which is attributable to the NILD educational therapy program.

Value of the Study

With the growing interest in learning disabilities, a significant amount of research has been conducted in order to investigate the effectiveness of intervention programs for learning disabled students. Research continues to show that most interventions for these students have yielded disappointing results. Recently, however, a study was conducted which revealed significant gains in academic achievement in reading, spelling, and arithmetic and in general, verbal and nonverbal cognitive functioning as reported on standardized test results after intervention using the NILD educational therapy model (Hopkins, 1996).

This study will provide further valuable data on the NILD program by determining the effectiveness of educational therapy in the overall classroom performance of students enrolled in the program. The underlying philosophy of NILD will be defined, providing the rationale behind the development of this program and reasons why it is believed to be effective.

Research Questions

In order to determine if gains made on standardized test results as a result of NILD educational therapy are also reflected in overall functional classroom performance the following Research Questions will be answered:

- Question 1: Did the students who participated in NILD educational therapy gain in standardized test results as measured by the *Gates-MacGinitie Reading Tests* and the *Wide Range Achievement Tests-Revised* (WRAT-R)?
- Question 2: Are the students achieving grade point averages commensurate with their ability as measured by the *Wechsler Intelligence Scale for Children-Revised* (WISC-R)?
- Question 3: What are characteristics of students' work habits following NILD educational therapy?
- Question 4: Are these students able to complete assignments independently at home and in school?
- Question 5: For students who required classroom modifications prior to NILD educational therapy intervention, has there been a decrease in the number or types of modifications needed after NILD educational therapy?

Definition of Terms

Learning Disabilities. Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities in individuals with average to above-average intelligence. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction (National Joint Committee on Learning Disabilities; Shaw, Cullen, McGuire, & Brinkerhoff, 1995).

Standardized tests. The standardized tests used in the research performed by Hopkins (1996) are the *Wide Range Achievement Test-Revised* (WRAT-R) and *Detroit Tests of Learning Aptitude-Second Edition* (DTLA-2). The standardized tests referred to in this project are the *Gates-MacGinitie Reading Tests* and *Wide Range Achievement Test-Revised* (WRAT-R).

Functional Classroom Performance. In this study classroom performance will be operationalized by grade point average as reported on report cards and work habits, rates of homework completion, and intensity of modification as described on anecdotal records.

Ability-deficit perspective. Theorists who hold to this perspective assert that the child with learning disabilities demonstrates a deficit in some psychological process which accounts for the lack of normal levels of school achievement. It is believed by these theorists that if the learning disorders are based on perceptual disorders then perceptual training is needed for academic success to be achieved (Bender, 1995).

Neuropsychology. Neuropsychology is a prominent branch of psychology concerned with the relationship between neurological function and academic learning.

Skill-deficit perspective. Advocates of this perspective recommend that educators

concentrate on the academic skills that the students need to learn rather than on the disabilities that impede their learning (Lerner, 1995). The purpose of such instruction is to improve the students' performance in basic skills.

Metacognition. Metacognition refers to what a person knows about his or her processes (conscious awareness) and the ability to control these processes by planning, choosing, and monitoring (Wiens, 1983).

Inactive-learner perspective. The inactive-learner perspective is designed to enable learning disabled students to use existing academic skills in a strategic fashion so that content information can be acquired, manipulated, stored, retrieved, and expressed (Deshler, Schumaker & Lenz, 1984).

Chapter Two

Review of Literature

Prior to the passage of Public Law 94-142 in 1975, there was virtually no way to count the number of students with disabilities in the nation. When PL 94-142 was introduced as federal law, the prevalence estimate was suggested to be one to three percent (Lerner, 1993). Today, with the nationwide count of the number of students in each category of disability, the child-count information indicates that the number of students identified as having learning disabilities has steadily increased. According to Gaddes (1994), the prevalence of learning disabilities is estimated to be 10% to 15%.

Under Public Law 94-142, the special education law known as IDEA, Individuals with Disabilities Education Act, schools are required to provide a continuum of alternative placements for students with disabilities. The delivery options for teaching students with learning disabilities include regular classes, resource room classes, special classes, special schools, and other types of placement as needed. With the variety of placement options for learning disabled students, it would be expected that the educational system is making gains in the education of the learning disabled (LD) population. However, according to Adelman (1994), evidence indicates that most interventions for learning disabilities have had only limited efficacy. Although an emphasis has been placed on defining learning disabilities, investigating differential

characteristics of students with LD, and diagnosing the presence of learning disabilities, much less attention has focused on interventions to effect better academic outcomes for students with learning disabilities and how assessment can be designed to improve the instructional programs and academic outcomes of the LD population (Fuchs, 1994).

In attempting to develop theories and instructional practices over the past several decades for the learning disabled population, three major theoretical perspectives have emerged. These three perspectives include the ability-deficit perspective (psychological processing), the skill-deficit perspective (direct instruction), and the inactive-learner perspective (metacognition) (Bender, 1995). Each perspective has offered instructional methods for students with learning disabilities, yet with each theory there remains a question as to its effectiveness.

In reviewing information presented through research, it is apparent that no one program in isolation is sufficient in addressing the multiple needs of students with learning disabilities. It appears, however, that a program that would integrate the strengths of each perspective would be the optimum program for learning disabled students.

Definition of Learning Disabilities

Before examining the three instructional perspectives, it is necessary to define the

term learning disability and to determine whether or not efforts to remediate such a disability are valid. The National Joint Committee on Learning Disabilities (NJCLD) (Shaw, Cullen, McGuire, Brinkerhoff, 1995) defines a learning disability as

... a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction... (p. 587)

According to this definition, a learning disability is presumed to be the result of a dysfunction within the central nervous system (CNS). Cruickshank (1994) maintains that learning and perception are neurological. The neuropsychological structure and intactness of the human organism are foundational to learning and adjustment. Since all learning originates with the brain, then it can be concluded that consequently, a disorder in learning can be caused by a disfunction in the CNS (Lerner, 1993). If such a dysfunction has occurred, is it possible to remediate the CNS to a degree at which an individual can perform the necessary psychological functions needed for learning and academic success?

Ability-deficit Perspective

The ability-deficit theorists assert that the individuals with learning disabilities demonstrate a deficit in one or more of the psychological processes which accounts for the lack of normal levels of school achievement. Psychological processes refer to innate prerequisite abilities such as memory, auditory and visual perception, oral language and

thinking. Psychological processes are information processing activities mediated by mental operations (Lerner, 1993; Wong, 1986). In correlation with the definition of learning disabilities presented by the NJCLD (Shaw et al., 1995), these theorists believe that the psychological processing deficits are due to a presumed malfunction in the central nervous system which affects the individual's psychological processes (Bender, 1995).

During the pioneering stages of the field of learning disabilities, professionals in the fields of education and medicine interested in LD emphasized various processing mechanisms underlying the dysfunction. It was believed that processing problems were considered to cause learning disabilities. Gaddes (1994) claims that research has revealed a close connection between learning disabilities and sensorimotor and perceptual deficits. Baker (1973) states that since perceptual processes are the child's means for obtaining and organizing information, they are essential to both the process and content of reading. More recently, Wong (1986) has acknowledged that psychological processes cannot be ignored if learning disabled students' difficulties in listening, speaking, reading, and writing are to be understood. Although research supports a language-oriented view of reading disabilities, Wong (1996) acknowledges that some difficulties in learning to read are complicated and intensified by visual perceptual problems, or by slow processing of visual information.

Information on brain function and the psychological processes used during the performance of academic skills has been gathered through research performed by Luria, Drake, Galaburda and Kemper, Duffy, and Galaburda and Eidelberg (Obrzut & Hynd, 1983). Luria (cited in Obrzut & Hynd) concluded from his studies on brain function that each area of the brain operates in conjunction with other areas of the brain to produce a response. Learning problems result from a dysfunction in any part of a system needed to perform a particular task. Based on Galaburda's research (Hynd, Marshall & Gonzalez, 1991), it was also hypothesized that any disruption of interrelated neurological systems involved in the process of reading degrades the ability of the individual to learn to read.

Werner (cited in Torgesen, 1979) strongly emphasized the necessity of understanding a child's poor achievement in terms of the psychological processes involved. In agreement with Werner, Torgesen believed that understanding deficit perceptual processes is essential in the development of remedial procedures that will address the intellectual problems of a child. It was believed by the ability-deficit theorists that if learning disorders are based on perceptual disorders then perceptual training is needed for academic success to be achieved. The ability-deficit theory of intervention focused on developing the processing functions that are weak through practice and training of deficit areas. The goal was to strengthen the weak process(es) in order to ameliorate the disabilities, thereby preparing the student for further learning (Lerner, 1993).

In their early years of working with LD children, Drs. Silver and Hagin (1965) focused on developing a child's strong perceptual areas. However, after discovering that a significantly high prevalence of perceptual difficulties persisted 10 to 12 years after the educational remediation, their program shifted to strengthening the weaker perceptual abilities. A 1972 report of Silver and Hagin's work of remedying perceptual deficits with channel-specific perceptual remediation revealed positive results from a study involving first grades with poor oral reading ability (Silver & Hagin, 1972).

Researchers who viewed research literature on tests used to measure psychological processes (Lerner, 1985) concluded that measures of ability lack the necessary reliability and validity to be used to identify students' strengths and weaknesses, and to make consequent decisions. Similarly, others concluded that the evidence for dysfunction in children with learning disabilities was inferential (Hammill, 1993). In contrast, however, neuropsychologists contend that research in neuropsychology has enabled them to develop valid measures of brain function related to academic achievement which allows them to develop realistic remedial educational programs for learning disabled students based on the assessment results (Fennell, 1995; Gaddes, 1994; Reynolds, 1982; Rourke, Fisk, & Strang, 1986). Through the study of the correlation of brain function and assessment scores, neuropsychologists can provide precise information on processing deficits of LD students located in visual, auditory, cognitive and motor areas of the brain.

Luria, Benton, and Reitan are cited by Gaddes (1994) as having shown empirical validity in neuropsychological tests. Two neuropsychological test batteries used in the assessment of learning disabled children are the *Reitan-Indiana Neuropsychological Battery for Children* and the *Luria-Nebraska Neuropsychological Battery for Children* (Lerner, 1993; Obrzut & Hynd, 1983). In addition, two tests cited by Bigler (1992) as reliable neuropsychological measures are the *Wechsler Adult Intelligence Scale-Revised* (WAIS-R) and the *Wide Range Achievement Test-Revised* (WRAT-R). According to Bender (1995), intelligence tests such as the WAIS-R and the WISC-III (*Wechsler Intelligence for Children-Third Edition*) can be used to document deficits in the psychological processes. Scores from various subtests within these tests may indicate deficits in these areas.

Although perceptual training has been shown effective in some cases, Wong (1992) notes a major flaw in the process training methods of Kirk and Frostig. Their training was taken out of context of the very academic skills that it was to benefit, i.e. reading. Research points to the need to directly teach basic component processes in reading if one wants to improve reading achievement in children with learning disabilities. Gaddes (1994) asserts that it is not just the recognition of neurological data that is useful, but also its application in deciding on an appropriate treatment program. Diagnostic understanding of the state of the child's brain and nervous system, coupled with skilled remedial teaching, has facilitated in numerous occasions, marked cognitive improvement.

Skill-deficit Perspective

As an alternative to the ability-deficit perspective, the skill-deficit (also referred to as direct instruction or basic skill remediation) approach was introduced. Advocates of this perspective recommend that educators concentrate on the academic skills that the students need to learn rather than on the disabilities that impede their learning (Lerner, 1985).

The purpose of basic skills instruction is to improve the student's performance in basic skill competencies. Remediation of skill deficits in these areas is seen as prerequisite to content acquisition. (Deshler, Schumaker, & Lenz, 1984). Students, therefore, cannot benefit from books used in the content classes until they have mastered certain basic skills in areas such as word attack and arithmetic computation.

DISTAR (Direct Instructional System of Teaching Arithmetic and Reading) is an individualized remediation program for language, reading and arithmetic (Clark & Uhry, 1995). It is a very structured program providing drill and repetition for the students. All instruction is guided by a script provided for the teachers. The *Corrective Reading Program, Decoding* and the *Corrective Reading Program, Comprehension* are based on the DISTAR concepts. These programs are directed toward developing primary and intermediate skills of students in grades four through twelve.

In a review of research on direct instruction, it is concluded that, generally, direct instruction is very effective for promoting basic skill development among students (Gersten, 1985). When teachers set and articulate learning goals, offer highly structured lessons, ask questions which are specific and narrow in scope, and provide correct feedback, achievement results are superior to those obtained with other less direct methods.

Deshler (1984) cites three factors as important components of basic skills instruction. These factors include: "use of direct instructional procedures that emphasize mastery of basic skills, to a prespecified level, the structuring of instructional procedures to insure intensity of instruction, and the use of reinforcement strategies to enhance the motivation of the LD students" (p. 171).

Seidenberg (1988), however, emphasizes the need for instructional interventions for LD adolescents that go beyond the traditional tutorial approach for the remediation of basic skills. Learning disabled students reach a plateau in basic skill development (i.e. reading, writing, and mathematics) in the secondary grades (Deshler et al., 1984), therefore, remediation of skills at this level for LD students may not be effective. It was noted by Deshler et al. (1984) that students in a program emphasizing basic skill remediation made gains of only .2 year in both math and reading as a result of a year of instruction in the resource room program. Other potential drawbacks to the basic skill

approach noted included restriction in the range of skills being taught and student ignorance to the relevance of skills they are learning (i.e. phonetic sounds) to the tasks they are required to complete in class. Although basic skills in reading and mathematics must be taught, it is important that educators recognize that a large number of secondary LD students require additional instruction in skimming, taking notes, and organizing data. The students need to see a relationship between what they are receiving in basic skills instruction to what is required of them in their regular classroom setting.

After examining both the ability-deficit and skill-deficit perspectives, it seems evident that neither program in isolation is ideal for the learning disabled student. The ability-deficit approach concerns itself with the psychological deficits of the student while avoiding the emphasis on the basic skills that is critical for the learning disabled individual. The skill-deficit approach takes the reverse position. Advocates of these perspectives have acknowledged that it is difficult to justify the concept of learning disabilities entirely on either perspective (Gaddes, 1994; Lerner, 1993; Silver & Hagin, 1972; Ysseldyke, 1982).

Inactive-learner Perspective

Seidenberg (1988) states that the research that has identified the specific learning needs of the LD adolescent, together with the research illustrating the relationship between metacognitive activities (awareness of one's systematic thinking strategies that

are needed for learning) and academic learning, provides a conceptual base for the design of instruction that focuses on both the content that must be learned and on the cognitive strategies that promote efficient learning. It is from this base that the inactive-learner perspective was developed.

According to Seidenberg (1988), learning disabled students do not spontaneously access or use task-specific cognitive strategies when they are needed. The inactive-learner perspective, therefore, is not designed to teach specific content, but rather to enable learning disabled students to use their existing academic skills in a strategic fashion so that content information can be acquired, manipulated, stored, retrieved, and expressed (Deshler et al., 1984).

Torgesen (1977) has pointed out that poor readers lack an intent to learn because of repeated failures and frustrations. As a result, they do not actively participate in their own learning. Believing that they are unable to learn, the students do not know when, where, or how to remember. This passivity often interferes with, and even negates purposeful thinking (Wiens, 1983). By teaching metacognitive skills, it is possible that one can provide motivation to learning disabled students. Not having developed thinking strategies on their own, the best thing to be done is to provide something educationally meaningful and useful for the students.

Feuerstein (1980) asserts that evidence exists to support the premise that learning disabled students can be changed from passive, dependent performers to active, engaged learners. Training studies (Seidenberg 1988) have demonstrated that LD secondary students can be successfully taught task-specific cognitive strategies which they are able to apply to academic materials used in regular classroom settings and, as a result, enhance academic achievement.

Seidenberg (1988) sites specific features of successful instructional intervention.

These features include:

instructing the learner in appropriate strategies to facilitate successful task completion, explicitly modeling the use of the strategies, providing guided practice and feedback regarding the application of the strategies, and providing instruction for generalized use of the strategies (p. 64).

Lerner (1985) lists several examples of cognitive learning strategies that teachers can use to help students learn. These strategies include self-questioning, rehearsal and review, cognitive behavior modification, determining the main idea and supporting facts in material, developing memory strategies, and making inferences .

Deshler et al. (1984) notes that one limitation of this strategy approach is that in order to successfully benefit from instruction in task-specific strategies, most students need to have acquired some basic skills. Teaching students to take a cognitive strategy approach to learning may be appropriate for higher order tasks (i.e. reading comprehension) but

have little applicability for more basic skills (i.e. decoding words).

As research has shown, each of the theoretical perspectives for remediating learning disabilities has areas of strengths and weaknesses. The evidence presented shows that no one approach in isolation is sufficient in impacting all the facets of educating learning disabled students. It appears, however, that the weakness in one perspective is compensated for by the strength of another perspective. Based on this information, it is concluded that a program that could incorporate the strengths of each perspective would be the optimum program for learning disabled students.

The National Institute for Learning Disabilities (NILD)

The National Institute for Learning Disabilities (NILD) has been established to meet the specific needs of the learning disabled population through an individualized program which integrates aspects of all three theoretical perspectives. The NILD philosophy in working with learning disabled students is based upon stimulating areas which are deficient in perceiving and processing information. To accomplish this goal, techniques have been designed to improve perception, cognition and basic skills. Cognitive functioning is stimulated through the use of interactive language and mediated learning involving the students and educational therapists (Mutzabangh, 1988; Hopkins, 1996).

In the late 1960s, Deborah Zimmerman, an educator with a medical background,

began working with Drs. Silver and Hagin at Bellevue Medical Center in New York City to classify students with learning disabilities (Hopkins, 1996). Specific techniques were being developed to stimulate cognitive functioning and to address hemispheric specialization for language. Silver and Hagin's approach emphasized simulating perceptual deficits.

As Silver and Hagin worked with children in the Out-Patient Clinic at Bellevue Psychiatric Hospital for emotional and/or behavior problems, it was found that approximately 80% of those referred were also severely retarded in reading. In an effort to provide intervention for these students, a tutoring program was initiated at the Bellevue Hospital Mental Hygiene Clinic. At that time, concentration was placed on remedial reading techniques which emphasized word attack, comprehension, and study skills as a means of intervention. While improvement was noted in reading, the gains were not reflective of appropriate age and grade levels, or intellect of the children (Mutzabaugh, 1988).

An experiment which followed tested for the effects of perceptual stimulation in the learning of reading and spelling. The results indicated a correlation between increased perceptual skills and the improvement in oral reading and reading comprehension. It was concluded that perceptual disorders do in part influence reading ability. Silver and Hagin noted that perceptual stimulation was not intended to be a method for teaching reading.

They preferred to direct perceptual training toward deficit areas in perception, which they believed should be strengthened in order for a LD child to learn how to read. (Mutzabaugh, 1988; Silver & Hagin, 1972).

Zimmerman further developed the techniques used by Silver and Hagin and began training other educators in the administration of these techniques. Grace Mutzabaugh organized and lead the first group of educators under the instruction of Zimmerman. With the collaboration of Zimmerman and Mutzabaugh, NILD (then known as the Norfolk Institute for Learning Disabilities) became an avenue for training educators in providing effective intervention for learning disabled students. Today, NILD is known as the National Institute for Learning Disabilities (NILD) and has programs established within hundreds of private, parochial schools through out the United States and worldwide (Hopkins, 1996).

In and effort to measure the effectiveness of the NILD educational program, Hopkins (1996) investigated the effects of the five core instructional techniques designed and developed by NILD on achievement and aptitude as measured by standardized tests. Based on the results from standardized tests, it was concluded that intensive intervention using the NILD educational model made significant improvement in academic achievement in reading, spelling, and arithmetic and in general, verbal and nonverbal cognitive functioning. This study has shown that the NILD educational therapy method

of integrating techniques which target perception, cognition and basic skills is an effective means of intervention for learning disabled students.

Chapter Three

Methodology

Subjects of the Study

The sample of students included in this study were drawn from two parochial schools, one in Tennessee and the other in Pennsylvania. Permission was obtained to select 22 students classified as LD who were enrolled in these schools. Children were selected on the basis that parents gave permission for the children to participate in the study. Nine of the children had previously been subjects in a study by Hopkins (1996) which evaluated the effectiveness of NILD educational therapy.

The sample of students used in this study had been diagnosed with learning disabilities. All the students were enrolled in the NILD educational therapy program in their school with the enrollment period ranging from two to eight years. At the time of initial enrollment in the NILD program, the students ranged in age from 7.5 to 15.9, and grade levels ranged between first grade and ninth grade. Grade level distribution of the students (N=22) reveals ten students enrolled at grades one through three, eleven students enrolled at grades four through eight, and one student enrolled at grades nine through twelve. All students were age appropriate for their grade placement.

Students included in this study were diagnosed as having a learning disability by a licensed psychologist and a certified educational therapist. The assessment process consisted of the administration of a comprehensive battery of achievement and psychological tests. Classification of each student was made in agreement with the federal definition of learning disabilities. This definition states that a severe discrepancy exists between the students' potential for learning and level of achievement in one or more of the following areas: (a) oral expression, (b) listening comprehension, (c) written expression, (d) basic reading skills, (e) reading comprehension, (f) mathematics calculation, and (g) mathematics reasoning (Hopkins, 1996; Lerner 1993).

Treatment

Students enrolled in NILD educational therapy received the treatment twice a week during two 80-minute sessions over a period of two to eight years depending on the severity of the students' deficits. The therapy program for each student is designed according to the individual deficits of the student; however, five core techniques remained consistent in each student's program. These five core techniques are Rhythmic Writing, *Blue Book*, Buzzer, Dictation and Copy, and Mental Math (NILD, 1993).

Rhythmic Writing is a technique which requires the student to perform intermodal tasks. During the technique, the students must trace a series of three large figure eights, one at a time, on the chalkboard while verbalizing the direction in which their hand is

moving. While tracing the eight, the students must respond to the command, "change", by changing the direction of their hand and continuing to say the direction. In addition, the students must answer a series of mental math calculations presented by the educational therapist. This requires the processing of math-related vocabulary (i.e. sum, difference, product, quotient, etc.) and the ability to perform mental math calculations (NILD, 1993). Following the tracing of the eights, the student must reproduce a series of motifs from one of six rhythmic writing pages which correspond to the letters of the alphabet. The students must write the motifs while integrating the correct auditory rhythmic count with the motif. Students are encouraged to develop visual memory for the motifs rather than relying on the motif card (Hopkins, 1996).

The *Blue Book* technique consists of a small book of phonemes and related key words designed to stimulate sound/symbol relationships. The students are required to learn the sound presented on each page, the letters associated with the phoneme, and the corresponding key words. Opportunities to apply the *Blue Book* are provided throughout the therapy sessions as the students engage in activities which require encoding and decoding skills (Hopkins, 1996).

The Buzzer technique has been designed primarily to strengthen auditory sequential memory skills through the use of a buzzing device and the Morse Code. This technique requires that the students be able to identify the letters of the alphabet that correspond

with the pattern of dots and dashes used on the Morse Code card provided for the student. Using the buzzing device and Morse Code, the educational therapist presents a given word to the students, one letter at a time, and in sequence until the students are able to identify the word. After the sequence of letters in the word has been identified, the students are required to pronounce and define the word, name the part of speech, use the word in a detailed sentence, and analyze the word by providing the *Blue Book* key word for each phoneme (Hopkins, 1996).

During the initial implementation of Dictation and Copy, the educational therapist leads the students in a discussion concerning paragraph function and design. From there, emphasis moves to the dictation of sentences from a chosen paragraph. After the first sentence of a given paragraph has been read to the students, they are asked to paraphrase the sentence, answer questions and define words relative to the sentence, and to make predictions as to the contents of the paragraph. Following the discussion of the first sentence, the sentence is reread. The student must then repeat the sentence verbatim and write it. The students then read what they have written to the educational therapist in order to determine if correct word order has been achieved; if not, the educational therapist rereads the sentence until it is written correctly. The students then proofread the sentence for spelling and punctuation errors. Once all corrections have been made, another sentence is dictated to the students. The students are instructed to proofread the second sentence and to copy the remainder of the paragraph at home. When the students

return for the next therapy session, they are expected to be able to summarize the main points in the paragraph (Hopkins, 1996).

The Mental Math technique consists of ten minutes of varied math activities; i.e. problems involving time, measurement, place value, money, percentages, fractions, word problems, etc. Educational therapists focus on the cognitive process used in determining an answer rather than the merely accepting a given product. Students are asked to verbalize their thoughts as they process an answer and are frequently asked to defend their answer to a problem. Metacognition is developed as educational therapists work with the students to devise strategies that will assist them in problem solving (NILD, 1993).

Each of the five core techniques emphasizes deficit stimulation, mediated learning, and interactive language between the educational therapist and therapy student (Hopkins, 1996). Annual objectives are established for each technique. A list of these objectives is included in the Appendix.

Instrumentation

Standardized test results measured in this study were obtained by using pre- and post measures on the *Wide Range Achievement Test-Revised* and the *Gates-MacGinitie Reading Tests*. In determining the transfer of progress made on standardized tests into the

regular education classroom, report cards were analyzed in order to determine progress in student grade point averages in language arts and mathematics. Language arts averages include grades from subjects such as reading, spelling, general language arts, and English. Mathematics averages include grades from general math, algebra, and geometry. Grade averages achieved at the time the students completed the NILD program were compared to the students' most recent IQ score in an effort to determine if the students' achievement was commensurate with their ability. For students attending the Pennsylvania school, information was gathered through initial test reports and anecdotal records in order to provide an evaluation of work habits prior to and during NILD educational therapy (i.e. consistency on homework and classwork and ability to complete assignments independently at home and in school) and types of modifications needed in the students' instructional program within the regular classroom.

Research Questions

It has been hypothesized that the positive gains on standardized tests as a result of NILD instructional techniques will be reflected in student performance in the classroom. Therefore, student performance in the following areas will be assessed:

1. Improved performance on tests, class assignments and report cards
2. Achievement as measured by grade point average which is commensurate with potential measured by the *Weschler Intelligence Scale for Children-Revised*
3. Increased rate of completion on assignments independently at home and in school

4. Decrease in the number of modifications needed in the students' instructional program

In order to empirically respond to the above concerns, the following research questions will be answered:

- Question 1: Did the students who participated in NILD educational therapy gain in standardized test results as measured by the *Gates-MacGinitie Reading Tests* and the *Wide Range Achievement Tests-Revised* (WRAT-R)?
- Question 2: Are the students achieving grade point averages commensurate with their ability as measured by the *Wechsler Intelligence Scale for Children-Revised* (WISC-R)?
- Question 3: What are the characteristics of students' work habits following NILD educational therapy?
- Question 4: Are these students able to complete assignments independently at home and in school?
- Question 5: For students who required classroom modifications prior to NILD educational therapy intervention, has there been a decrease in the number or types of modifications needed after NILD educational therapy?

Analysis and Treatment of the Data

The results of this study are organized in accord with specific outcomes as measured

by (1) standardized test results, (2) report card grades, and (3) anecdotal records. The progress made by students who received NILD educational therapy is measured by a comparison of pre- and post-test scores on standardized tests and by comparison of grade point averages at the time of enrollment in the NILD program and at the student completed NILD educational therapy. In addition, anecdotal records are evaluated in order to determine improvement in overall functional classroom performance.

Chapter Four

Analysis and Interpretation of the Data

The purpose of this study is to determine if the progress made by students who received NILD educational therapy is measurable not only by standardized test results, but also by functional classroom performance. A previous study showed significant gains as measured by standardized test results in reading, spelling and arithmetic achievement as well as gains in verbal and non-verbal cognitive functioning (Hopkins, 1996). This study examined the effects of NILD educational therapy within four areas of student performance including (1) performance on standardized test results, (2) performance on tests, class assignments and report cards, (3) ability to complete assignments independently at home and in school, and (4) a decrease in the number of modifications needed in the students' instructional program. The results of this study are organized in accord with specific outcomes as measured by (1) standardized test results, (2) report card grades and (3) anecdotal records.

Results

Five research questions are answered in this study. The questions are discussed sequentially and the data related to these questions are contained in tables and discussion.

Question 1: Did the students who participated in NILD educational therapy gain in standardized test results as measured by the *Gates-MacGinitie Reading Tests*

and the *Wide Range Achievement Tests-Revised* (WRAT-R)

- Question 2: Are the students achieving grade point averages commensurate with their ability as measured by the *Wechsler Intelligence Scale for Children-Revised* (WISC-R)?
- Question 3: What are characteristics of students' work habits following NILD educational therapy?
- Question 4: Are these students able to complete assignments independently at home and in school?
- Question 5: For students who required classroom modifications prior to NILD educational therapy intervention, has there been a decrease in the number or types of modifications needed after NILD educational therapy?

Analysis of Standardized Test Results

Table 1 contains the pre- and post-test vocabulary and comprehension scores from the *Gates-MacGinitie Reading Tests*. An inspection of Table 1 shows that in terms of vocabulary achievement, the average student improved 17%tile points. Within this group, six students regressed, six students made gains of 25%tile points or more and eight students made gains ranging from five to twenty-four percentile points. The time interval between pre- and post-test scores ranged from two to eight years, with the specific interval for each child specified in Table 1.

Table 1

Gates-MacGinitie Reading Tests: Pre-Treatment and Post-Treatment Test Scores

Student	Pre-Vocabulary %tile Rank	Post-Vocabulary %tile Rank	Time Interval In Years	Gain	Pre-Comprehension %tile Rank	Post-Comprehension %tile Rank	Gain
1	32	93	6	+61	69	86	+17
2	39	35	4	- 4	32	30	- 2
3	85	84	2	- 1	76	87	+11
4	20	63	3	+43	5	13	+ 8
5	18	42	4	+24	18	53	+35
6	30	25	5	- 5	30	24	- 6
7		56	6			80	
8	48	44	5	- 4	24	16	- 8
9		91	4			51	
10	22	46	4	+24	13	56	+43
11	14	30	3	+16	14	61	+47
12	95	87	5	- 8	5	91	+86
13	15	59	5	+44	41	78	+37
14	38	48	3	+10	49	51	+ 2
15		16	8			44	
16	61	99	3	+38	79	82	+ 3
17	54	84	3	+30	21	66	+45
18	78	98	4	+20	70	98	+28
19	41	46	3	+ 5	24	30	+ 6
20	63	41	3	-22	35	60	+25
21	68	75	4	+ 7	80	70	-10
22	30	84	4	+54	4	37	+33
Average Gain				+17			+21

Note. Complete data not available for students 7, 9, 15

Also contained in Table 1 are the results of the comprehension subtest of the *Gates-MacGinitie Reading Tests*. An inspection of Table 1 shows that in terms of

comprehension achievement, the average student improved 21%tile points. Within this group, four students regressed, nine students made gains of 25%tile points or more and six students made gains ranging from two to seventeen percentile points.

Further inspection of Table 1 shows that two students, while showing post-test gains in comprehension, regressed in vocabulary and one student, while showing gains in vocabulary, regressed in comprehension. These kinds of idiosyncratic gains and losses are difficult to interpret, but may be related to the individual's learning disability.

Table 2 contains the pre- and post-test reading (word identification), spelling and math scores from the WRAT-R. An inspection of Table 2 shows that in terms of reading achievement, the average student improved 23%tile points. Within this group, two students regressed, six students made gains of 25%tile points or more and fourteen students made gains ranging from five to twenty-two percentile points. The time interval between pre- and post-test scores ranged from two to eight years. The specific interval for each student is specified in Table 1.

Also contained in Table 2 are the results of the spelling subtest of the WRAT-R. An inspection of Table 2 shows that in terms of spelling achievement, the average student improved 21%tile points. Within this group, two students regressed, ten students made gains of 25%tile points or more, eight students made gains ranging from 3.1 to 20

Table 2

Wide Range Achievement Test: Pre-Treatment and Post-Treatment Test Scores

Student	Pre-Reading	Post-Reading	Gain	Pre-Spelling	Post-Spelling	Gain	Pre-Math	Post-Math	Gain
1	16	58	+42	3	14	+11	10	34	+24
2	19	39	+20	14	30	+16	14	47	+33
3	63	50	-13	10	45	+35	14	77	+63
4	12	34	+22	2	30	+28	50	39	-11
5	23	37	+14	12	39	+27	16	45	+29
6	7	19	+12	9	9	+ 0	5	27	+22
7	4	47	+46.6	9	4	+ 3.1	.09	3	+2.91
8	27	34	+ 7	5	18	+13	1	50	+49
9	8	70	+62	6	61	+55	19	63	+44
10	12	68	+56	9	55	+54.1	19	53	+34
11	1	16	+15	5	19	+14	21	42	+21
12	66	81	+15	61	81	+20	27	39	+12
13	4	19	+15	16	16	+ 0	30	37	+ 7
14	8	30	+22	5	39	+34	13	37	+24
15	7	27	+20	14	25	+11	10	13	+ 3
16	66	87	+21	27	63	+36	4	37	+33
17	8	13	+ 5	12	39	+27	10	45	+35
18	25	82	+57	19	68	+49	58	82	+24
19	3	9	+ 6	14	8	- 6	14	45	+31
20	45	66	+21	45	79	+34	37	61	+24
21	92	90	- 2	86	82	- 4	92	61	-31
22	6	55	+49	2	8	+ 6	1	39	+38
Average Gain			+23			+21			+23

percentile points and two students remained the same.

Finally, Table 2 contains the results of the math subtest of the WRAT-R. Table 2 shows that in terms of math achievement, the average student improved 23%tile points.

Within this group, two students regressed, ten students made gains of 25%tile points or more, ten students made gains ranging from 2.91 to 24 percentile points.

Further inspection of Table 2 shows that one student regressed in reading, spelling and math. Two students, while showing post-test gains in reading and math, remained at the same level in spelling. One student regressed in reading, but made gains in spelling and math, one student regressed in spelling, but made gains in reading and math, and one student regressed in math but improved in reading and spelling. These gains and losses are not easily explained, but may be a result of the individual's specific learning disability.

Report Card Grades

Overall grade averages in language arts and mathematics as evidenced by report card grades did not reflect the same degree of progress as seen in the standardized test scores. A summary of the students' scores reveals three broad categories in which the grade averages fell: an increase in subject averages, a decrease in subject averages, and equivalent grade averages from enrollment in to the completion of the NILD educational therapy program.

Analysis of the language arts grade point averages reveals that six students made gains, fourteen students regressed, and two students stayed the same. The average

Table 3

Language Arts Grade Point Averages

Student	Grade Average First Year	Grade Average Final Year	Gain + or -
1	3.0	2.5	-0.5
2	2.7	2.7	+0.0
3	2.5	3.5	+1.0
4	3.0	2.0	-1.0
5	3.0	2.7	-0.3
6	3.5	2.0	-0.5
7	3.5	3.0	-0.5
8	2.0	1.7	-0.3
9	3.0	3.5	+0.5
10	2.4	2.9	+0.5
11	2.9	3.2	+0.3
12	3.4	2.7	-0.7
13	3.7	2.5	-1.2
14	3.4	2.9	-0.5
15	3.3	2.0	-1.3
16	3.0	3.7	+0.7
17	2.0	3.0	+1.0
18	3.5	3.5	+0.0
19	3.7	2.7	-1.0
20	3.5	3.0	-0.5
21	3.0	2.0	-1.0
22	3.5	2.0	-1.5
Average Gain			-0.4

regression in language arts averages was -.4. A comparison of the students' language arts averages is shown in Table 3.

Analysis of the mathematics grade point averages reveals that eight students made gains, six students regressed, and eight students remained at the same level. The average regression in the mathematics averages was -.1. Table 4 provides a comparison

Table 4

Mathematics Grade Point Averages

Student	Grade Average First Year	Grade Average Final Year	Gain + or -
1	3.0	1.7	-1.3
2	2.7	3.0	+0.3
3	2.5	2.7	+0.2
4	2.5	3.0	+0.5
5	2.5	2.5	+0.0
6	3.0	2.0	-1.0
7	3.0	2.0	-1.0
8	2.7	2.5	-0.2
9	3.5	4.0	+0.5
10	2.7	2.7	+0.0
11	2.7	3.0	+0.3
12	3.4	3.0	-0.4
13	3.7	2.0	-1.7
14	3.7	3.7	+0.0
15	0.8	2.0	+1.2
16	3.0	3.0	+0.0
17	3.0	3.0	+0.0
18	2.7	3.0	+0.3
19	3.5	3.5	+0.0
20	2.5	2.5	+0.0
21	2.5	2.7	+0.2
22	3.0	3.0	+0.0
Average Gain			-0.1

of the students' mathematics averages.

In order to determine if the students' achievement at the completion of NILD educational therapy was commensurate with their ability, final grade averages were

compared to the students' most recent IQ score as measured by the *Weschler Intelligence Scale for Children-Revised*. IQ scores fell into three categories; superior, high average and average. Language arts averages for each of the ability levels were as follows: students (n=5) who scored in the superior range on the WISC-R attained a final grade point average (GPA) of 2.9; students (n=5) who scored in the high average range on the WISC-R achieved a GPA of 2.7; and students (n=12) who scored in the average range attained a GPA of 2.6. Mathematics averages for each of the ability levels were as follows: students (n=5) who scored in the superior range on the WISC-R attained a grade point average (GPA) of 2.5; students (n=5) who scored in the high average range on the WISC-R achieved a GPA of 3.1; and students (n=12) who scored in the average range attained a GPA of 2.6. These results show that in terms of the language arts GPA, students of average ability appeared to be achieving at a level commensurate with their ability. In mathematic ability, students who were in both the high average and average ranges exceeded the superior students in terms of GPA. Further analysis of the students' GPAs show that the average students were achieving at a level commensurate with their ability and 60% of the high average students were achieving at a level commensurate with their ability.

Anecdotal Records

Records of fifteen students from report cards and progress reports (direct access to records of the remaining seven students used in this study was not possible)

were examined in order to evaluate their ability to complete assignments independently at home and in school and to determine changes that took place in the number of modifications needed in their instructional program.

Evaluating the students' ability to complete assignments independently at home and in school was difficult due to limited anecdotal records related to this specific area of performance. Accumulation of data did not show a consistent progression of improvement or lack of improvement in this area. The students' work habits in language arts and mathematics often varied between subjects and from marking period to marking period or from year to year. Comments received by seven of the fifteen students (47%) reflected inconsistent work habits, required work not submitted, required work submitted late, and/or improvement needed in preparation for tests. One of the seven students showed a consistent problem with submitting required work on time once he had reached the junior high grade levels (6-8). Six students (40%) received comments indicating progress in academic performance, progress in becoming more independent and confident in class work, demonstrating extra effort, and demonstrating a sense of responsibility. Records of two (13%) students lacked comments concerning specific work habits.

The greatest amount of improvement was seen in the students who needed modifications in their instructional program. Of the fifteen students in the study, nine (60%) were deemed not to need any modifications in the classroom. Six students (40%),

enrolled at the elementary level, were noted as having some form of academic assistance or modifications made in their classwork. Four students were below grade level in both reading and mathematics. Of those four students, two were enrolled in the resource room where they were able to receive direct instruction in their deficit area. No indication was given as to resource room instruction for the other two students, although classroom modifications were noted. In addition, basic skills instruction in language arts and mathematics was provided through resource room instruction for two students who were functioning at grade level but required academic assistance. Table 5 provides a summary of the students receiving program modifications. Modifications noted for these six students consisted of use of below-level text for reading and mathematics, reduction in the number of spelling words, and fewer problems given on math tests. The data showed that these students, with the exception of one who received resource room instruction again at a later date, were working at grade level and without modifications within an average of two years. It was noted, however, that math and language arts grades fell below a 2.0 average on several occasions after grade five. Only one-third of these students were able to consistently maintain a 2.0 or higher average in math and language arts.

Table 5

Students Receiving Modifications

Resource Room with Direct Instruction	Classroom Modifications	No Modifications
4	4	9

Chapter Five

Summary and Conclusions

Summary

The National Institute for Learning Disabilities (NILD) has been established to help children who have experienced frustration and/or failure due to learning difficulties (Mutzabaugh, 1988). Educational therapists trained in NILD techniques work with learning disabled students on an individual basis to supplement the teaching in the regular classroom. NILD techniques are designed to stimulate areas which are deficient in perceiving and processing information through the integration of perceptual, cognitive, and metacognitive skills. The goal for students enrolled in the NILD program is independent functioning at grade level.

A recent study involving the NILD program revealed significant gains in academic achievement in reading, spelling, and arithmetic and in general, verbal and non-verbal cognitive functioning as reported on standardized test results after intensive intervention using the NILD educational model (Hopkins, 1996). As a follow-up to Hopkins, the purpose of this study was to answer the general question, "Are the gains evidenced on standardized tests as a result of intensive intervention using the NILD educational model reflected in classroom performance?". It was hypothesized that student progress in the classroom would be reflective of positive gains on standardized tests as evidenced by

(1) performance on tests, class assignments, and report cards, (2) ability to complete assignments independently at home and in school, and (3) a decrease in the number of modifications needed in the students' instructional programs.

Conclusion

This research project revealed that the students' grade averages in language arts and mathematics did not reveal the same positive gains as was seen on the students' standardized test scores. The students' language arts grades from the time of enrollment in the NILD program to completion of the program fell an average 0.4 points from 3.1 to 2.7. Math grades attained by the group dropped an average 0.1 points from 2.8 to 2.7.

The students' work habits as measured by performance in the classroom, consistency on homework and classwork, and ability to complete assignments both home and in school varied between subjects and from one marking period to another. Progress was seen in this area for 40% of the students, while 47% showed difficulty with consistent work habits and handing in required work on time.

Improvement was noted in the students who needed modifications in their instructional program. Six of the fifteen students evaluated needed modifications in their instructional program at the time of enrollment in educational therapy. By completion of the program, none of the students in the research sample were relying on program

modifications. Four students, one who began with a modified program, achieved "Honors" or "High Honors" standing for all or part of at least one school year during enrollment in the NILD program.

Discussion

Several factors must be taken into consideration when examining the regression in language arts and mathematics grade averages. First, six of the students' beginning grade averages in both language arts and mathematics reflected below-grade level performance; therefore, the grades reflected their performance within their own ability level. As the students progressed through the NILD program, they were eventually able to perform independently at grade level. It is possible that the final grade average would have shown a positive gain had the initial grade average not been modified to show achievement within a reduced grade equivalent. Secondly, in several cases, the students were referred for testing due to observations of difficulties even though they had not reached the point of academic failure. Although the students were able to maintain adequate academic performance in the classroom, standardized test scores revealed a significant discrepancy between potential and performance on standardized achievement tests. Based on this criteria, the students were enrolled in educational therapy. For many of these students, academic decline did not occur until the junior high or high school years when higher order skills are required for academic achievement. This means that grade averages of these students revealed a decline due to the greater academic demands that were placed

on them in the classroom setting. This has very significant implications for the NILD program which will be addressed later in this chapter. Thirdly, it is commonly accepted that grade point averages may be very subjective and, therefore, may not be the best means to use in determining academic gains. In addition, it was not possible to control for the individual differences in teachers and other factors that might influence a child's academic performance from one year to the next (i.e. sickness, family trauma, etc.).

Analysis of test data reveals that students (n=2) who were diagnosed as learning disabled and chose not to enroll in NILD educational therapy regressed an average of 1.0 point in language arts GPA and regressed an average of 0.4 points in mathematics GPA during an interval of three years. The decline in these scores exceeds the regression seen in the students who received NILD educational therapy by 0.6 points in language arts and 0.3 points in mathematics. Future investigation should be made to compare the academic progress made by students enrolled in NILD educational therapy with the academic progress of students who were diagnosed as LD but did not receive intervention.

The significant improvements that the students made on standardized test measures and the decrease in classroom modifications are indicators that the NILD program is effective in aiding students in the development of academic skills. It is necessary, however, to keep in mind that there are skills required for academic achievement in the classroom that are not measurable by standardized tests such as the *Wide Range*

Achievement Test-Revised and the *Gates-MacGinitie Reading Tests*. Students are expected to be able to perform at higher academic levels on achievement tests from one year to the next; however, the performance demands in the classroom from year to year go beyond what is required/measured on the standardized tests; i.e. taking notes, writing reports, comprehending complex literature, language proficiency and high level math reasoning such as geometry. Although the NILD program incorporates techniques which are targeted to stimulate higher-order thinking skills, perhaps more attention needs to be placed on these skills. Strategies which teach reading comprehension, study skills, and organizational skills may need to be stressed, particularly at the junior high and high school levels in addition to addressing more complex reasoning skills at the secondary grade levels.

Collaboration between teachers, parents, and educational therapists is a major component of the NILD program. Although collaboration is strongly encouraged, there is, perhaps a need to place greater emphasis on this concept in order to evaluate the students' classroom achievement and to determine whether or not there is a need to make adjustments in the educational therapy program. As educators and parents work together to assist the students in areas that are difficult for them, they help to provide structure for the students and a system of accountability for them.

Suggestions for revising and repeating this study would include selecting at the

initiation of the study a sample of students who are demonstrating academic failure and who have a severe discrepancy between IQ and standardized achievement scores. This would enable the researcher to attribute changes in student scores, grades and general progress in a more precise fashion. Secondly, the study should cover a three- or four-year time period using students who are new to the NILD educational therapy program. This would allow the researcher to obtain and chart current information from parents and teachers through a quarterly or bi-yearly questionnaire concerning accommodations made in the students' instructional program, work habits of the students, and level of independent performance of the students at home and in the classroom. Parents and teachers should have more direct involvement in the research than this study allowed. Most of the students used in this current study were initially enrolled in the NILD program more than six years ago and, therefore, it was difficult to obtain accurate comments from the parents and teachers regarding the students' past academic performance. A prospective study using current data would be an improvement over the retrospective analysis of data contained in student records.

Although the academic progress revealed in this study was not what the researcher had hoped for, the study has provided some insight as to the academic skills that need to be addressed more thoroughly in order for students in the NILD educational therapy program to achieve greater success in the classroom. NILD is committed to helping learning disabled students become independent and successful in the classroom.

NILD recognizes that evaluating the program's effectiveness and revising the techniques as necessary is an important part of moving ahead and providing the students with a program that best meets their needs. I trust that this study will further assist the Professional Support Team at NILD in their commitment to providing a quality program for learning disabled students.

Appendix

EDUCATIONAL OBJECTIVES FOR NILD CORE TECHNIQUES

<i>TECHNIQUE</i>	<i>ANNUAL OBJECTIVE</i>
Rhythmic Writing	To develop ability to do intermodal tasks To establish hemispheric specialization for language To improve directionality To improve visual-motor integration To improve visual sequential memory
<i>Blue Book</i>	To improve decoding skills and encoding skills To improve long-term visual and auditory sequential memory To improve ability to apply spelling generalizations
Buzzer	To improve auditory sequential skills To improve auditory short-term memory To improve word analysis skills To develop expressive language To improve vocabulary and grammar skills To strengthen visual imagery
Dictation and Copy	To strengthen language processing To develop understanding of paragraph structure To improve auditory memory To improve near point copying To develop proofreading skills To develop long-term memory
Mental Math	To stimulate cognitive processing To improve auditory attention and listening skills To develop problem solving ability

To improve formations and retention of visual image

To improve mathematical reasoning skills and logical thinking

To develop mathematical vocabulary and concepts

To internalize basic math facts (addition, subtraction, multiplication, division)

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