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Mediated and collaborative learning for students with learning disabilities : "This is about life, it's the rules of life."

Gail L. Collins

To the Graduate Council:

I am submitting herewith a dissertation written by Gail L. Collins entitled "Mediated and collaborative learning for students with learning disabilities : "This is about life, it's the rules of life."." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Education.

Katherine H. Greenberg, Major Professor

We have read this dissertation and recommend its acceptance:

Michael G. Johnson, John M. Peters, Howard R. Pollio

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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MEDIATED AND COLLABORATIVE LEARNING

FOR

STUDENTS WITH LEARNING DISABILITIES:

"This is about life, it's the rules of life."

A Dissertation
Presented for the
Doctor of Education Degree
The University of Tennessee, Knoxville

Gail L. Collins
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DEDICATION

This dissertation is dedicated to my family:

My husband: Peter A. Collins
for his patient and encouraging words
throughout this learning process

Our children: Kimberly and Matthew
and their spouses
Charlie Walker and Laura Collins

My mother: Oretha Neubauer
who did not live to see this project in its entirety,
but who prayed for me throughout my life and
lived in our home as I began this part of the journey

and

To the children who have walked beside me in the past
and made a difference in my life
and
to the children who will walk beside me in the future
and I trust shall be different as a result of our paths crossing.

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- Dr. Kathleen R. Hopkins, the executive director of the National Institute for Learning Disabilities, who has taken me further professionally than I ever dared to dream, who prodded me to begin this route, and who encouraged me to continue as I trudged along.

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- And my Heavenly Father, without whom I could not possibly have traveled this long and sometimes lonely road. His Word is sure and His promises are always to be trusted for they have never failed me.

ABSTRACT

Many approaches have been developed to help students with learning disabilities become independent learners. One such program, developed by the National Institute for Learning Disabilities (NILD), is a one-on-one model of educational therapy that is designed to stimulate students' neurological weaknesses and improve deficits in perception and/or cognition. As an educational therapist, I am always looking for ways to enhance my ability to mediate my students' learning and to help them transfer what is learned in educational therapy to other settings. In my search I became acquainted with the Cognitive Enrichment Advantage (CEA) approach to learning. As an adaptation of Feuerstein's theory of mediated learning, the CEA approach gives students an explicit way to learn how to learn that I saw could be incorporated within the NILD Educational Therapy™ Model.

I chose a case study approach and used action research as a way to examine my 'new' practice systematically and carefully. The purpose of this study was to look at my practice to see what my students, their parents and I would experience if I focused on mediated learning as we collaboratively developed meta-strategic knowledge through the learning of CEA's Building Blocks of Thinking and Tools of Learning. I collected data through a reflective journal, audio recordings of student research team meetings, parents' focus group meetings, and individual exit interviews of students and their parents. I analyzed data in multiple ways to ensure validity.

My students and I used the CEA approach during educational therapy and research team meetings. The findings showed that the students could use meta-strategic knowledge

to develop learning strategies that were meaningful to them and transferable to other settings. The findings from parent meetings and interviews also showed that learning the CEA approach was helpful to them as they mediated their children's learning.

Implications for future research focused on the possible need for more collaboration within the one-on-one educational therapy model, the need for parent training workshops, and the call for further research to validate the findings of this study. Suggestions for NILD's corporate use of these findings also were given.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

Children who experience difficulty learning in a classroom setting, at home or with peers often find ways of depending on others. They resist becoming independent learners because they think *they can't* or assume *others think they can't.* These false assumptions can be changed if a significant other, whether parent, relative, teacher or peer, provides opportunities for collaborative learning experiences. When children believe themselves capable of learning, they begin to expect more of themselves and to share in the responsibility for their own learning. Vygotsky (1978) and Feuerstein (1980) have both proposed theories of mediated learning that frame the collaborative learning experiences fostering a child's growth toward becoming an independent learner. As students progress from dependent to independent learners they eventually begin seeing themselves as generators of their own knowledge and facilitators of others' learning (Greenberg, 2000a). My intentionality as an educational therapist is to guide my students to change their self-perception that says to them *they can't* to one that knows, *they can.*

Research Purpose

I approached this research project from the theoretical framework that students with learning disabilities could change their "learner perception" if given an opportunity to participate in a program that uses mediated learning as the framework for collaborative learning experiences. The purpose of this study was to look at my own practice to see what my experience and the experiences of my students and their parents would be as I focused on mediated learning as a means to foster learning in a collaborative way. I also

wanted to look at the experiences of my students, their parents and myself as we learned to develop and to use meta-strategic knowledge as described by Kuhn (1997) as "knowing and using learning strategies that guide a student to apply and monitor learning principles in consistent and task appropriate ways" (p. 145). Cognitive Enrichment Advantage's 12 Building Blocks of Thinking and eight Tools of Learning (Appendix A) helped us to develop meta-strategic knowledge to create learning strategies that were applicable in any setting. Therefore, I set out to examine my practice as an educational therapist who incorporated the Cognitive Enrichment Advantage (CEA) approach inside the National Institute for Learning Disabilities (NILD) model for working with students who have learning disabilities.

This research project sought to answer the following questions:

1. What did my students, their parents and I experience as we participated in mediated learning experiences collaboratively to learn the CEA Building Blocks of Thinking and Tools of Learning?
2. What did my students, their parents and I experience as we sought to develop and to use meta-strategic knowledge in many types of formal and informal learning situations?

Theoretical Framework

My journey to this action research project has been greatly influenced by examining several broad areas. These include the following: (a) the theory of mediated learning experiences as addressed by Reuven Feuerstein (1980) and Lev Vygotsky (1978), (b) collaborative learning experiences for teachers and students, (c) the Cognitive

Enrichment Advantage (Greenberg, 2000a) approach for helping students develop their own personally relevant strategies for any learning situation, (d) the NILD model of deficit stimulation for students with learning disabilities, and (e) action research to examine my own practice.

The lens that through which I view all that I do today is founded in the model of deficit stimulation for students with learning disabilities. NILD Educational Therapy™ is a non-tutorial intervention program designed to stimulate students' neurological weaknesses and improve deficits in perception and/or cognition. Deborah Zimmerman is credited as the author of the NILD Educational Therapy™ Model of intervention (Mutzabaugh, 2000). Zimmerman, a nurse and educator, developed and adapted techniques designed to provide deficit stimulation. The NILD Educational Therapy™ Model seeks "to change the thinking structure of a student from a passive and dependent performer to an autonomous and independent thinker" (NILD Instructor's Manual for Level 1, 1995). As I began this research process, I spoke with Zimmerman (personal communication, August 14, 1999) about putting CEA inside the NILD model of educational therapy. I briefly explained the CEA approach and what I planned to do in my educational therapy practice. Her words of encouragement were something like, *I am so glad you are going to do this, I have seen the need for research on the mediated learning theory for years.*

Underlying the NILD model is Feuerstein's (1980) theory of mediated learning. Mediation is a special way of interacting with others that ensures that the learner who cannot learn without assistance receives appropriate help when it is needed. The place where learners are unable to learn on their own, but can continue to learn when guided by

significant others was identified by Vygotsky (1978) as the "zone of proximal development." Students with learning disabilities benefit from the guidance of an expert mediator who moves them into their zone of proximal development. Expert mediation requires that the mediator be aware of both the learner's need for mediation and the type of mediation appropriate to give. Feuerstein (1980) describes the occurrence of mediated learning as when a more knowledgeable person prompts a less knowledgeable person to label, compare, categorize, and give meaning to a present experience as it relates to prior and future ones. Mediation promotes flexibility of mind and results in learners learning how to learn. (Greenberg, 2000a, p. 31) I believe the description of mediated learning experiences described by Feuerstein and Vygotsky are the clearest approaches given for teacher/mediators to understand the social construction of knowledge that can occur for children.

Feuerstein (1988) described four critical attributes that must be present for any situation to be called a mediated learning experience. He identified these areas as intentionality (sensu Feuerstein), reciprocity, meaning and transcendence. As I began looking more deeply at my role as mediator I learned to understand and value each area, but was impressed that reciprocity seemed to be foundational for providing collaborative learning experiences for my students and for me. For the purpose of this study, collaborative learning is said to occur when teachers and students join together for the purpose of learning new information or clarifying "fuzzy" ideas. I believe a student who has difficulty learning and is in his or her zone of proximal development needs mediated learning experiences to ensure that learning occurs. It is during these learning experiences,

as the educational therapist is guiding the student and at the same time seeking what he or she can learn from the student, that collaborative learning occurs. I value what my students have to say and earnestly seek to understand their assumptions so that I know when or if further mediation of their learning is needed. I believe that for a mediator to be an expert it really means that sometimes he or she must lay aside the role of expert and become the learner. To have a clear understanding of the learner's needs, I found that the mediator must often ask for clarification with an inquiry such as, "Help me to understand what you are thinking." Such inquiries, that may lead to a change in the roles where the learner becomes the mediator, sets the stage for collaborative learning to occur.

As I came to view myself as a *learner* along with my students, we often engaged in collaborative conversations that may be called dialogue. I believe that dialogue occurs when learners exchange ideas and participate in an interactive conversation that seeks to clarify each participant's understanding. Dialogue does not always lead to collaborative learning but is the means by which it can occur. Throughout this study, we used dialogue as we shared our own experiences of jointly learning the CEA Building Blocks of Thinking and Tools of Learning. So it was that I began exploring a new way of learning for myself that my students, their parents and I could share.

As I continued my journey as an NILD educational therapist, the lens through which I viewed my role as a collaborative mediator came into sharper focus when I learned about the Cognitive Enrichment Advantage (Greenberg, 2000a) approach for helping students develop their own personally relevant strategies for any learning situation.

> The Cognitive Enrichment Advantage Teacher Handbook focuses on the role of the teacher/ mediator within the zone of proximal development. In CEA (an application of Feuerstein's theory), the knowledge about how one learns becomes explicit for both the teacher-mediator and learners. In CEA, it becomes explicit, first, through the use of a shared vocabulary within the learning community for specific cognitive processes and affective-motivational approaches to learning and, second, by teaching students to use these ways of learning to develop learning strategies in any situation (Greenberg, 2000a, p. 3).

I felt that CEA's 12 Building Blocks of Thinking that label specific cognitive processes and the eight Tools of Learning that are prerequisites to effective independent and interdependent learning would help my students approach learning experiences in a new way and with a greater awareness of their learning. It was at this juncture that I set out as a novice to learn the CEA approach along with my students. I developed a plan to examine my own practice as being both an expert NILD educational therapist and a novice at implementing the CEA approach. I chose to use action research to examine my practice because this approach allowed me the freedom to make changes as I gained insight into what I was doing. As an educator striving for excellence, I must constantly reflect on what I am doing, evaluate my work, and change my practice to improve either or both the process and the product.

Lewin (1948) described action research as a series of steps that involve planning, acting, observing and evaluating. This approach is characterized as cyclic in nature

because it calls for action plans that are flexible and responsive to situations.

Peters (1997) described action research as "a way in which people learn from their own and other people's experiences." Kemmis and McTaggart (1988) defined action research as a form of inquiry undertaken by two or more participants to improve their own educational practice. As will be seen later in this report, my plans and actions changed as I observed my own experiences and those of my students and their parents.

I was also guided in the research process by looking at Merriam's (1998) approach to qualitative research and case study applications in education. Merriam stated that the case must be a "bounded system" that she defined as "a thing, a single entity, a unit around which there are boundaries" (1998, p 27). She identified a "program" as a case to be studied. The CEA approach inside the NILD program was the case that I studied.

Merriam discussed the constant comparative method of data analysis developed by Glasser and Strauss (1967) originally used to develop grounded theory. She suggested that this method has also been adopted by many researchers who are not seeking to build substantive theory. I followed her suggestion to constantly compare data from many sources allowing these comparisons to lead me to categories and then to the findings of this study.

Background of the Researcher

My interest in helping children who have difficulty learning dates back to my elementary school years, when I was first introduced to children that were orthopedically disabled. From that point on, I charted a course throughout my life to come to a greater understanding of how we learn and how we can help individuals who have difficulty

learning. My varied teaching experiences moved from teaching elementary aged children with orthopedic disabilities, to teaching in the education department of a Christian college where I regularly taught the course entitled "Education of Exceptional Children," to being a resource teacher in a private Christian school, to my present position in the same Christian school as the administrator of the NILD Educational Therapy™ program for students with learning difficulties. For the past thirteen years, I have been using a one-on-one model of deficit stimulation designed by the National Institute for Learning Disabilities.

I was first trained by NILD to be an educational therapist in 1988. This model of educational therapy and the training that I received changed the course of my travels from one that was always seeking a "better way to help students learn" to one that brought me to the belief that "I have found a way to make a difference." Since 1996 I have been a member of the NILD Instructional Team, one of two teams of NILD trained educational therapists who have been appointed by the organization's executive director, Kathy Hopkins. The members of the Director's Professional Support Team (PST) are responsible for the review and revisions of the therapist training manuals for the three levels of NILD courses currently being offered. The PST and the members of the Instructional Team jointly share the following responsibilities: (a) teaching graduate level training courses, (b) presenting seminars for several regional educational conferences, (c) visiting schools with NILD programs to observe educational therapists and assist in program development, and (d) serving on NILD accreditation teams. These

experiences have broadened my understanding and helped me to gain expertise in the educational therapy process.

In 1997, I entered the doctoral program in Collaborative Learning at the University of Tennessee, Knoxville. I was interested in learning more about mediated learning and how working collaboratively with my students would enhance the learning experiences that we shared within the NILD Educational Therapy™ model. I have found the emphases on collaborative learning and Feuerstein's (1980) theory of Mediated Learning Experience have been not only compatible with, but significantly enhanced, my work with students who experience difficulty learning how to learn. I have seen changes in my response both to my peers and to my students as I have become much more collaborative in the way I approach all learning experiences.

Significance of the Study

I anticipate this study will significantly impact the way that I facilitate the learning ability of students in the NILD Educational Therapy™ Model. I expect that I will continue with a collaborative learning model to foster meta-strategic knowledge that will make learning more meaningful for my students who have learning difficulties. Therefore, because of this study, I expect to change the way I had in the past attempted to bridge my students' learning from educational therapy to their regular classrooms and to other settings outside school.

I anticipate that my students and their parents will benefit from the opportunity to share learning experiences that are at a meta-cognitive level. I expect these experiences will impact the way that they might view learning in all situations. I believe that my

students will see themselves as having the tools to learn in any situation and that their parents might feel empowered to mediate their children's learning as they become aware of the need to do so.

In addition, this research study will potentially affect the body of literature in several ways. I anticipate that others can benefit from my being able to connect collaborative learning and Feuerstein's mediated learning experience more clearly than has been done in the prior literature. This study will contribute to the much needed literature on the application of Vygotsky's and Feuerstein's theories from the point of view of how a teacher can reflect upon and improve her actions while working with students in their zones of proximal development.

CHAPTER 2

FORMAL THEORY TRANSFORMS MY PRACTICE

Since my practice is couched within the field of learning disabilities, I began this section with a very brief historical review of this field. Then, as I examined my experience of mediated and collaborative learning with students in the NILD Educational Therapy™ process several other areas of research influenced my thinking. My review of literature led to the belief that Feuerstein's (1980) theory of mediated learning is foundational to one's understanding of collaborative approaches for working with students who have special learning needs. Vygotsky's (1978) theory gave insight into how students learn. To this end, he addressed mediated learning, the importance of the zone of proximal development (the place that is just beyond what a student can do on his own, but where he can process information with the help of a mediator), the role of higher mental functions, and internalization. This body of literature led to an investigation of learning as a social act and the role of dialogue between teachers and students in collaborative learning experiences.

Another area that impacted my thinking on how children learn was found in the literature on cognitive education. I reviewed the role of metacognition since it sheds light on one's understanding of how children learn to be aware of their own thinking. I was especially interested in determining if students with learning difficulties could benefit from experiences that required metacognitive thinking.

I also examined the research that has been conducted on the Cognitive Enrichment Advantage (CEA) education model, the National Institute for Learning Disabilities (NILD) program, and the importance of parental involvement that is present in both

approaches to learning. Numerous studies have been conducted on CEA from 1988 through the present and a review of this body of literature is included. Research on the NILD program has been more limited, with two unpublished doctoral dissertations and several other master's theses having been completed thus far. Hopkins' (1996) research that evaluated the core techniques of the NILD program is discussed to give an overview of the educational therapy process. Hutchison's (1999) research is important to this current study because it focused on the educational therapist and an analysis of the questions asked and answered in NILD therapy sessions. Hutchison's study helped to guide me in the area of dialogue and questioning skills of expert NILD educational therapists.

Historical Review of the Field of Learning Disabilities

In 1963 Samuel A. Kirk first introduced the term "learning disabilities" (Farnham-Diggory, 1992). Although both educators and parents began using the term learning disabilities to describe children who were not mentally retarded but were experiencing learning difficulties, there was not a concise understanding as to what the term actually meant. For more than thirty years various groups have debated and produced definitions that have been accepted to varying degrees. Recent attempts to define learning disabilities have included terms such as neurological impairment, processing disorders, perceptual disabilities, discrepancy and exclusion factors, academic deficiencies and cognitive deficits (Mercer, Jordan, Allsopp, and Mercer, 1996).

Most definitions, such as the 1990 National Joint Committee for Learning Disabilities (NJCLD) definition, emphasize the difficulties a student might experience.

> 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 skills.
>
> These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not, by themselves constitute a learning disability.
>
> Although learning disabilities may occur concomitantly with other disabilities (e.g. sensory impairment, mental retardation, serious emotional disturbance), or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences. (NJCLD, 1990)

This definition, although included in the training of first-year educational therapists in the NILD training course, does not address a student's strengths that typically coexist with his or her weaknesses. The simultaneous strengths and weaknesses that exist for my students are what makes working with them challenging to my own learning and to my skills as a mediator of their learning. Since the 1960s, when I first became involved in special education, much has occurred in this field that has changed my thinking and beliefs about students who have difficulty learning.

Beginning in the 1980s there has been an explosion in brain research that has brought to light new understanding of the architecture of the brain, human learning

potential and the implications this has for educators (Kruse, 1998). The belief held by neuropsychologists and others, including Feuerstein (1980), that the brain is malleable is what leads me to expect that students who have difficulty learning can change with appropriate neurological stimulation. Feuerstein's goal of a mediated learning experience "to change the cognitive structure of the retarded performer and to transform him into an autonomous, independent thinker, capable of initiating and elaborating ideas" (1980, p. 70) supports my belief that all children, with or without learning difficulties, have the potential to become generators of knowledge.

Mediated Learning Experiences

In the 1950s, Feuerstein (1980) inspired by the work of Piaget and Rey, began creating a means of dynamically assessing the potential learning ability of immigrant children in Israel. These children had been determined to be functioning between three and six years below average on psychometric or school assessment measures. Out of this work grew Instrumental Enrichment, a program whose goal "is to modify the cognitive structure of the individual and thus to produce and set in motion his further development" (Feuerstein, 1980, p. xvii). Feuerstein's approach has been an effective and productive model for demonstrating the effects of adult/child interactions that leads to the development of higher cognitive functioning (Greenberg, 1990; Klein, 1991). Because of mediated learning experiences, those whose learning potential was once thought to be at a very low level have successfully completed tasks requiring higher mental functions (Feuerstein, 1980).

The Mediated Learning Experience (MLE) as described by Feuerstein was originally designed to aid the learning process of children who had not learned through traditional cultural mediation of their parents. While we might assume that all good teaching ensures learners can reach their potential, Feuerstein (1980) stated that the critical attributes of intentionality, reciprocity, meaning, and transcendence must be present for a learning experience to qualify as a mediated learning experience. Kozulin (1998) elaborated on the importance of the process of mediation when he stated, "In a learning situation, the child should realize that the real objective of the learning activity is not a particular task or puzzle, *but the child's own thinking*" (p. 66). In line with Feuerstein's theory, the goal of an NILD educational therapist is to focus attention on the process that allows a student to arrive at the solution to a problem rather than focusing on the student's one right answer. Accordingly, students in NILD Educational Therapy™ are not viewed as disabled learners, but as those whose learning potential has not been reached through traditional classroom instruction.

To guide my understanding of the process of mediated learning, I looked at Greenberg's (2000a) discussion of both the art and science of mediated learning.

> The art of mediated learning is displayed by mediators that use implicit knowledge to make decisions about who to mediate, decisions that may involve good judgement and insight that they cannot explain. But armed with the explicit knowledge of mediated learning experience theory, mediators can develop the science of mediated learning and become mindful of specific qualities of mediated learning, carefully consider their

> intent within the learning experience, and systematically plan ways to use mediated learning to facilitate the learner's ability to overcome cognitive, affective, and motivational difficulties (p. 32).

This suggested to me that, as an educational therapist, I must focus on the science of mediated learning to help me become mindful of the explicit knowledge of mediated learning experiences, but that I must also pay attention to the implicit knowledge that helps me to know that I am using the art of mediated learning.

The following sections look deeply not only at the "science of mediated learning," but also at how the educational therapist can learn implicitly to improve her ability as a mediator of a student's learning and ensure that high quality mediated learning exists. From this discussion on the critical attributes of mediated learning it may appear that they are linear and occur in isolation since each attribute will be presented separately. In practice, they are intertwined within each experience such that any attribute may appear at any point within the experience. As I examined the critical attributes of mediated learning with a focus on educational therapists and students learning collaboratively, however, I came to the conclusion that reciprocity was essential for collaboration to occur. Therefore, I will begin with reciprocity and suggest that it is the key factor that serves to foster all other aspects of mediated learning.

Reciprocity

In reference to the importance of a reciprocal relationship between the child and the mediator, Feuerstein (1988) stated that mediated learning "is present whenever there is a strong, clear loop between the sending and the receiving ends of the communicational

process" (p.64). To shed further light on the communicational process, Greenberg (2000a) defines reciprocity as the establishment of "a positive connection of acceptance, trust and understanding between the learner and mediator" (p. 36). While these two definitions focus on two different aspects of reciprocity, they are both critical because without the acceptance, trust and understanding of the participants in a learning experience there cannot be a clear loop between them. An educational therapist working with a student who has difficulty learning must focus attention on the student's needs. Since intervention must be based on the student's needs, it requires the educational therapist to be constantly judging the learning experience and making needed changes so that the student's experience is neither too easy nor too difficult, but is within his/her zone of proximal development (that place where the student cannot learn on her own, but can learn with the help of a mediator).

Sometimes the student himself will bring about a change or new direction that was not foreseen by the educational therapist. In this case the educational therapist often needs to lay aside the view that the mediator is the expert and instead assume the role of being a learner. When the initial response of the student is incomplete or unclear the mediator/ educational therapist should encourage further elaboration and dialogue to the help foster collaborative learning by participants in the learning experience (Ben-Hur, 1998). Requests such as, "I can see where you are coming from, but I need a little more information to understand fully," or "That is interesting, I had not thought about it that way before. Tell me more about what you are thinking," will foster reciprocity and demonstrate to the students that what they are thinking and sharing is really important to

the educational therapist (Presseisen and Kozulin, 1992). Klein (1991) stated that an intentional behavior is considered to be reciprocal when the student in the interaction responds in some way, whether verbally, non-verbally or even visually to show that he/she could attend to the adult's mediation. Therefore, reciprocity is present when the teacher/mediator's behavior is not accidental but purposeful and when the student's behavior is in response to what he/she saw or heard from the teacher/mediator.

In summary, an educational therapist/mediator who initiates a reciprocal relationship joins the student in the learning process by giving responses to students such as: (a) summarizing what a student said and asking for elaboration on one or more points, (b) saying, "Say more about what you meant by . . . ," or (c) saying, "Help me to understand how . . . , or why . . . " Interactions such as these lead to collaborative learning for both the student and the educational therapist/mediator, and set the stage for all of the other critical attributes of mediated learning.

Intentionality

> Intentionality transforms any interactive situation from accidental into purposeful. By constantly focusing on the child's state of attention, problem solving strategies, mistakes, and insights, the adult infuses the learning situation with a sense of purpose and intentionality" (Kozulin, 1998, p.66).

Catching the learner's attention at the outset of any learning experience is critical. However, it takes more than colorful balloons or an interesting story to ensure the child is receiving the information intended by the teacher. It is important that the teacher/

mediator has carefully prepared a plan to catch or focus the student's attention. Greenberg (2000a) states "the teacher/mediator should be well organized and have thought about how to catch and focus the attention in advance of the learning experience." It is as if the mediator deliberately holds a magnifying glass up to a particular stimulus to bring it into sharper focus and to help the learner distinguish it from other stimuli (Skuy, 1996). The educational therapist must have a plan that will isolate and interpret the stimuli based on her awareness of the student's needs. She must take cues from the student's past or present performance and *intentionally* initiate mediation. This approach to mediation illustrates the importance of recording reflective anecdotal notes during or immediately following educational therapy sessions. From these notes the educational therapist will be guided in preparing for future sessions and know his/her student's need of mediation. The educational therapist will also know when to allow the student to proceed without intervention.

As important as intentionality is, the educational therapist should be aware that merely intending to isolate and interpret stimuli does not guarantee that reciprocity will occur with the student. The educational therapist who has an intentional plan and intervenes when the student does not need it or needs another type of intervention shows a lack of reciprocity. This means that "intent often needs to change during the activity" (Greenberg, 2000a) and points to the importance of flexible thinking for the educational therapist who must be constantly aware of the learner's needs. So, while the educational therapist must have an intentional lesson objective planned, it is just as important for the

student "to feel ownership of the intent within the mediated learning experience" (Greenberg, 2000a).

As a mediator encourages a child to perceive things with clarity and precision, it sometimes requires that the stimulus or context must be changed or transformed so that those involved in the learning experience can accurately perceive what each member of the learning experience is understanding (Feuerstein, 1988). This means that the educational therapist needs to prepare ahead of time more than one way to present the lesson objective. She needs to always be thinking of the best way to help a student understand the task, even if it means "scrapping a wonderful idea" that she had planned but finds it is not working with this student. Intentionality and reciprocity represent the back and forth interchange of ideas that occurs during an educational therapy session mediated by an expert educational therapist.

The following example from the researcher's own practice illustrates the intentional nature of a learning experience. In collaboration with my students I must seek to understand their assumptions as we approach any learning experience. As assumptions are intentionally uncovered, both my student and I are able to perceive the learning experience with greater clarity and precision. I intentionally provide a stimulus or context within which I assume learning might take place, but I may find that something about the stimulus, whether spoken, written, pictorial or manipulative must be changed or transformed in a way that allows both of us to perceive it accurately from the other's point of view.

Fred was attempting to solve the following mathematical word problem: "A man drove 120 miles to Mt. Garland and one-fifth of the way back before dark. How many miles will he need to drive the next day to return home?" Fred did not know how to solve this problem on paper. When guided to answer questions such as "What do you know?" and "What do you need to know?" Fred used Exploration to discover that he knew that the man had to drive 120 miles from his starting point (which we arbitrarily called his house) to Mt. Garland. Then, Fred realized that he needed to know how to find one-fifth of a number. Given the memory jogger of "what does 'of' mean that you have to do in a problem with fractions?" he had a partial understanding of what he had to do to solve the problem. To help him clarify what he really needed to find out, I asked Fred to draw a picture on the chalkboard that illustrated what he knew from the information given. Fred drew a road that went from "his house" to "Mt. Garland." He then labeled the road with 120 miles. Our discussion included questions such as "What are you thinking?" and "What other information do you know?" As we continued, Fred was able to discover the relationship of "one-fifth" and what the question was asking. His attention was focused on making a Plan for how to solve the problem as he was actively involved in our discussion. I never told him how to solve the problem but our discussion and his chalkboard drawing

helped him to perceive clearly what he needed to do to solve the problem on paper.

As we collaboratively sought to understand each other's thinking I was able to learn what Fred was thinking and thereby gained a better understanding of how to help him in the future; at the same time, Fred was able to refine his thinking about how to approach this task. He was actively involved in the problem-solving situation in a way that will impact his thinking for future learning (Kozulin, 1998; Dominowski, 1998). In support of this belief, Feuerstein states "that [the metacognition components of this interaction], once internalized, become the steering power toward more efficient learning, and in turn, leads to higher levels of modifiability" (1991, p. 20).

Meaning

> The mediation of meaning represents the energetic, affective, emotional power that will make it possible for the mediational interaction to overcome resistance on the part of the learner and thereby ensure that the stimuli mediated will indeed be experienced by the learner (Feuerstein, 1988, p. 66).

The educational therapist must demonstrate to the student that his/her response is really important. Along with ensuring that reciprocity is present in any learning experience, I believe that creating meaning for all participants is foundational for collaborative learning to occur. It is the back and forth questioning of the educational therapist and student in their striving together to create a meaning that is personally relevant for both that makes mediated learning a collaborative experience. The mediation of meaning is more likely to

occur when a reciprocal relationship is established between the mediator and learner through a display of affection and mutual expression of acceptance, trust and empathy (Hundeide, 1991). This suggests that for meaning to occur it is critical for an educational therapist to establish an environment where the student feels safe and believes his response will be accepted. As a trusting relationship is built, the student is willing to take greater risks in responding and finds new meaning in her learning. The educational therapist, who knows what is important to the learner, can use that information to energize their interaction.

Meaning is triggered as the educational therapist addresses the cognitive, affective and/or motivational needs of the learner (Greenberg, 2000a). The cognitive meaning is objective and may be found in a factual statement such as "Mt. Rainier is the highest mountain in the state of Washington." The affective meaning is subjective and may be expressed in a statement such as, "I was really inspired by the awesomeness of God's handiwork when I visited Mt. Rainier." The motivational meaning addresses the reasons for the learning such as, "If I visit Mt. Rainier to study the rocks and plants then I will learn more about a volcanic mountain." The goal of the interaction is to help the learner find value in a learning experience that brings about an emotional response, whether joy or wonder, or a willingness to express fear or anxiety (Greenberg, 2000a).

Since students who have difficulty learning typically do not automatically see learning experiences as meaningful, it is the mediator's role to guide the student in a search for meaning. Helping a student find meaning may be accomplished by:
(a) comparing and contrasting present learning experiences with those of the past and

those anticipated in the future, (b) discussing learning goals with the student, (c) helping a student to identify and to use new learning in different applications, and (d) by asking "why" and "how" questions rather than "what" questions (Ben-Hur, 1998). Through dialogue the student discovers how to interpret new knowledge in light of his personal belief system. This may include an understanding of the value or importance of the new knowledge within her own everyday experiences. As a student experiences meaning in the learning experience she may feel a sense of awe and an understanding of the "whys" or "what fors" of the learning (Ben-Hur, 1998).

Reflection that focuses on the new knowledge and how it was acquired will help the student experience new meaning in the current learning experience. Dialogue between the educational therapist and the student should include the meaning derived by the student and how the student figured out this meaning. As the student verbally reflects on how the learning experience becomes meaningful, she builds a conscious awareness of the importance of the learning experience and an increasing control of her own thinking about how to use this in the future. This type of dialogue also helps the educational therapist determine if there has been a connection between the purpose of the lesson, the strategies used by the student and the meaning derived by the student. If there is a weak connection between the educational therapist's intent and the meaning derived by the student then further dialogue should occur that clarifies the assumptions of both. As the educational therapist and the student both come to an understanding of each other's assumptions, then the meaning of the learning experience is clear for both.

Greenberg (2000a) suggests that the teacher/mediator engage in one of the following behaviors to guide the student to meaningful learning experiences. The specific learning activities given are out of the NILD framework and demonstrate how mediated learning can be included in educational therapy.

1. Share with the learner a personal interest and emotional involvement in the activity. The educational therapist might say, "I can hardly wait to see what kinds of questions you will ask about today's paragraph. Your questions often help me see new ideas that I didn't think of myself." (This statement is in relation to an NILD technique called Dictation and Copy, Appendix E.)
2. Discuss the importance of the activity with the learner: "You will feel so good about yourself when you can better understand what you are reading by asking questions as you read. I know that it helps me to write down questions as I read so that I can think about the answers later."
3. Share an objective or subjective value: "I was really pleased to hear from your teacher that you helped another student in your class understand that having difficulty in learning is not a bad thing. When you shared that you have learned to ask higher level questions as you read, I am sure that it helped her to see more about what you are learning in educational therapy."

Frequent reflection on a meaningful learning experience, such as described in the preceding activities, will keep the mediation of meaning alive for both the student and the educational therapist. These behaviors also foster transcendence as the student begins to see how what is learned in educational therapy applies in other areas of his life.

Transcendence

Feuerstein (1980) revealed the connection of the two critical attributes of intentionality and transcendence when he stated,

> An interaction that provides mediated learning must include an intention, on the part of the mediator, to transcend the immediate needs or concerns of the recipient of the mediation by venturing beyond the here and now, in space and time. It is the intentional transcendent nature of the interaction that is the defining characteristic of a mediated interaction (p. 20).

To ensure the intentional transcendent nature of the learning experience the mediator may need to guide the student to change the way he learns and thinks. For this to occur, "the changes must transcend the content and context of the MLE" (Ben-Hur, 1998, p. 665). This suggests that the chief difference between the mediation of meaning and the mediation of transcendence lies in the difference between comparing and contrasting previous or anticipated learning experiences *in their context* as opposed to bridging the learning experience to decontextualized principles of learning that are *beyond the context.* Transcendence is the goal of a mediated learning experience because it is what guides students to apply what they are learning with the mediator to other settings and in turn to become active generators of their own learning.

> Transcendence helps learners build flexibility of thinking because they gain an understanding of the framework underlying some concept or the process of learning that can help them learn better. They build the knowledge needed to develop personal learning strategies in any kind of situation and explore relationships at a useful and deep level between some aspect of the given learning experience and other experiences. (Greenberg, 2000a, p.39)

Bridging is the key to the mediation of transcendence. This is described as a method to transfer meta-strategic knowledge through dialogue in which a student and/or a teacher shares a learning principle as well as an example of how that principle may be useful in other settings. In the CEA approach to learning "the teacher/mediator helps the student to bridge the possible results of effective or ineffective use of a specific Building Block or Tool to other, personally relevant, learning experiences in and out of the school setting" (Greenberg, 2000a, p. 127). An example of a bridging statement for CEA is: "If I use Planning systematically, deciding what to do first, second, and third, then I can solve problems" (Greenberg, 2000a, p. 132).

As an educational therapist I found that without the mediation of transcendence, students who experience difficulty learning do not readily see any relevance to what they are learning in educational therapy. Therefore, it becomes the educational therapists' responsibility to help their students make connections between what they learn in therapy with what might done at home or in a classroom setting. Students must view themselves as learners in all settings, not just in school. However, the educational therapist is cautioned that students may not successfully transfer strategies unless the students,

themselves, have developed their own strategies that are personally relevant (Ashman and Conway, 1997; Perkins and Salomin, 1989). The role of the educational therapist is

> . . . not to provide examples of bridging, but to have students draw examples from their own experiences or situations in which the same process could work. In this way the students see the broader application of the process in their own terms and in relation to their own experiences, rather than being limited to teacher-contrived situations with which they may be unfamiliar (Haywood, 1988, p. 4).

Vygotsky's idea of internalization seems to connect to the mediation of transcendence. Through internalization a student takes ideas or strategies developed collaboratively with his educational therapist/mediator and makes them his own to use as his thinking dictates. This type of interactive dialogue enables him to develop a process where "communicative language is transformed into inner speech and further into verbal thinking" (Vygotsky, 1986 in John-Steiner and Mahn, 1996, p.196). John-Steiner and Mahn (1996) stated that: "Internalization is simultaneously an individual and social process" (p. 197). The mediation of transcendence seems to be clearly expressed in their statement that,

> in working with, through and beyond what has been appropriated in social participation and then internalized, individuals co-construct new knowledge. . . . Internalization that involves sustained social and individual endeavors becomes a constituent part of the interaction with what is known and leads to the creation of new knowledge (p.197).

As an educational therapist and student dialogue about a word's definition or a mathematical concept, the therapist can play a part in mediating the student's learning so that the concept under discussion goes inward and eventually transcends what is now known. Transcendence has occurred when the concept goes inward and the student creates previously unidentified knowledge either within the educational therapy setting or in another environment.

As the educational therapist mediates a student's ability to transcend present learning experiences, the interactive dialogue that occurs guides a student to anticipate when this learning experience might be useful in a future situation beyond the specific content of the present learning experience. To put it another way, "transcendence as a mediating criterion provides not only for the anticipated widening of cognitive factors in the information under question, but assumes the constant enlargement of the learner's own need system and his/her dynamic, continuous change" (Presseisen and Kozulin, 1992, p. 14). It is this dynamic and continuous change that occurs in my students that make my work as an educational therapist so worthwhile. The interactive dialogue that we engage in gradually changes the student's cognitive structure and enables him to move from a *question answerer* to a *question asker.* As the student learns to trust himself to become responsible for his own learning, he is willing to take risks in asking questions he might not have previously done.

The next three sections of this chapter discuss the role of interactive dialogue that can be used by an educational therapist to guide students into their zones of proximal development and on to higher mental functions (Vygotsky, 1978). Collaborative learning

experiences that result from interactive dialogue will foster the students' abilities to become independent learners (John-Steiner and Mahn, 1996; Presseisen and Kozulin, 1992). The dialogic method (Shor and Freire, 1987) and the Socratic method (Elder and Paul, 1998; Overholser, 1992) are discussed to help the reader formulate a style of questioning that will be appropriate for the student involved in the interaction.

Interactive Dialogue

Interactive dialogue is a means of joint learning for students and teachers. The dialogic method of teaching that best describes the goal I have for my students and me learning together is based on Paulo Freire's definition of dialogue. He described dialogue as "the sealing together of the teacher and the students in the joint act of knowing and re-knowing the object of study" (Shor and Freire, 1987, p 100). This method requires that the teacher move away from an authoritarian view of himself/herself as the *expert* and the student as the *learner*. Instead, when engaged in dialogue with a student, the educational therapist must also view himself/herself as a *learner*. Not just *learning* to be a better educational therapist but relearning the content and knowledge along with a student as we jointly engage in learning as a social act. For example, as a student is reading aloud from his literature text, he may encounter a word for which neither of us has a precise definition. We share in the experience of determining the word meaning by looking at the context, asking one another what we know about the root word or prefix or suffix if they are present, and seeking for other clues that might be present. Often, this type of dialogue helps us both to gain a precise understanding of the word even before finally consulting the dictionary to check our understanding.

Although Freire's style of dialogue is a goal that I have for my students, most students with learning disabilities initially need guidance and practice with the skill of question answering and asking before they can engage in dialogue as described by Freire. I have found that students initially respond to a form of question asking similar to Socratic questioning. This form of questioning provides experiences that will eventually lead to dialogue. Socratic questioning is questioning that stimulates thinking and generates a further question as opposed to questions that call for answers that bring about a stop in thinking (Elder and Paul, 1998). The Socratic method uses "a series of questions designed to channel the student's thinking processes along predetermined paths" (Overholser, 1992, p. 78). "Socratic questions rarely evoke factual information because their intent is not to challenge the student's knowledge base but to bring information already possessed into the student's conscious awareness and help him/her reason through difficult problems" (Meyers, 1988, p. 43). The following illustration is given to guide an educational therapist in using the Socratic method.

Through questioning a student that experiences difficulty recalling a paragraph as part of the Dictation and Copy technique, the NILD educational therapist may uncover the cause of the student's difficulty. For example in a recent interchange with a student in sixth grade, I discovered that she did not know the definition of "navigate," a key concept to understanding the entire paragraph. Socratic questions such as the following brought her to a greater understanding of the paragraph as a whole: (The paragraph was about the dangers of navigating past the island of Cushnoc, just off the coast of Maine.)

1. What is an island? (Factual question, not Socratic)

2. Where might you find an island? (Factual question, not Socratic)
3. Draw a picture that includes the coast of Maine and Cushnoc. (The student drew a picture of a peninsula rather than an island.)
4. After the "picture" was clarified, the student was guided by the educational therapist who drew an arrow on the student's picture to indicate a ship coming in from the ocean and going between Cushnoc and Maine. The educational therapist asked, "If you were "navigating" past Cushnoc, what would you be doing?" (Socratic question)
5. Why would navigating past Cushnoc be dangerous? (Socratic question) (The author of the paragraph stated that it was dangerous because Cushnoc is so tiny it can only be seen at low tide.)
6. It was evident that further clarification was necessary when the student asked, "What is low tide?" She expressed that she did not understand the term "low tide" even though she was able to describe her experience of swimming in the ocean and how the water did seem to come higher or lower on the beach at different times of the day.

This previous example suggests that Socratic questioning that leads to interactive dialogue within a collaborative learning environment will guide a student who has difficulty learning into his/her zone of proximal development. Without interactive dialogue, in which case a student "asks back" such as in the previous illustration, the educational therapist might assume the student had not studied or had not fully completed her homework. Instead,

through dialogue it was revealed this student was clearly operating within her zone of proximal development.

The Zone of Proximal Development

Vygotsky (1978) described the zone of proximal development (ZPD) as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers"(p.86). A child's abilities that are only just beginning to emerge are those that are found in his ZPD. Vygotsky (1978) called these emergent abilities the "functions that have not yet matured but are in the process of maturation"(p.86). The metaphor that Vygotsky gave us when he stated, "these functions could be termed 'buds' or 'flowers' of development rather than 'fruits' of development"(p.86) paints an explicit picture of the student who encounters mediated learning experiences such as those provided in educational therapy. As the therapist begins to see her students experience success with thinking and learning on their own, she knows that what they can do with assistance today has the potential to be what they will do independently tomorrow. Students in educational therapy within their zone of proximal development are in the place between being dependent on others for their learning and being able to be an advocate for their own learning in any setting. As a student's learning is mediated, his thinking ability moves toward higher mental functions.

Higher Mental Functions

Vygotsky (1978) suggested that a child demonstrates higher mental functions when he seeks what he can learn on his own. He believed that all higher functions

originally develop through relationships between individuals and that children develop higher mental functions and chase after higher levels of learning when they interact socially. This is why interactive dialogue, meant to uncover new meaning collaboratively, is critical for a child who experiences difficulty learning and does not naturally seek ways to learn on his own. Vygotsky (1978) gave further support of the importance of collaborative learning experiences for children with learning difficulties in his well-known statement, "Every function in the child's cultural development appears twice: first, on the social level, and later on, the individual level; first, between people (inter-psychological), and then inside the child's head (intra-psychological)" (p. 57). Vygotsky (1966, in Shotter, 1993) elaborated on this statement when he said, "what first appears on the social plane as something inter-mental between people, later appears as something psychological as an intra-mental category within the child" (p. 44). A child demonstrates this principle when he can use independently, in another setting, information or concepts that were first learned through dialogue with others.

Although we looked at Vygotsky's (1978) concept of internalization earlier, it needs further elaboration in the context of the process of changing an elementary mental function to a higher mental function. At the heart of Vygotsky's idea of internalization is "distinction between things people do spontaneously [elementary mental function] and those that they do deliberately [higher mental functions]." Our higher mental functions can be developed by discovering how to use what Vygotsky calls "psychological tools" and then by incorporating these devices. He stated that the "major 'tool' for influencing people's behavior is language." As a "child begins to practice with respect to himself the

same forms of behavior that others formerly practiced with respect to him" (Vygotsky, 1986, p. 39-40) he has internalized the behavior or concept. By this Vygotsky (1986) was clearly referring to a process in which, at first, a child does things only spontaneously and without self-reflection under the control of an adult, but later is able to do these things as he or she so directs. Vygotsky (1986) stated that "awareness and deliberate control appear only during a very advanced stage in the development of a mental function, after it has been used and practiced unconsciously and spontaneously" (p. 168). When an educational therapist works collaboratively with a student to mediate his thinking and ability to come to new understanding, she intentionally guides him to transfer this learning from the educational therapy setting to other aspects of his life. As he becomes able consciously to use the learning strategy in multiple situations outside the educational therapy setting, he gains a feeling of competence that allows him to use the skill independent of the mediator. The intent of the educational therapist is to mediate the use of "the external signs [labels given to learning strategies] that school age children require [so that they can be] transformed into an internal sign ...as a means of remembering" (Vygotsky, 1978, p 45). It seems from this discussion, however, that unless external signs or labels are assigned to learning strategies students will have a difficult time using them and thus transforming them into internal signs or higher mental functions. Therefore, it seems imperative that labels be given to the processes of learning so that children can use them to develop their own strategies that eventually will go inward and become useful to them in many settings.

To demonstrate the role of collaboration in guiding a student to move toward higher mental functions I offer this example: Jane began the educational therapy process at

the high school level as a very defeated student who displayed poor work habits resulting in failing grades. She was very disorganized and often did not remember to bring books, paper, or pencils to class. She forgot to do assignments or if they were done they seemed to be "lost." She felt that she "couldn't do much better," but was willing to "try anything" that might help her. At the time of this interchange, Jane was a junior in high school and had been engaged in mediated learning experiences for two years. During those two years, Jane's learning ability changed from being dependent on others to being capable of learning independently and as an advocate for her own learning. She moved from being able to answer Socratic questions to a form of dialogue described by Freire in which she frequently challenged my thinking by asking me questions. She often demonstrated a 'seeking after knowledge' that suggested she was engaged in higher mental functions. As we worked together, Jane and I developed a close relationship that came about because of dialogue that led to trust building, risk taking and learning for both of us. Through dialogue we jointly sought new understandings as we learned collaboratively. The following is an example of an interchange between Jane and me that gave evidence of the collaborative learning that occurred as we engaged in a dialogue to seek new meaning in our shared learning experience:

> *Jane and I had been working on analogies for three weeks. She was learning how to analyze the relationship of one word to another. At one point, she saw a relationship between two words that I had not seen. After telling her that she had correctly seen something that I had not thought of, I said, "That's why I enjoy working with you, you're always*

teaching me something new." She replied, "What were you thinking about?" Her question drove me to clearly state an alternate relationship between the two words. I was forced into having to express that relationship in terms I might not have otherwise used. We both found the need to use explicit language to help the other understand our thinking. Together, we then explored the two meanings to see if there was a relationship between "her way" and "my way" of looking at the words.

Jane's ability to be a generator of knowledge continues to rise as do her grades in school. At the time of this writing Jane has successfully completed one year in college and "is doing very well" as reported by her mother. In my view, Jane's change in performance and attitude was due, at least in part, to improved metacognitive ability that helped her to become a generator of knowledge. She understood her needs and consciously thought about what she could do to make "learning happen."

The next section will discuss the theoretical view of metacognition as a basis for why incorporating the mediation of meta-strategic knowledge into a program for students with learning disabilities is not only possible, but necessary. Research shows that students with learning disabilities can benefit from learning how to develop their own meta-strategic knowledge that will readily transfer from school learning to other aspects of their lives (Belmont et al. 1982; Borkowski and Buchel, 1983; G. Reid, 1980; Turner and Bray, 1985, in Ashman and Conway, 1997, p. 46).

Metacognition

The field of cognitive education has much to say about metacognition. Hacker (1998) reviewed the importance of metacognition in education and found that "by fostering metacognitive processes during instruction, more durable and transferable learning can be achieved" (p. xiv). Flavell (1971) defines metacognition as an awareness of oneself as "an actor in his environment . . . and a deliberate storer and retriever of information" (p.8). Just as we watch actors on a stage, a student must be aware of watching the way he/she processes information in all aspects of life.

The terms 'monitoring' and 'regulation' are found throughout the literature on metacognition. Flavell (1979) stated that "metacognition involves active monitoring and consequent regulation and orchestration of cognitive processes to achieve cognitive goals"(p.908). Bonds and Bonds (1992) defined metacognition as "knowledge and awareness of one's cognitive processes and the ability to regulate, evaluate, and monitor one's own thinking" (p. 56). Perkins (1992) stated, "the highest level of metacognitive thinkers are reflective learners who reflect on their thinking-in-progress, ponder their strategies, and revise them" (p. 102). My experience of working with students who have difficulty learning is that they are often lacking in both self-monitoring and self-regulating behaviors. Feuerstein (1980) described the "episodic grasp of reality" as a deficit cognitive function often seen in students who have learning difficulties. This phenomenon, can be seen as:

> A passive attitude toward one's experiences because no attempt is made by the individual to actively contribute to his experience by organizing,

> ordering, summating, or comparing events and thereby placing [the events] within a broader and more meaningful context (p. 102).

An episodic grasp of reality contributes to students' poor ability to monitor or regulate their behavior. They fail to recognize that what they neglect to do today, such as forgetting to do a homework assignment or to study for a test, has any effect on their future performance.

Recognizing the importance of the executive function of the brain may be helpful to educational therapists who want to help their students to monitor and to regulate their behavior through the use of metacognitive strategies. Ashman and Conway (1997) point out that "most models of cognition include a component called 'executive' that is a metaphor for a controlling agent capable of performing an intelligent assessment of the activities occurring within the brain" (p. 47). Luria (1966, 1973) and others (Restak, 1994; Healy, 1990) investigating brain function have suggested that the frontal lobe is crucial for executive function. This area of the brain, called the "frontal and pre-frontal lobe," is thought to be responsible for such activities as "intentional behavior; the formation of plans and action sequences; the regulation of behavior according to these plans; and the checking or verification of a plan or action sequence" (Luria, 1973, in Ashman and Conway, 1997, p. 67).

Kluwe (1982) designated "executive processes" as metacognitive activities. He then elaborated on executive processes by dividing these activities into: (a) executive monitoring processes that are defined as activities "directed at the acquisition of information about the person's thinking process" and (b) executive regulation processes

that are "directed at the regulation of the course of one's own thinking" (1982, p. 212). Kluwe suggested that executive monitoring processes help:

1. To identify the task on which one is currently working.
2. To check on the current progress of that work.
3. To evaluate that progress.
4. To predict what the outcome of that will be.

He identified the executive regulation processes as one's decisions that help:

1. To allocate his or her resources to the current task.
2. To determine the order of steps to be taken to complete the task.
3. To set the intensity, or the speed at which one should work on the task

1982, p. 212).

An educational therapist who provides learning activities to stimulate executive function demonstrates her understanding that metacognitive activities can have a great impact in stimulating students' ability to use higher mental processes such as planning, monitoring and regulating their learning.

The importance of mediating metacognitive activities is reflected by Butler and Winnie (1995) who stated that the "most effective learners are self-regulating" (p.245). Mediating effective self-regulation is the key to helping students identify what they know and what they need to know to solve a particular problem or to move forward in any learning experience (Schoenfeld, 1987). This echoes the illustration given earlier when Fred was attempting to solve the mathematical word problem.

Dominowski (1998) suggested that knowing the kinds of questions to ask would help a teacher who is working one-on-one with a student. He differentiated between asking prompting and probing questions. The teacher may ask probing questions that ask the student to think aloud while problem solving. These kinds of questions give the teacher a better understanding of the student's problem-solving ability to know what type of mediation might be required in this or future learning experiences. The educational therapist can use cues from her student's behavior to select the right kind of probing question. Dominowski (1998) suggested the following types of probing questions:

1. What are you doing here? - if the student is trying some procedure to solve a problem, but the procedure is murky.
2. Why did you do that? - if the procedure is clear, but the purpose is not.
3. What seems to be the difficulty? - if the student stops and seems puzzled (p. 41).

In contrast, prompts are attempts to transmit information to the student such as:

1. Remember to watch for the "r-combination" syllable that we just studied when you analyze this word (part of the NILD Buzzer technique).
2. When you begin this puzzle, why don't you try to find the parallelogram first since it is always the hardest for you to find.

Prompting statements lead a student to notice a particular feature of the problem or suggest that the student try this or that. Prompts might help the student to solve the current problem, but there is concern about the real benefit to the student. Eventually, for the student to be successful he needs to be able to think on his own without outside

prompts. Dominowski (1998) stated further that teachers who are concerned with efficient use of instruction time often are driven to use prompts rather than patiently asking probing questions. But, Dominowski's (1998) research suggests that "teachers can take heart ... that metacognitive probing can produce results with reasonable speed" (p. 41-42). This should encourage educational therapists to resist the impulse to prompt students too soon or when it is not needed. We must be patient to watch the students' process and then ask probing questions at appropriate times.

Much of the literature on metacognition discusses teaching "metacognitive strategies" to help students with reading comprehension. Examples from the literature include: (a) metacognitive strategies for reading such as planning, guided practice, and evaluation and (Bonds and Bonds, 1992), (b) strategies used by expert readers to enable the student to become 'expert constructors of meaning' such as inferencing, identifying important information, monitoring and clarifying, summarizing, and generating questions (Cooper, 1997), and (c) strategies used to make sure that students self-monitor, make/confirm/disprove predictions, formulate and answer questions, reread/retell or mentally replay the story, employ imagery, notice organizational patterns of the text, or make connections between story features and personal experiences (Weir, 1998).

Another technique for reading comprehension that has received much attention is reciprocal teaching. This technique involves teaching the students to predict, generate questions, summarize and clarify misleading or complex sections of the passage they are reading (Palincsar, A.S., et al., 1986, 1988; Pearson, P.D. and Raphael, T.E 1990).

While these strategies are valid and useful for students, a word of caution must be given to educators who believe that teaching students a list of strategies will enable the students to use them on his own. Research on metacognition often reported that students failed to transfer training after metacognitive training ended. During the 1970s numerous studies showed that:

> . . . people with learning difficulties could be taught to use efficient learning and memory strategies almost as effectively as non-disabled people, but they failed to continue to use the strategies once the training ceased, and they were unable to adapt (or transfer) successful strategies to learning tasks other than those used in training (Kramer, Nagle, and Engle, 1980).

To help students successfully retain and use strategies on their own, it was found that they needed to be: (a) actively involved in the learning, (b) aware of the value of using a strategy, and (c) given the opportunity to use a strategy in a variety of settings (Palincsar and Brown, 1984). This research agrees with the Cognitive Enrichment Advantage approach to learning. The CEA approach to learning is founded on the premise that all students can understand and learn to use meta-strategic knowledge to guide them in all learning situations. Kuhn (1997) defined meta-strategic knowledge as "knowing and using learning strategies that guide a student to apply and monitor learning principles in consistent and task appropriate ways" (p. 145). The key for the CEA teacher/mediator, however, is to help students to develop *their own strategic knowledge* by developing a shared vocabulary. Learners can "build their own cognitive, affective and motivational strategies as needed in all learning situations anywhere" (Greenberg, 2000a, p. 15)

through learning the CEA Building Blocks of Thinking and Tools of Learning. The 12 Building Blocks of Thinking is an adapted version of the 28 deficit cognitive functions described by Feuerstein (1980). Feuerstein's Instrumental Enrichment program places a strong emphasis on the mediator helping students to build learning strategies and principles around the deficit cognitive functions and to justify their own personal use of the strategies. The eight Tools of Learning are "a direct application of Feuerstein's parameters of mediated learning experience when used as part of a shared vocabulary to develop knowledge related to understanding feelings and motivating learning behavior" (Greenberg, 2000c, pp 59-60).

Theoretical Foundation for the Development of Meta-strategic Knowledge

Throughout the literature that I reviewed, various findings supported the need for the development of meta-strategic knowledge and the kinds of thinking that can be fostered through the CEA Building Blocks of Thinking. Ashman and Conway (1997) report that there is little emphasis in education on teaching children a systematic approach to develop meta-strategic behavior. They state that children do not develop the ability to plan on their own, even though educators assume that this skill will come naturally through a trial and error procedure. Research findings suggest that all students, but especially students with learning disabilities, have difficulty engaging in effective planning behaviors (Todman and McBeth, 1994, in Ashman and Conway, 1997). Although I agree with these findings that students with learning disabilities have a difficult time initiating planning on their own, my experience in this study showed me that once I mediated the need for planning, students frequently developed strategies based on the Building Block of

Planning. Other research found that "learners that report using... planning activities seem to perform better on a variety of academic tasks in comparison to students who do not use these strategies" (McKeachie , Pintrich, and Lin, 1985; Pressley, 1986). These findings suggest that students need the explicit teaching of how to approach learning experiences and for planning in particular.

Several of the Building Blocks for Making Meaning seem to fall under a body of literature on "meta-memory," a term coined by Flavell, Fredericks, and Hoyt (1970). Meta-memory was described as what we know about how we remember information. Ashman and Conway (1997), however, state that cognitive psychologists and educational psychologists have not always agreed on the kinds of cognitive processes that fall in the category of meta-memory and that educational psychologists more commonly use the term "comprehension monitoring." This term typically refers to the "evaluation and regulation" of what one reads (Palincsar and Brown, 1984). As I look at the skills that fall under the Making Meaning category for the Building Blocks of Thinking, it seems like the same tasks required to monitor and evaluate what one reads are also required in any learning experience for getting the main idea, making comparison, integrating thoughts within a learning experience and connecting what has been learned in the past to a present learning experience or one that might occur in the future. In support of the relationship between reading and other kinds of problem solving, Brown and Pressley (1994) report findings on the reciprocal teaching approach, a reading program based on Palincsar and Brown's (1984) model. They stated that "students perceived that skilled reading is thinking and problem solving" (p. 170).

The Tools of Learning are the affective/motivational approaches that foster independent and interdependent learning. These include the two categories of understanding feelings and motivating behavior within the learning experience. Understanding Feelings within the Learning Experience includes Inner Meaning that helps a student to seek deep and personal values in learning experiences. Feather (1992) stated that "values are one class of motives that guide individuals' behaviors in different settings" (p. 104). Finding value in learning and having an awareness of self-change is especially important for students with learning disabilities.

Students with learning disabilities are often not motivated to try because of the prevailing philosophy that says "to try and fail is worse than not trying at all." This thinking is supported by the research that has shown "that students with learning difficulties often attribute success to luck, and failure to their lack of ability" (Cole and Chan, 1990). These findings suggest that explicit training about being lucky or unlucky in learning and the role of motivation needs to be incorporated into strategy training. Short and Weissberg-Benchell (1989) suggested that while many strategy training approaches focused indirectly on motivation through teacher modeling, discussion, thinking aloud and self-monitoring; the important missing ingredient was "the use of a deliberate and systematic approach to providing the scaffolding needed for students with difficulties to acquire skills and accept that they are responsible for their achievements" (p. 151). In studies that demonstrated improved motivation, training emphasized "realistic goal setting, self-monitoring of behavior, and self-reinforcements" (p. 151).

This discussion demonstrates the importance of the Tools of Learning most closely connected to motivation. The development of strategies for regulating one's own behavior, setting goals, understanding and valuing one's uniqueness and acquiring the ability to participate in and accept responsibility for learning with others, are all keys to helping students develop their own strategies that will motivate them in learning. At the beginning of this research project, the mother of one of the student researchers illustrated this principle as she spoke at length about her son's lack of motivation. Once he began learning and applying learning strategies by using the CEA Building Blocks and Tools, however, he became a motivated student who displayed a Feeling of Competence instead of a demeanor of being consistently downcast as he was prior to this study. By the end of the study, this mother reported, "all of a sudden everything seemed to click, and I think a lot of it was the Building Blocks and Tools. They just seemed to help quite a bit."

Transfer of Learning

One of the key areas of investigation for this research project related to my students' ability to transfer learning from one setting to another. Brown and Pressley (1994) said that data gathered from what they call "metacognitive interviews" often "reflects more [about] whether students can talk about cognitive processes than [about] whether they can and do use them" (p. 170). Jackson and Butterfield (1986) stated that "transfer of a correct strategy from one related problem to another is a hallmark of metacognitive ability because it is a sign that a problem solver not only knows how to use a strategy but also when to use it" (p. 56). They go on to say that these findings suggest that a teacher's task would be easy if students generalized correct problem-solving

strategies from one problem to other similar problems. Their studies suggested, however, although predicting when transfer could be attained was difficult, cognitive ability could be used to predict student success with transfer. Sternberg (1985) found that "intellectually able students are more likely to show transfer from one situation to another" (p. 57).

I disagree with the implications of these findings that students with learning disabilities are not as likely to be able to develop the ability to transfer learning from one situation to another. My findings in this research project suggest that students need explicit teaching on how to develop their own learning strategies and, given this opportunity, all students, including students with learning disabilities, can and do transfer learning from one setting to another. I also disagree with Brown and Pressley (1994) who found that metacognitive interviews do not reveal whether students can actually use the cognitive processes about which they talk. Again, my findings suggested that students could not only talk about what they could do, but that they could give vivid examples of what they were doing.

Greenberg (2000a) states that "a very important part of transfer focuses on helping students connect ways of learning at school with ways of learning at home" (p. 128). In this study, I utilized Feuerstein's technique of *bridging* as adapted in the CEA approach. My students developed their own strategies for using CEA Building Blocks and Tools in school and then talked about how they might or did develop strategies for using them in other settings at school and home. Unlike the students in Brown and Pressley's study, my students had no difficulty transferring their meta-strategic learning into multiple situations. The CEA approach provides a structure for helping students with bridging by creating "If

. . . , then . . . " statements. Following the structure suggested by Greenberg ensures that bridging meets the conditions for transfer. Greenberg (2000a) gives three basic steps for CEA bridging:

1. Connect a Building Block of Thinking or Tool of Learning to some aspect of the learning experience that students are engaged in.
2. Help students formulate a decontextualized principle that connects the Building Block of Thinking or Tool of Learning to virtually any learning experience.
3. Help students develop examples that tightly connect the decontextualized principle to examples of learning strategies in school settings, home settings, work settings, and social settings (p. 129).

Research on Cognitive Enrichment Advantage (CEA)

In 1984, a federally funded project led to the initial development of CEA for use by the Douglas Cherokee Economic Authority Head Start Agency in east Tennessee. From 1988 through 1995, COGNET, the former name for CEA, became one of 15 national Follow Through education models for young students at-risk for school failure. The U.S. Department of Education awarded several million dollars of support for COGNET research and implementation projects at the University of Tennessee and its use in several field sites. COGNET has been used in elementary schools in Tennessee, on the Flathead Indian Reservation in Montana, in prison schools in several Canadian provinces (Greenberg, 2000a) and in schools in Belgium, Brazil, Chile, South Africa and the United Kingdom (Greenberg, 2000c).

"COGNET received national validation (accreditation) based upon effectiveness demonstrated through 14 studies presented to the US National Diffusion Network's Program Effectiveness Panel in 1995" (Greenberg, 2000c, p. 68). To summarize, these evaluation studies on COGNET (now called CEA) found the following benefits for participants:

1. Assistance for children in learning how to learn.
2. Improved academic performance with the gains of academically at-risk students as great, or even greater, than those of average or above average ability.
3. Help for teachers in learning how to change the way that they interact with students to develop their thinking and learning skills (Ashman and Conway, 1997, p. 168).

I describe three studies that were conducted between 1991-1994 (Greenberg, 2000c; Greenberg, Machleit, and Schlessmann-Frosst, 1996). These studies involved elementary school students from high poverty families in urban settings of white and African-American ethnicity. The project targeted underachieving students considered at high risk for school failure.

In one of these studies, data from three schools using the CEA approach and two comparison schools were gathered from the Tennessee Comprehensive Assessment Program T-CAP) tests administered in 1991, 1992, and 1993. The results reflected a consistently higher average percentage of expected gains for COGNET students in the three schools using the CEA approach than for students in two comparison schools. The

percentage of expected gains were derived from a statistical procedure called "Value-Added Assessment" (McLean, Sander, and Stoup, 1991) This statistical procedure makes it possible to measure improvement of individual students and to pinpoint the strengths and weaknesses of educational programs. The data were based on the number of scale score points necessary to keep pace with the national norm curve at the 50th percentile. A score of +20 represents a gain of 20% greater than the national average. The differences in academic performance from the national norm expected gains for students with CEA ranged from +8.9 to + 29.8 in reading, +6.3 to +44.0 in language, and +6.4 to +23.5 in mathematics. The differences for students in the comparison schools ranged from -5.2 to -12.7 in reading, -8.6 to + 29.0 in language, and -11.7 to -12.7 in mathematics.

The second study analyzed NCE gains for five treatment and comparison groups of students in three school districts. Statistical analysis was used to determine effect size (Glass, McGaw and Smith, 1981) of the difference in gains in reading, language, and math. Effect size was determined by subtracting the mean gains of comparison students from the mean gains of treatment students and dividing by the pooled standard deviation (Fitz-Gibbon and Morris, 1987). An effect size of .30 has typically been accepted as the minimal practice difference (Ralph and Dwyer, 1988). The effect size for reading varied in the three school districts from +.20 to +55. For language the effect size varied from +.90 to +1.00, and for mathematics the effect size varied from +1.00 to +1.50. The results [of this study] revealed an educationally significant effect size in favor of the COGNET treatment groups over their matched comparison groups in all three subject areas (Greenberg, 2000c).

The third study focused on NCE reading, language, and math scores for cohorts of students who attended first grade in 1991 and fourth grade in 1994 in two urban elementary schools and one comparison school. According to national records, the percentage of low income, underachieving students scoring below grade level on achievement tests tends to increase as students move through the grades. In this study, the percentage of CEA students scoring below average reversed this trend. In the two CEA schools 24 % of first graders were scoring below average in reading. By 4th grade only 9% were scoring below average in reading. Similar reversals occurred in CEA schools for language and math scores. In first grade 32% of students scored below average in language and 29% in mathematics. By fourth grade, only 9% of students in CEA schools were scoring below average on standardized achievement tests in language and 21 % in mathematics. In contrast, the percentage of students in the comparison school that scored below average increased in reading by 13 percent and remained unchanged in language and math (Greenberg, 2000c).

Other research studies have been "designed to study the effects of CEA on a teacher's ability to facilitate higher-order thinking and learning skills through the use of a mediated learning teaching method." These studies showed that, in comparison to other teachers, "CEA teachers used intent, transcendence, lesson purpose, and strategic teaching." They also showed that "CEA teachers spent more time with students who gave partial or misguided responses and taught their students to respect each student's opportunity for learning by not blurting out answers" (Greenberg, Woodside, and Brasil, 1994).

Another interesting informal finding occurred in one school as teachers were preparing students to take standardized achievement tests. The achievement test scores for students in classes where teachers fully implemented the CEA approach were compared with students in classes where teachers used the CEA approach at a minimal level, choosing instead to spend class time to intentionally prepare them for the achievement test by using drill and practice on the content areas covered by the test. The achievement test results showed that the students whose teachers fully implemented CEA did significantly better than those whose teachers minimally exposed them to CEA and instead spent class time on drill and practice on test content areas (personal communication, Greenberg, July, 1997).

One component of the CEA approach that makes it unique compared with other learning to learn approaches is the emphasis on family-school partnership. "CEA views learning as important in all arenas of life and at all ages and emphasizes the systematic needs of learners, attending to factors in and outside the classroom that impact learning potential" (Greenberg, 2000a, p. 16). Through the Family-School Partnership Handbook (Greenberg, 2000b), parents or care-givers are encouraged to become active participants in the learning their children receive at school. The importance of adult guidance in children's learning is found throughout the literature, although much of it deals with parents and young children. The following section looks at a small sampling of literature that suggests the importance of having parents participate in the mediation of what their children are learning in the school setting.

The Role of Parents in their Children's Learning

From birth, a child's parents play a crucial role in mediating learning experiences. It is the goal of most parents to guide their child in becoming a competent and functioning adult within their own culture. Feuerstein (1991) suggests that the role of parent is so important that:

> A parent who is reluctant to impart to his children the 'meaning' of existence impoverishes their lives, not only by certain contents, values, and motivations, but by denying them the very faculty and need to search and even construct for themselves meaning for their lives and their activities (p. 27).

Klein (1991) stated that through the mediation of an adult, the child "is led to acquire the need to organize behavior and to match it with the requirements of the task at hand" (p. 214). As the parent mediates the child's environment the adult attends to the child's needs and takes an active role in helping the child see the relationships between current learning experiences and those in the past or future.

Rogoff (1990) reported on studies that examined the remembering and planning interactions of older children with both middle-class adults (as skilled partners) and with their peers (as less skilled partners). Research findings demonstrated advantages of working with skilled partners in memory and planning tasks. "Adult partners consistently evidenced greater sensitivity, demonstration, and modeling of sophisticated strategies than peer partners" (p. 165). In other studies Ellis and Rogoff (1982, 1986) looked at learners' interaction with adults in what they called "guided participation." They found that "the

adults attempted to orient the children to tasks, to provide the links between current knowledge and the new situation, and to structure the tasks" (p. 166). These research studies all supported the idea that interaction with adults is useful for children's learning. They also found that "collaborative planning of adult-child dyads was much more sophisticated than that of peer dyads" (p. 167). However, Rogoff also found that:

> The value of cooperative classroom learning, in which peers work together on academic tasks and provide one another with motivation, guidance, and feedback (Damon, 1984, Slavin, 1987), also suggests that in circumstances in which children have practice in interaction, they may be very helpful to one another (Rogoff, 1990, p. 169-170).

In summary, this brief review suggests that adults and parents in particular can play an important role in helping children learn. NILD Educational Therapy™ also recognizes the importance of parent participation, and thus, includes "parent involvement" as one of the program distinctives. It is stated that the parents play a key role in the success of the therapy process by:

1. Providing the structure and accountability their child needs to enter the therapy process.
2. Supervising homework as needed.
3. Keeping in regular contact with their child's educational therapist to increase their understanding of the therapy process and to adequately partner with the therapist in providing an effective therapy program for their child (NILD).

Research on the NILD Educational Therapy™ Model

The current model of NILD Educational Therapy™ was first introduced by Grace Mutzabaugh at Norfolk Christian Schools in Norfolk, Virginia in 1973. Mutzabaugh's tenacious spirit, compassionate heart and firm conviction of the worth of the techniques, that she learned from Zimmerman, provided the foundation that built the NILD program (Mutzabaugh, 2000). Because of increasing requests for help in teaching children with learning disabilities, NILD was established in 1982 as a non-profit organization to train educational therapists and to help with the development of programs for children with learning disabilities in Christian schools. Under the guidance of the executive director, Dr. Kathleen Hopkins, NILD has experienced phenomenal growth. Today there are more than fifteen hundred active educational therapists in about nine hundred programs, including both schools and independent practices, established in forty-five states and thirty-eight foreign countries. Each year about two hundred and fifty students, from NILD member schools around the world, receive certificates of completion of educational therapy. Many of those have also graduated from college and hold professional positions or are working in the marketplace (NILD, 2001).

Since the current model of individualized educational therapy was first implemented at Norfolk Christian School, a small body of literature has begun to emerge. As the practice of educational therapy grew so did the expertise of the educational therapists as they gained experience and participated in graduate studies. As a result of their research, seven unpublished studies have examined the techniques or components of

the NILD program, or reviewed student progress. These include four masters' theses, one postgraduate culminating project, and two doctoral dissertations.

The work of Hutchison (1981) was the earliest research reported on the NILD program of educational therapy. Hutchison studied the effect of Rhythmic Writing, one of NILD's five core techniques, on the performance of visual-motor integration, cursive handwriting, and the establishment of dominance and hemispheric dominance. This study looked at the effects of Rhythmic Writing for eight students enrolled in educational therapy administered by the researcher during the 1980-81 school year. A control group consisted of students who had been identified as having learning disabilities during an initial assessment but were not enrolled in educational therapy. Hutchison used a pretest/posttest comparison of matched age, gender and IQ for control and experimental groups (n=8 for each group). Performance in the four areas under investigation was evaluated through the formal tests of Developmental Test of Visual-Motor Integration (Beery and Buktenica, 1967, in Hutchison, 1981) and the Zaner-Bloser Evaluation Scales (1979), and also informal surveys of dominance and directionality. The students in educational therapy (experimental group) showed improvements in visual-motor integration and handwriting compared with the control group. However, there were no measurable changes for either group in directionality or hemispheric dominance.

Hanna (1987) studied spelling achievement of students enrolled in NILD Educational Therapy™. The researcher focused attention on perceptual training, phonetic and structural analysis of words, and cognitive strategies. The participating students (n=27) included eighteen who were enrolled in their first year of educational therapy,

while the remaining nine students had already had one or more years of educational therapy. All participating students were administered a spelling pretest as part of their initial battery of diagnostic tests. Following one year of educational therapy, each was administered a spelling posttest. A statistically significant difference showing improvement in spelling achievement was found between the educational therapy students' pretest and posttest raw scores using the Wide-Range Achievement Test-Revised (WRAT-R), (Jastak and Wilkinson, 1984).

Ryff (1991) reviewed the instructional models for students with learning disabilities that were currently in use and the historical perspectives on various remedial perceptual and cognitive approaches. Ryff collected data from 39 Christian schools using the NILD model of educational therapy to analyze the effectiveness of individualized educational therapy. He reviewed both pretest and post-test data compiled from the WRAT-R for 588 students being served by 127 educational therapists in 15 states and three foreign countries. Ryff summarized testing data by separately analyzing the performance of first, second, and third year students in educational therapy. Improvements based on grade equivalent scores ranged from +0.59 years (for third year students in Spelling) to +1.45 years (for first year students in Reading). Based on the size of the sample, the results of the study, and the program longevity represented in the sample, Ryff concluded that NILD Educational Therapy™ was effective.

Thomas (1993) examined the achievement test scores of students (n=72) from six Christian schools using the NILD Educational Therapy™ Model of intervention for students with learning disabilities. Data were gathered for three years (1989-1992) from

schools accredited by NILD. Thomas used a repeated measure of analysis of variance (ANOVA) to test the hypothesis that perceptual stimulation through educational therapy would increase student performance. She analyzed student performance by comparing scores on the Gates-MacGinitie Reading Test and the WRAT-R taken at initial testing and each spring after their first, second, and third year in NILD Educational Therapy™. Five null hypotheses in reading, spelling, and math performance were tested and all were rejected based on the results of the statistical analysis. Significant but varied gains were made in each of the three years of educational therapy. Thomas concluded that her research supported the theory that the stimulation of deficit areas of perception will significantly impact academic achievement.

Dower (1997) investigated students' functional classroom performance to determine if it reflected the gains evidenced on standardized achievement tests as a result of the NILD model of educational therapy for students with learning disabilities. Dower's sample included students (n=22) who were enrolled in educational therapy in two private Christian schools from Tennessee and Pennsylvania. The students in this study had been enrolled in educational therapy from 2 to 8 years. Dower used pre- and posttest measures on standardized tests (Gates MacGinitie Reading Tests and WRAT-R) to determine progress of the students in the NILD program. She analyzed grade point averages on the students' report cards to determine classroom performance in language and mathematics. In addition, information regarding students' work habits was gathered by looking at initial testing evaluation reports and the anecdotal records of the educational therapists. Results of this research revealed that the students' grade average in language and mathematics did

not demonstrate the same positive gains as seen by their standardized achievement test scores. To determine if the students' achievement at the completion of NILD Educational Therapy™ was commensurate with their ability, the final grade averages were compared with their most recent IQ score as measured on the Wechsler Intelligence Scale for Children-Revised (WISC-R) (Wechsler, 1971, 1974). These findings showed that "... 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" (p.39). The students' work habits as measured by classroom performance and consistency in completing homework and classroom work varied between subjects and from one grading period to another. Forty percent of the students showed improvement in this area, while 47% continued to have difficulty with consistent work habits and handing work in on time. There was notable improvement seen in the students' need for modification in their classroom instructional program. Only 15 of the 22 students were evaluated in the area of modifications. Of this number six required modifications initially, but no student was relying on modifications at the conclusion of their educational therapy experience. In fact, four of the students who initially needed modifications achieved "Honor" or "High Honor" standing for all or part of at least one year while in the NILD Educational Therapy™ program.

Hopkins (1996) was the first to look at the NILD model of educational therapy from both a theoretical perspective and an in-depth program evaluation perspective. The basis of her research was founded on the theoretical frameworks of Piaget (1959), Vygotsky (1962/1975), Feuerstein (1980), and Luria (1981). She found that by joining

these theorists it was possible for educators to design an effective intervention program for students with learning disabilities. Three ideas that seemed essential for an effective design emerged from her literature review: (a) interactive language was important in the stimulation of cognitive functioning, (b) individualized intensive mediation aimed at boosting weak cortical functioning was needed, and (c) active involvement of the learner in verbal interchange seemed essential.

Hopkins (1996) used a quasi-experimental nonequivalent control-group design to examine the effect of five instructional core techniques that are part of the NILD model. These techniques, that depend heavily on the use of interactive dialogue to stimulate oral language, are aimed at stimulating the cognitive functioning of students with diagnosed learning disabilities. They include: Rhythmic Writing, Dictation and Copy, Buzzer, Math Block, and Blue Book. (Appendix E)

Archival data, from the initial testing battery and the third year testing battery, became the basis of a statistical review. Statistical procedures included an analysis of covariance (ANCOVA) and a Tukey post hoc test. The .05 level of confidence was applied to the results to test the stated hypothesis. Data was reported from eight Christian schools that had been using the NILD model of educational therapy for a minimum of five years and were accredited by NILD.

Seventy-two students in the experimental group and 25 students in the control group were included in this 3-year longitudinal study. Students in the experimental group had been identified as having learning disabilities based on a standardized testing battery and were all included in educational therapy programs at their schools. Students in the

control group had also been identified as having learning disabilities on the same standardized testing battery, but had not been enrolled in educational therapy due to their parents' choice. The educational therapists who implemented the NILD Educational Therapy™ techniques had been evaluated to determine that the treatment procedures were standardized.

Hopkins' analysis of her data answered three questions that she had asked:

1. Are the groups different? "Students in the experimental group significantly outperformed students in the control group on general and verbal cognitive processes as measured by the DTLA-2." Hopkins stated that based on her research findings students with learning disabilities tend to regress in language on standardized tests, therefore "an increase of approximately 10 points on each of these variables indicates a significant treatment effect" (p. 139).
2. Is performance different over time? "For each of the six variables performance increased significantly over time for the experimental group. Thus increases were noted in reading, spelling, and arithmetic, and in general (GIQ), verbal (VIQ), and nonverbal IQ (NVIQ) scores. Two of the variables, general intelligence quotient and verbal intelligence quotient, also increased significantly over time for the control group" (p. 139-140).
3. Do the groups differ by time (is there interaction of group/time? "A significant interaction effect was noted for five of the six variables: reading, spelling, GIQ, VIQ and NVIQ. In addition, GIQ and VIQ evidenced both

> group and time differences. Both groups evidenced significant growth; however, the experimental group demonstrated impressive gains compared to the control group" (p. 140).

Hopkins' overall results indicated that "students with diagnosed learning disabilities benefit from an intensive individualized program over a 3-year period." She also concluded that "intensive intervention using the NILD Educational Therapy™ Model appeared to affect significant changes in academic achievement in reading, spelling, and arithmetic, and in general, verbal, and nonverbal cognitive functioning" (p. 140).

Hutchison's (1999) research focused on the educational therapist; specifically on an analysis of the questions asked and answered in NILD therapy sessions. Her study, that examined discourse analysis as it is used in educational therapy, helped to guide me in the area of dialogue and questioning skills of expert NILD educational therapists. Hutchison selected three of the core techniques: Buzzer, Dictation and Copy, and Math Block because of their use of interactive language and multiple activities imbedded in each technique. Four experienced NILD educational therapists (all members of the Executive Director's Professional Support Team, PST) were video taped three times throughout the 1997-98 school year. Thirty-six segments of these sessions, 12 for each of the three core techniques, were transcribed and their discourse analyzed. Transcriptions of the tapes, along with a literature review, were sent to the other three educational therapists for review. The four participants in this study met "to review the data analysis, to suggest further analysis, to discuss questions the study had raised, and to jointly construct possible conclusions of the study" (1999, p. 46).

Hutchison (1999) observed two typical discourse structures used in therapy talk: the IRE (Initiation-Response-Evaluation) pattern and a five-step dialogue frame. She also observed four discourse strategies: (a) the use of questions, (b) intonation, (c) repetitions, and (d) pauses. She discussed the IRE pattern of classroom discourse described by Cazden (1988, in Hutchison, 1999) in the following 3 stages:

Step 1: I - INITIATION (teacher calls on student).

Step 2: R - RESPONSE (student responds).

Step 3: E - EVALUATION (teacher comments on student response) (p. 54).

Hutchison stated that "this discourse structure is most often observed in a teacher-led lesson where the teacher elicits and controls both the topic of conversation and the students who participate" (p. 54). Sometimes, it was observed that this structure was shortened to IR when the teacher gave no verbal evaluation. Hutchison observed this sequence in the interactions of all four educational therapists with their students. She stated that:

> The IRE/IR sequence is appropriate in therapy talk when the student responds to a question or a series of questions without the need for further scaffolding or mediation or to provide a common structure to keep the student focused on the task at hand (p. 58).

Of particular interest to NILD educational therapists, Hutchison (1999) found a common dialogue frame was a student's response to the therapist's question, "I don't know" and the therapist's response of "Yes, you do." Hutchison stated that since one-on-

one educational therapy is designed to work on student deficits, the student quickly learns that his response of "I don't know" will be challenged. The therapist's response "indicates to the student that he is expected to recall and produce an answer because his therapist knows that he is able to answer the question"(p. 60).

Hutchison also found that when students had difficulty and further mediation was required, a five-step dialogue frame was more appropriate than either IR or IRE. This dialogue frame was discussed by Graesser (1992, in Hutchison, 1999) as a "pervasive pattern" typically seen in tutoring sessions. The steps for the five-step dialogue frame are:

Step 1: Tutor asks a question.

Step 2: Student answers question.

Step 3: Tutor gives short opinion on answer.

Step 4: Tutor improves the quality of the answer by directly supplying information or by initiating a collaborative exchange.

Step 5: Tutor assess student understanding of answer (p. 20).

Person et al. (1995, in Hutchison, 1999) state that "this five-step dialogue frame offers flexibility to the conversation" (p. 20). It seems to me that step three and/or four of this dialogue frame is the place where the educational therapist might include either prompting (if necessary) or more ideally, probing questions to foster metacognitive thinking, as described by Dominowski (1998). Being mindful of the student's need for mediation should guide her in determining the type of question or suggestion to give.

Initially Hutchison had intended to focus on describing and analyzing therapists' questions. Her analysis led her, however, to the belief that there "was much more to our

dialogue than just the questions we asked and that often the questions we asked were not in an interrogative form" (p.50). Instead, she found that questions did not stand alone as the only discourse strategy employed in therapy talk. She stated, that "in fact, the effectiveness of therapists' questions is enhanced by using several other discourse strategies: intonation, repetitions and pauses" (p. 50). The use of intonation seemed to serve many purposes in therapy talk. Hutchison cited examples of discourse that included elements of pitch, volume, and lengthening of sounds. In summary, intonation was found to "ease the flow of the conversation, support the use of scaffolds, and encourage the jointly-constructed dialogue developed to answer questions" (p. 87).

Next, Hutchison (1999) was struck by the number of times that she and the other educational therapists repeated themselves. Analysis of the data revealed various types of repetitions, including exact repetitions to paraphrasing a question or answer. One therapist noted, "we are thinking so fast to stay ahead of the student that once we hear our original question, we realize it could be better stated and so we do it right away before the student can answer"(p. 90). Hutchison (1999) stated that this often happens when we work in the student's zone of proximal development. "As we jointly construct meaning, a student's answers may be unexpected or far off the topic of discussion, so a therapist may rephrase a question to get herself or her student back on track" (p. 90).

The third type of discourse structure observed in Hutchison's (1999) research was pauses. She stated that many pauses seemed to occur at a change of turn, but other times it appeared that the therapist was waiting for the student to respond or the student was thinking or possibly hedging and hoping for the therapist to keep the floor.

In conclusion, Hutchison proposed an application of the five-step dialogue frame that should be used in therapy talk. She stated that the "application of the five-step frame reveals the collaborative nature of therapy talk that uses scaffolded instruction and mediated learning to stimulate student thinking within his/her zone of proximal development" (p. 112). She proposed the following steps:

Step 1: Therapist poses a problem (directive or interrogative).

Step 2: Student responds.

Step 3: Therapist asks student to clarify or defend answer.

Step 4: Student and therapist collaborate to confirm or refine the answer.

Step 5: Therapist assesses student understanding; may indicate that exercise is complete.

Hutchison (1999) felt so strongly about the importance of this idea that she stated: "if the five-step dialogue frame is not present in a therapist's conversation with the student, he/she may be bypassing or circumventing the hard work of stimulating a student's deficits through mediation and scaffolded instruction" (p. 112). Hutchison's study provides a useful way to look at the student/therapist responses that should he present in educational therapy. I am wondering, however, if the mediation of meaning and/or transcendence might be enhanced by including an alternative to Step five that includes the student in the assessment of his/her own understanding and whether or not the activity is complete.

These seven studies comprise all of the research that has been written thus far on the NILD program. While this body of research is still small, there is enough evidence to suggest that the model of educational therapy designed by NILD is effective. Just as

Hutchison's study focused on the educational therapist and the questions asked in educational therapy rather than on program effectiveness, this present study focused on the educational therapist and her collaborative experiences with mediating her students' learning.

Summary of Literature Review

This chapter reviewed the literature that informs my practice and guides me as I seek to use mediated learning to provide collaborative learning experiences for my students and myself. I began with an historical review of the field of learning disabilities because that is the theoretical basis where I began my personal journey. My introduction to mediated and collaborative learning changed my perspective about the best way to teach. The focus of my teaching is no longer to get the "one right answer," but to provide learning experiences that focus on the process of learning in a way that is respectful and meaningful for my students.

A deeper examination of Feuerstein's theory of mediated learning helped me to understand the essential elements that must be present for high quality mediated learning to occur. This led me to the belief that reciprocity was especially critical for educational therapists who seek to provide collaborative learning experiences for themselves and their students. I reviewed the importance of interactive dialogue and Socratic questioning that leads students who are in their zone of proximal development to develop higher mental functions and to be aware of their own thinking. This literature then led me into cognitive psychology and the area of metacognition that helped provide a the theoretical foundation

for why and how students can develop meta-strategic knowledge to enable them to transfer what they learn from the educational setting to all other learning situations.

I closed this chapter with a brief look at three areas: (a) the role of parents in their children's learning, (b) a review of the research on the Cognitive Enrichment Advantage approach to learning, and (c) a review of the research on the NILD model of educational therapy for students with learning disabilities.

CHAPTER 3

METHODOLOGY

This research project involves a qualitative case study using action research as its mode of investigation. This chapter begins with a review of the literature concerning action research in educational settings. There is also a brief review of case study research. Following a literature review on methods of research, the reader is introduced to the participants who played a vital role in this project. This chapter ends with a description of the research site and the procedures used throughout this study.

Research Paradigm

Lewin (1948) described action research as a series of steps that involve planning, acting, observing and evaluating. This approach is characterized as cyclic in nature because it calls for action plans that are flexible and responsive to situations. The ebb and flow of action and reflection should bring about changes in one's practice as the researcher learns from his/her experiences. As this study progressed, I expected that I would need to make changes in my approach as to how I mediated my students', their parents' and/or my own learning of the CEA Building Blocks of Thinking and Tools of Learning.

Kemmis and McTaggart (1988) defined action research as a form of inquiry undertaken by two or more participants to improve their own social or educational practices. More simply put, action research is trying out ideas in one's own practice as a means of improving and increasing knowledge about the curriculum, teaching or learning process. Peters (1997) suggested that action research "can be pursued in search of interesting new ways of learning, . . . personal and professional development, and to

contribute to theory that can be of general use to others . . . " (p. 64). I chose action research because I was interested in improving my practice and myself personally. I wanted to be more collaborative in the way I approached all people, but especially the students and the parents that I encountered as an educational therapist and/or administrator of the educational therapy program at my school. I felt that as I focused on new ways to learn that I would find new ways of interacting with others in my circle of influence.

Since it is noted that action research gives a sense of empowerment (Merriam and Simpson, 1995; Quigley, 1997; and Schmuck, 1997) for participants in the process of examining their own activities, I felt this means of inquiry would make an excellent tool for the present research project. I believed that collaboration would occur between my students, their parents and me as research partners and would enhance the power of this project. I was very interested in the students and the parents assuming ownership or responsibility in the research process along with me. I believed that as this occurred my students would see themselves as generators of information and that the parents would be empowered to mediate their children's learning in a new way. I also believed that as I observed my own actions I would be empowered to change and improve my skills as a mediator of learning for others.

Winter (1996) identified action research as a key link between self-evaluation and professional development. He stated that the process involves reflection that brings about greater understanding and the need for changes in one's practice. Every practitioner seeking excellence develops plans, observes his/her processes, and reflects on the effects.

The action researcher, however, more carefully, more systematically, and more rigorously reflects on the processes of change in his/her professional development (Kemmis and McTaggart, 1988). These observations give support to the importance of reflection throughout this project.

Case study research was selected because the nature of this project closely fits what Merriam (1998) described as a "case." The National Institute for Learning Disabilities intervention model and the Cognitive Enrichment Advantage approach are both "bounded systems" as defined by Smith (1978). According to Smith, a "case" might involve a student, a group such as a class, a teacher or a program. Miles and Huberman (1994) equated a case with "a phenomenon of some sort occurring in a bounded context." In this project, the focus of study was the particular students in the NILD Educational Therapy™ program, assigned to the researcher for the 1999-2000 school year, who received the benefits of the CEA approach.

I selected the focus group method as one means of data collection for parent participants since the collaborative aspects of a focus group meeting seemed to lend itself well to this project. Krueger (1994) defined a focus group as "a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, nonthreatening environment." Through focus group meetings, I expected to learn about the perceptions of the parents as we discussed the inclusion of the CEA approach inside the educational therapy process. Brotherson (1994) believed that "adherents of a qualitative paradigm should recognize the potential influence of the inquirer and respondent relationship." Because of the nature of the relationship that I already enjoyed

with my students' parents, I expected that the interactive dialogue, usually present in a focus group meeting, would afford me a more in-depth understanding of their perceptions, beliefs, attitudes, and experiences from multiple points of view.

In further support of focus group meetings for this collaborative project Vaughn, Schumm, and Sinagub (1996) cited three distinctive advantages to interactive dialogue in a focus group: (a) focus groups encourage not only interaction between group participants and the group leader but among participants themselves, (b) support given to individuals by others in the group helps to generate greater openness in responses, and (c) participants are not only allowed, but encouraged, to express their opinions and to know that their experiences are valued. Morgan (1997, 1998) outlined the four basic purposes of focus groups as problem identification, planning, implementation and assessment. I used his outline to guide me in the number of focus group meetings that were required.

Research Participants

The four students who joined me as co-researchers in this project were enrolled in the school's NILD Educational Therapy™ program during the 1999-2000 school year. All had been diagnosed with specific difficulties in learning based on an initial psycho-educational test battery. They all demonstrated some strengths in selected areas of learning and various processing deficits that made learning difficult for them. Two of the students in this study were brothers. At the time of the study, Jerry, Jack, Paul and Fred (pseudo-names) were in grades three, four, seven and eight, respectively. I had worked with all four of these students during the previous year(s). They continued as my students during the year of this study. I enjoyed interacting with each of these students because they

demonstrated a positive attitude toward their enrollment in the educational therapy program. Because of the relationship we had already developed, I felt that they were ideal participants for this study. They all eagerly agreed to participate in this project and became my research assistants.

Because I believed that active parent participation was important to student learning of the CEA Building Blocks of Thinking and Tools of Learning, the parents of these four students were also invited to participate in this research project. All of the mothers and one father readily agreed to be research assistants and participate in this project. The parents were given the pseudo-names of Carla, Betsy, Gina and Tom.

Research Site

This project took place at a private Christian school in a metropolitan area in the southeastern part of the United States. This school, a K-12 unit school, is accredited by the Southern Association of Colleges and Schools (SACS). There are currently more than 700 students enrolled in grades kindergarten through twelfth grade. The educational therapy program at this school began in 1987 and was first accredited by NILD in 1994 and re-accredited in 2001.

Students enrolled in NILD Educational Therapy™ have difficulty learning due to processing deficits identified through an individual psycho-educational battery that includes both an individual intelligence test, given by a licensed educational psychologist, and a battery of standardized achievement tests, administered by me. As administrator of the educational therapy program, I select students for the educational therapy program in my school by extensively examining the test battery to determine cognitive or processing

deficits that might inhibit successful learning and problem solving. The lengthy evaluation and analysis of testing information given during initial testing are warranted according to Ashman and Conway (1997), who suggest that "a processing profile generated from a more extensive assessment may provide valuable information [for program planning]" (p. 127). I do not view the students in our school's educational therapy program as disabled learners, but as those whose learning potential has not been reached through traditional classroom instruction. If the traditional criteria for defining learning disabilities by means of a discrepancy factor had been used, the students in this study would not necessarily have received services. As the administrator of the educational therapy program in my school, I have found that students who have low average intellectual capacity and a commensurate achievement profile, can benefit from the NILD Educational Therapy™ process. Because of this belief, and since I am not restricted by state guidelines for funding purposes, a limited number of students, who do not fit the typical criteria for certification as having a learning disability, are enrolled in this school's educational therapy program.

All students in this school's educational therapy program are seen by NILD-trained educational therapists for two 80-minute one-on-one sessions each week. Typically, students continue in educational therapy for 3 to 5 years before graduating from the program. Students demonstrate a readiness for graduation by their successful ability to complete classroom work independently and by becoming an advocate for their own learning in any setting.

Procedure

Before beginning this study, I completed a year long exploratory study during the 1998-1999 school year. During the exploratory study I engaged in some "messing about" to learn the CEA approach to learning. Hawkins (1974) used this term to describe "an ongoing process of reorganizing and testing, through which new knowledge and new plans may modify our behavior." It was during that year that Dr. Greenberg and I worked together to divide the original list of Building Blocks and Tools from COGNET into categories that might make it easier for students and practioners to learn them. I also felt that there was a need for posters (Appendix B) that arranged the Building Blocks and Tools according to these categories. I envisioned that having the Building Blocks and Tools on display in my educational therapy station would provide the students, their parents and myself with a quick reference for learning and using them within our learning experiences.

Also, during the exploratory year, icons were developed that would give the learner a visual cue for each Building Block or Tool. I created a pocket-sized book that I entitled Memory Card Book (Appendix C), with separate pages for each Building Block and Tool. Each page contained the name of a Building Block or Tool, its icon, and its definition. I thought that such a book might be a useful tool for students and their parents to have readily available to them and to help them facilitate their learning. Thus, at the end of one year of exploratory study, I proposed that, while my students, their parents and I would continue to "mess about" to see what new knowledge could be created as we learned the CEA Building Blocks and Tools, we were ready to begin a formal study that

would, according to Kemmis and McTaggart (1988), allow us to more carefully, more systematically, and more rigorously reflect on our process of learning.

I began this research project with a focus group meeting with the parents. I introduced this project by preparing a draft copy of the CEA Family-School Partnership Handbook (Greenberg, 2000b) that was yet to be published. This material was placed in three inch ring binders and given to the parents during the first meeting. They were given an overview of the project and an opportunity to participate if they chose to do so. Each family readily agreed to participate. Together, we devised a plan of what I would do in educational therapy, what they would do at home, and when we would meet again.

Originally, I planned three focus group meetings with the parents. I anticipated that by following Morgan's (1997, 1998) stages the first meeting would include both the problem identification and planning and the second meeting and third meetings would check on implementation and assessment. It became evident, however, that additional meetings would be needed to guide the parents in their understanding of how to mediate their children's use of the Building Blocks and Tools. Consequently, the parents and I met once a month from September, 1999 through March 2000, excluding December 1999. At the conclusion of the study, the mothers also participated in individual exit interviews.

I introduced this study to my students by displaying the posters, presenting them with the Memory Card Book, and inviting them to be research assistants. After they agreed to participate, I incorporated the CEA approach to learning within their regular educational therapy sessions. Beginning in November 1999, all of the students and I began meeting together after school in research team meetings. We met only twice before

Christmas, but then began meeting about every other week from the end of January 2000 until the end of March 2000. The research team meetings gave the students an opportunity to collaborate with their peers and to make explicit their understanding of the Building Block or Tool that was the focus of new learning for that week. During each meeting, the students and I collaboratively constructed a mind map (Appendix D) on the effective and ineffective use of the particular Building Block or Tool under study. The students shared stories of how they were able to use a Building Block or Tool in their classrooms or at home.

Collection and Analysis of Data

The methods of data collection that I initially proposed included written journals from me and my students, and taped recordings of the parents' focus group meetings. Since I found that the students experienced difficulty with writing journal entries that showed how they were learning or using the Building Blocks or Tools, the student research team meetings were initiated to help me with data collection. The students also participated in individual exit interviews at the conclusion of the study. The students' research team meetings and individual interviews were audio recorded and transcribed by me.

I collected data from several sources that allowed my data to be triangulated. These sources included: (a) my reflective notes that I took after educational therapy sessions, the student research team meetings and parent focus group meetings, (b) transcriptions of student research team meetings, (c) mind maps that were a pictorial record of the student research team meetings, (d) transcriptions of parents' focus group

meetings, and (e) transcriptions of students' and mothers' individual exit interviews. The data were analyzed using a constant comparative method of analysis as outlined by Merriam (1998). Merriam suggests that comparisons of this type will lead to tentative categories that can then be compared with each other until the categories that reflect the focus of the study emerge. Merriam (1998) gives several important guidelines that can be used to determine the efficacy of the categories derived from the constant comparative method of data analysis. They are:

1. Categories should reflect the purpose of the study.
2. Categories should be exhaustive, meaning that they include all data deemed as important or relevant to the study.
3. Categories should be mutually exclusive, meaning that a particular unit of data should fit into only one category.
4. Categories should be sensitizing, meaning that the name of the category should reflect the content of the data as clearly as possible.
5. Categories should be conceptually congruent, meaning the same level of abstraction should characterize all categories at the same level (pp.183-184).

I examined each data set one at a time, beginning with the exit interviews of both the students and the mothers. I initially did mind maps of each exit interview so that I could see the any recurring patterns that were emerging from these data sets. Following the analysis of the exit interviews I looked at each of the remaining sets of data in terms of statements that supported the categories that emerged from the exit interviews. At this

point I selected portions of the data that reflected the focus of the study and developed what Patton (1990) calls a "case record." The "case record includes all the major information that will be used in doing the case analysis and case study" (p. 194). It was also at this point that I chose to ignore anything that did not elaborate the categories that were found throughout the data. This became the process of making the "case record complete but manageable" (Patton, 1990). As I read and reread the data while focusing on the selection of categories according to Merriam's guidelines, I found five categories that emerged across all data sets. I also examined the data regarding my use of mediated learning to foster collaborative learning, what the students and their parents said about being a research assistant, and I looked at the students' pre- and post-intervention standardized test results to give me another means of examining my students' changes in ability that might suggest that transfer occurred in academic settings.

Merriam (1998) stated that internal validity is enhanced by using the following strategies: (a) triangulation, (b) member checks, (c) long-term observation, (d) peer evaluation, (e) participatory or collaborative modes of research, and (f) researcher bias checks. Each of these strategies were used at different times during this study. Triangulation was enhanced by an examination of multiple sets of data with the same categories emerging from the data provided by students, their parents and myself. Member checks is described by Merriam as "taking data and tentative interpretations back to the people from whom they were derived and asking them if the results are plausible" (p.204). Member checks were completed continuously through this study as I met with the students and their parents in meetings and individually. Merriam (1998) stated that long-

term observations of the same phenomenon, gathered over a period of time increases the validity of findings. This formal study took place over the course of a nine-month academic year, however, I observed my students and myself using the CEA approach to learning during the exploratory study and after the formal portion of this study was completed. Peer evaluation, another of Merriam's strategies for validation, was ensured by data analysis by both myself and fellow researchers in the Collaborative Learning program at the University of Tennessee, Knoxville. Validity was also enhanced by the active role participants played in all phases of this study. Students and their parents helped me to plan the procedures for this study, to understand changes that were needed as we progressed, and to evaluate the study at the end. My biases as researcher were checked and taken into account during a bracketing interview prior to the analysis phase of this study.

The following chapter examines each category in detail along with specific incidences that emerged from the data to support that category. The stories of how we (the students, their parents and I) learned the CEA Building Blocks of Thinking and Tools of Learning are woven into each category. The changes that took place as we learned are incorporated within our stories to help the reader observe the process of our learning.

CHAPTER 4

OUR STORIES TELL THE PROCESS OF OUR LEARNING

This chapter tells the story of our collaborative learning of the CEA Building Blocks of Thinking and Tools of Learning. It reflects changes that took place as we traveled together throughout this research project. It is hoped that both our struggles and our triumphs of learning are evident to the reader. I share my own story of learning as it is intertwined within the stories of the students' and their parents' learning process.

In this chapter I report my findings from four areas that emerged from the data: (a) a review of the students' learning at both pre- and post-intervention stages, (b) what the parents and students said about being a partner in this research project, (c) the categories derived from thematizing the transcripts, and (d) my use of mediated learning as a framework for collaborative learning experiences. The categories that emerged from my thematic analysis of the transcripts were: (a) the process of learning the Building Blocks and Tools, (b) "things" that helped us learn, (c) learning with others, (d) using the Building Blocks and Tools, and (e) how the Building Blocks and Tools help in life.

The Students: Pre- and Post-Intervention

To provide insight into changes that occurred for students in this study, I have included a review of the students as learners before beginning this study (pre-intervention) and again at the conclusion of this study (post-intervention). This will give the reader some familiarity with the students, a brief look at their learning difficulties, and the changes that occurred. The report of their changes is triangulated from three sources of information: (a) what the mothers said about their child's learning, (b) what teachers said

about the students at the beginning of the study and what they said at the conclusion of the study, and (c) a comparison of the students' scores on standardized tests given prior to this study and again at the conclusion of this study.

The Mothers of the Students. In this study the mothers described the changes in their children's learning in the following ways:

Fred's mother: As Fred's mother recalled Fred's difficulties prior to intervention she said, "When we found out that Fred had so many problems we didn't know what direction we needed to go when nobody would accept him in their school. I didn't even realize that he couldn't even read or write at sixth grade. Now, what is important to me is for Fred to [keep] growing like he is doing . . . and being able to express himself, and to remember things and how to go about doing things."

Paul's mother: Early in the study Paul's mother reported that, "I've tried everything I could think of to get him on the bandwagon." She said that she and her husband had tried many different things to motivate him to make better grades, but nothing seemed to work. By the end of the study she reported that using "the Building Blocks and Tools this year seemed to make a difference for Paul and as a result of the student meetings he just seemed to take it and run with it."

Jack's mother: During the first parent meeting Jack's mother shared that "he has a very hard time saying what he wants to say and he tries so hard but it takes him a long time to do his school work, especially if there was

reading involved." Just recently, Jack's mother and I were talking about how well he is doing in school. His grades are mostly A's and B's and she reports that she has seen a change in his ability to do his homework on his own.

Jerry's mother: In the first parent meeting Jerry's mother stated, "I hope that Jerry won't [always] see himself as so different from everyone else. That, you know, he'll come to a place where he realizes that he's not so different." At the exit interview, she said that [learning the Building Blocks] "still impacts our world today . . . just helping him to slow down and regulate himself..."

The Classroom Teachers. The classroom teachers gave the following comments about the students' learning in the past compared to their current learning:

About Fred: When Fred first began at our school, I did not think he would be able to survive academically. He continues to struggle in learning, but is now attending to the task of learning better and is making satisfactory grades in most classes with very little modifications. Fred's Biology teacher shared that Fred is one of his best students in lab.

About Paul: Something has happed to Paul this year! There has been a change in his countenance. He seems to have gone from the child that seemed so unmotivated to learn to a young man that carries himself with greater confidence and shows a desire to achieve to the best of his ability.

About Jack: Wow, Jack has really become one of my top students in history and science. He always does the extra credit and volunteers information in class that really helps the class in learning. Jack's former teachers reported that he rarely contributed in class and seemed unsure of himself.

About Jerry: Jerry was unable to continue in the educational therapy program this year although he still struggles in school academically. However, his ability to control his behavior and participate in the classroom in task appropriate ways has really improved this year.

Test Scores. The students in this study were identified as having learning difficulties on an initial psycho-educational test battery. This complete test battery is re-administered at three year intervals. Each student in this study was administered both a pre- and post-intervention intellectual and achievement evaluation. Research findings (Anderson, Cronin, and Kazmierski, 1989; and Zhu, Woodell, and Kreiman, 1997) demonstrate that the average IQ scores of children with learning disabilities [that do not receive appropriate intervention] are lower after a 3-year interval. However, three of the four students in this study demonstrated an increase in their full-scale intelligence quotient that ranged from 8 to 12 points. One of the student's full-scale intelligence quotient was two points lower than his pre-intervention score, though there were significant improvements in his reading and written language scores on the achievement test.

For the purpose of this study I will report only part of their full pre- and post-intervention test battery. Test scores from the Wechsler Intelligence Scale for Children-III include: Full-Scale Intelligence Quotient, Verbal Intelligence Quotient, and Performance

Intelligence Quotient. Achievement in reading, mathematics, and written language were measured by the Woodcock-Johnson Tests of Achievement-Revised. To measure these areas, the following subtests were administered: Letter-Word Identification (Letter-Word Id.), Passage Comprehension (Passage Comp.), Calculation, Applied Problems, Dictation, and Writing Samples. All of the post-intervention achievement scores for the students in this study demonstrated changes in ability suggesting that, for students that have difficulty learning, transfer can occur in academic settings when they participate in an intensive intervention targeted at stimulating deficit areas along with the opportunity to develop meta-strategic knowledge through an approach like CEA.

Table 1 illustrates each student's standardized test scores at pre-intervention (Pre-I) and three years later at post-intervention (Post-I). Standard scores, based on a mean of 100 and a standard deviation of 15, are given as well as the students' chronological age at the time of each administration. A review of these test scores showed that all of the students in this study made gains in intellectual ability and/or achievement. Some gains were significant and very encouraging. The presentation of these test scores are given to provide triangulation of data and lend support to what the parents and teachers said about the students in this study and are not an attempt to do a statistical analysis regarding the benefits of CEA. A statistical analysis cannot be derived from these standardized test scores for three reasons: (a) data does not meet the basic assumptions required for statistical analysis, (b) the sampling is not large enough, and (c) there is no way to ferret out the difference in effect from the NILD Educational Therapy™ program and the CEA approach.

Table 1

Standardized Test Scores at Pre-Intervention (Pre-I) and Post-Intervention (Post-I).

	Fred		Paul		Jack		Jerry	
	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I
Age	12-2	14-9	10-11	14-0	9-8	12-2	7-4	10-5
Wechsler Intelligence Scale for Children-III								
Full-Scale IQ	81	93	90	101	93	101	89	87
Verbal IQ	81	91	90	94	85	97	97	91
Performance IQ	84	96	91	110	104	106	82	84
Woodcock-Johnson Tests of Achievement-Revised								
Letter-Word Id.	81	84	91	94	78	79	79	111
Passage Comp.	89	97	95	106	87	98	87	103
Calculation	86	96	97	117	85	97	79	80
Applied Problems	89	94	89	106	87	100	98	103
Dictation	65	72	84	79	77	83	54	87
Writing Samples	65	91	82	113	81	110	77	108

Research Assistants

I was very interested in finding out what the students and their parents had to say about being asked to be a research assistant in this study. I thought that including this information might be helpful to other teachers or educational therapists who were interested in doing an action research project with their students and/or their students' parents. My findings suggested that all participants in this study felt a sense of ownership and that this appears to be important to their efforts to be successful. I've included comments from both the parents and the students:

Fred: [I felt] kind of important. That [I] was doing something that not everybody else would be doing. And, I wanted to do a good job at it.

Jack: I don't know, good I guess. I sorta felt good.

Paul: I guess I was glad that I could help. And glad that I could help you and learn better at the same time.

Betsy: [I felt] nervous. (laugh) I didn't really feel like I was qualified or anything like that. At the beginning of this project, I told [Paul and Jack], it may seem like a lot of work ...but, you know Mrs. Collins has been so good to us to help us... this is the least [we] can do.

Carla: I felt this [Jerry's learning difficulties] is a hard thing to deal with and if it helps someone else to have an easier path then I am in favor of it.

Gail: Did Jerry have any comments about being a research assistant?

Carla: I think he enjoyed that, I think it made him feel like he was doing something to help someone else.

In interviewing Jerry his comment was a punctuated version of what his mother had said:

Jerry: I felt neat! Cause I thought that I could help you a lot and stuff.

Although Gina did not directly answer my question about being a research partner she did state:

Gina: So, these things that you have, the Building Blocks of Thinking and Tools of Learning, it makes you stop and think and if I didn't come in here I wouldn't realize that this is what we're dealing with.

These comments give evidence that inviting students and parents to be a part of a research study does much to bolster their self-confidence and demonstrate to them that what they have to say is very important. Our joint efforts in this project brought about a community of learners that in all probability would not have been possible otherwise.

The Process of Learning the Building Blocks and Tools

The process of learning is the first of five categories derived from thematizing the transcripts. This category includes a discussion of my findings in three areas: (a) my learning, (b) students' learning, and (c) parents' learning.

My Learning. Hall (1975) discussed the transition of teachers moving from novice to expert when attempting a new practice. These five levels of implementation included: orientation, mechanical use, routine use, integrated use, and renewal. The exploratory study, that took place in the year prior to this formal study, allowed me to become orientated to CEA and to "mess about" with using the Building Blocks and Tools with my students in an informal way. Although I began this formal project as a novice and probably

at the mechanical stage, my years as an educational therapist gave me the confidence that I could quickly move from mechanical use to integrated use and beyond within a short period of time.

Therefore, I initially set up a time frame for this research project to take place over the course of about six months. I anticipated that within that amount of time, my students, their parents and I would be able to internalize at least some of the Building Blocks or Tools so that we could use them in a variety of learning experiences. I expected that, as I reflected on what I was doing, it would necessitate changes in the approach that I was using to guide my students, their parents and/or myself in developing meta-strategic knowledge. I did not anticipate, however, the length of time that it would take me to move from the mechanical stage into the integrated use stage in my ability to implement CEA. In practice, I found that all participants in this research project, including myself, needed at least a year of formally incorporating the Building Blocks of Thinking and Tools of Learning inside the NILD Educational Therapy™ process to develop meta-strategic knowledge that was commonly used in multiple settings.

Initially, since I was aware of the importance of mediating my students' learning when there was a need, I thought I should wait for the need to be evident before introducing a new Building Block or Tool. Therefore, at the beginning of this study, I introduced a new CEA Building Block or Tool as I saw each student demonstrate a need for that particular one. As a novice in CEA, I soon found that with each of my students learning different ones, I became confused about the essential elements of the various Building Blocks or Tools. The following notes from my reflective journal suggested the

need for changing my approach as to when to introduce a new Building Blocks and Tools in educational therapy:

> October 5, 1999: *I am feeling frustrated by my not really knowing which Building Blocks or Tools each of my students have already been introduced to and by my lack of ability to recall the essential elements for each one. This problem is causing me difficulty in being able to mediate my students' learning and to help them make connections with past and present learning experiences. How can I expect my students to do this when I am having so much difficulty remembering them myself? Is there a better way to do this?*

Shortly after that, in a meeting with the students' parents, I shared my frustrations. Through a collaborative effort, it was agreed that I would change the way that the Building Blocks or Tools were introduced in class. Instead of each student doing different ones, we agreed that, for a given week, I would focus on the same Building Block or Tool during all of my students' individual educational therapy sessions. During this meeting the parents shared that they did not always know what Building Block or Tool their child was supposed to be focusing on that week. This showed me that I needed to ensure that the Building Block or Tool for that week was noted on students' assignment sheets. The parents felt that regularly having this information would make it easier for them to follow up with more discussion and learning about each Building Block or Tool at home.

Having all of the students learning the same Building Block or Tool at the same time also provided a platform to make another change that would enable the individual

students to collaborate with the other student researchers in after school "research team meetings." These meetings gave the students the opportunity to collaborate with their peers and to make explicit their understanding of the Building Block or Tool that was the focus of new learning for that week as they constructed a mind map that I recorded on the chalkboard. The students focused on the effective and ineffective use of the particular Building Block or Tool under study for that week and shared stories of how they were able to use a Building Block or Tool in their classrooms or at home.

The students, however, were not the only ones that benefitted from the meetings. I quickly discovered that these meetings gave me the opportunity to more explicitly learn the essential elements for each Building Block or Tool under study for that week and to observe my students as they demonstrated their understanding and collaborative learning of each new Building Block or Tool. The addition of the after-school meetings added a new dimension to both my learning and the learning of the students.

Students' Learning. I begin this portion of the discussion by sharing the story of one of my student's initial reaction to receiving his own copy of the Memory Card Book. I created this small pocket-sized book as a tool for the students to keep with them and to use as they saw a need for a Building Block or Tool. Almost immediately after giving the Memory Card Book to Jerry I was called out of my office for an urgent phone call. I asked Jerry to look at his new book while I was gone. When I returned a few minutes later, the following conversation took place:

Jerry: I have the very best teacher there ever was.

Gail: Why do you say that?

Jerry: Because no other teacher would ever take the time to make me a book that I can use in so many ways.

Gail: Wow, Jerry, I am glad that you are excited about your new book! How do you think you will be able to use it?

Jerry: One of the things that I see I need is Sharing Behavior. I need to learn to share better with my brothers when I am at home.

Jerry had been "messing about" with the Building Blocks and Tools prior to this, but receiving this book seemed to heighten his enthusiasm about what he could learn through the CEA Building Blocks and Tools. His enthusiasm was echoed by the other students as I gathered them together to invite them to participate with me as co-researchers in the project.

In exit interviews the students and their parents shared their reaction to process of learning the Building Blocks or Tools. This is Jack's story:

Jack: It was very hard... because I thought I had to learn them all at one a time.

Gail: Why did you feel that you had to learn them all at one time?

Jack: Because I needed to learn them real quickly.

Gail: You felt some kind of pressure that you had to learn them quickly?

Jack: Uh, huh

Gail: Okay, was that a pressure that you felt from me or was that something else?

Jack: Something else

Gail: Something else? What was it?

Jack: I don't know.

Although Jack made significant progress in processing language, expressing himself in a way that clearly gives himself and the listener an understanding of what he is thinking is sometimes still difficult for him. About two weeks later, I asked Jack again about the pressure that he said he felt to learn the Building Blocks quickly. He still could not clearly talk about why he felt that way. As the reader will see later, Jack can now clearly express how the Building Blocks and Tools were useful to him.

Paul shared this about his process of learning the Building Blocks and Tools:

Paul: I thought it was pretty hard at first. But, we would talk about them, then they became pretty easy.

All of the students did not talk about their process of learning, although all did share stories of using the Building Blocks and Tools in multiple settings. These stories are found under other categories presented later in this chapter.

Parents' Learning. The parents met in focus group meetings once a month from September 1999 through March 2000 except December 1999. Betsy (Paul and Jack's mother) and Carla (Jerry's mother) shared their initial reaction to learning about CEA:

Betsy: Oh, my goodness! (laugh) What have we gotten into? It looked like a lot of, a lot of work. Homework.

Carla: Honestly, it was a bit overwhelming. I thought, 'Oh dear this is going to be a task.'

Both Betsy and Carla changed their views as the study progressed. Carla described her learning process during the October meeting when she said:

Carla: What I do [is take] these out a lot of times when I'm fixing a meal. I have a bench in the kitchen and [Jerry will] sit in there and we'll talk. And uh, that's mainly when we've been going over [the Building Block that you have introduced]. And it's on the refrigerator. So it's easy for me to get to even when my hands are busy, they're [the Building Blocks or Tools] there.

During the exit interview, Betsy shared how she mediated her sons learning at home:

Betsy: I used some of the stories [in the Family-School Partnership Handbook (Greenberg, 2000b)] when I was going over [the Building Blocks and Tools] with Paul and Jack. I read the stories to them and let them say, before we got to a point, (in the exploration one) where [the mom's] asking her child how are they going to find the chalk that they need in the discount store, "What would they do first?" And before I read the child's answer I stopped, and of course Jack had given me his answer. And then I read the child's response and the mother's and then Paul gave me his response. And it was interesting to see. Jack's first reaction was kind of like the boy's first reaction. "That there might be a word that says 'chalk' you know on the aisle sign indicator." And then Jack and Paul got to discussing it. And Paul said, "Well you know it probably wouldn't say that, like [the mother in the story] said, it would probably say 'school supplies' or something."

Gail: So you did sit down with your kids when we would introduce a new one and talk about it then?

Betsy: Yes, I don't think we did with all of them, but with a lot of them we did.

By the February meeting, Betsy demonstrated her understanding and use of two Building Blocks:

Betsy: Well, I think I can tie this Self-Regulation to Problem Identification...

Also in the February meeting, Carla comments about using some Building Blocks with Jerry at home:

Carla: I have a couple [of Building Blocks that we are using]. Of course homework is an issue at my house. So, I've found several different Building Blocks that I could link to homework...

In contrast to Betsy and Carla who understood and personally used the Building Blocks and Tools, both Gina and Tom, the parents of Fred, experienced difficulty learning about and using them. Throughout this project they tried and from time to time said they understood, although the following comments, that occurred over time, expressed their difficulty in learning the Building Blocks and Tools:

During the October meeting at the end of the first month of the study Tom said:

Tom: I see what you're saying, but I'm still lost on exactly what to do. I haven't really done anything because I thought we were gonna have another meeting and sort of go over it. This is sort of overwhelming.

Later in the same meeting:

Tom: I've been reading through it [the Family-School Partnership Handbook (Greenberg, 2000b)].

Gail: Okay. Did it help you any?

Tom: It's just that I'm not used to working it like you are. And we're just trying to comprehend it like the kids are sort of.

Gina suggests that she now understands her role as a parent participant in this project after I ask:

Gail: Have you spent some time going over the pages on the Building Blocks that I've introduced to him when I've written one down or he's written one down on his assignment sheet?

Gina: No

Gail: Okay, well that's what will need to happen.

Gina: Okay, now I think we understand a little more what you're asking.

And together, at the end of this meeting, both Tom and Gina review their frustration and what they now understand:

Tom: We just got lost in communication. I might have been waiting to hear, Here, this is what we are working on and I never did hear that.

Gail: Okay

Tom: Now, Carla, she's doing it right, or started on it. But,

Gail: Okay, so what can I do to make it easier for you all?

Tom: Just let him tell us "We're on Problem Identification or whatever."

Gail: And then you need to pull out the page [from the Family-School Partnership Handbook (Greenberg, 2000b)] on that Building Block, okay?

Gina: Now that we know what to do.

Tom: Yeh, that will be simple to do.

Gina: Okay.

Their ongoing frustration continued to be evident a month later when we met again. At this meeting, in November, I shared that my observations of the learning of all participants showed me that my original intent to complete this study in six months was unrealistic. Tom agreed with me by saying: "It's more complicated than that, and you know what it is and we don't really..."

During the February meeting, Gina openly expressed her uncertainty about her role in this project. During this meeting I was attempting to mediate meaning (an essential element for mediated learning) for all of the mothers (Tom was absent). I wanted them to have a Feeling of Competence about what they were learning and thought that might happen if we all wrote a brief story about how we were using one or more of the Building Blocks or Tools. After time was given for everyone to complete their "writing assignment" the following comments were given by Gina:

Gina: It's just like when you say to me, you may have even pointed to me, when you [were] talking about taking pencil and paper and writing something down, it's a struggle for me.

Gail: Well, I'm not going to collect them.

Gina: Well, I know but I'm not sure what you . . . It didn't matter if you did [collect them] or not, I'm just not sure what you want, right. And, I think should I put this down, but I don't because I'm not sure if that's what [you] want and it's a block.

During the March meeting, one month later, Gina again felt free to share without Tom being there. After the other mothers had shared their stories of specifically using the Building Blocks or Tools with their children, Gina told a story about Fred wanting to buy a certain type of gun to shoot hogs. She gave a long explanation of how Fred systematically talked to three different people in an attempt to learn about the gun and to find the best price. However, Gina never used the name of any Building Block or Tool. Then toward the end of her story she said:

Gina: So you see he was getting information. He went back to a magazine and uh, checked their price, so you know . . . I don't know if it has anything to do [with the Building Blocks] but,

Carla attempted to help Gina see the relationship between what Fred was doing and the names of specific Building Blocks:

Carla: Oh, yes, it does.

But, Gina goes on with her story:

Gina: He was amazing. This again, is what we want them to do, to have a good self-esteem cause they're going to have a family [someday].

Carla: Right.

Gina: They're gonna have. . .

Carla interrupts and tries again to help Gina make the connection by telling her:

Carla: He was Systematically Planning, he was Making Comparisons.

But Gina still does not see the benefit of using the names of the Building Blocks or Tools as she talks with Fred at home. The conversation continues:

Gina: You know he does that a lot. So I'm sure by him not coming out and saying, "this is what she's teaching." It's there.

I then suggested:

Gail: It would help to connect that though.

Gina: Sometimes I think he may need to help me connect that.

All: (laugh)

Gina: It's amazing though probably in his discussion I did it without knowing what I was doing. Because I told him that was a good plan for him to do. And I said, maybe . . . tell him to check into it and find out if he could get it cheaper, whatever. Anyway, that was very impressive to me.

Gina was certainly mediating her child's learning but was having a difficult time knowing when and how to use the names of the Building Blocks or Tools. A few minutes later Gina repeated her uncertainty when she stated:

Gina: We don't know what you are wanting.

She echoed this same feeling in her exit interview, but this time she shed more light into her underlying difficulty that included fears of: " What if I don't say the right thing," or "What will other people think?" She gave the following comments during the exit interview when I asked her to talk about the change that occurred in the parent meetings when Tom could not be there during the last two meetings:

Gina: Well, uh, I think it was when I decided, okay, now Mrs. Collins has been really out there for us. She has a goal in her mind and she's done so much for my son. I thought, nobody's got the nerve to speak up and say, "What do you want?

> You tell us in simple form." And I was afraid to do that. And that's why I'm afraid to talk to teachers and so forth, because I think, "What if I don't say the right thing or what if my English is not right?" You know, you sit back and you worry about what other people think. And so I finally thought, well Tom was gone too, and if he'd been here I wouldn't have been able to say it, because he will say, "What did you say that for?" But, that's what opened up because everybody felt that way. Because they didn't know what you wanted. But you were wanting us to tell you and just like today, I really don't know what you want but I thought about it, and I thought, well if there's something that I could say.

When I interviewed the other mothers, neither of them offered the same feelings that Gina expressed that "they didn't know what you wanted." Instead, both Betsy and Carla told me how they used the Building Blocks or Tools themselves and/or how they used them to mediate their children's learning.

As I reflected on the struggles that Gina and Tom faced in mediating their son's learning of the Building Blocks and Tools I was struck by the stories they both shared of mediating his learning in other ways. They appear to be doing an excellent job of parenting and their lack of ability to have a working use of the labels for the Building Blocks and Tools has not seemed to affect Fred's learning of them. As is seen in other places in this report, Fred uses the Building Blocks and Tools by name in many formal and informal learning situations.

I also reflected on why Betsy and Carla seemed to be able to move from their initial reaction of "what have we gotten into?" and "this is going to be a task" to being able to mediate their children's learning and to use the Building Blocks and Tools by name. It seemed like the difference was directly related to their being able to get inside of the materials provided for their learning. Both Betsy and Carla talked about using the Family-School Partnership Handbook (Greenberg, 2000b) (although they did not call it by name) and the Memory Card Book. They mentioned reading stories to their boys, paying attention to the "refrigerator pages" (these pages, found in the Family School Partnership Handbook summarizes information needed for family mediators and their children to plan mediated learning experiences for each Building Block and Tool), and talking with their children about the Building Blocks and Tools by name. I believe the now published Family-School Partnership Handbook would provide an even easier tool for parents to be able to "get inside" and learn to mediate their children's learning. Both Betsy and Carla said the new book might have been easier for them to use. They used words like "less daunting" and "not quite as intimidating" to describe the new Family-School Partnership Handbook compared with the draft copy that I gave them in a three-inch ring binder.

"Things" That Helped Us Learn

This section discusses my findings from the second category that emerged from my thematic analysis of the transcripts. Throughout this research, the students and parents talked about various "things" that occurred in the project that seemed to have an impact on their learning.

The Student Research Team Meetings and Mind Maps. were very important to the learning for all of the students. Fred said:

Fred: I think the meetings helped you to learn it better, because you were talking about it and then when you wrote it on the chalkboard, you could see it, and you go into a little more detail about it.

Jack also talked about creating the mind maps on the chalkboard at the meetings:

Gail: So what helped you to understand [the Building Blocks and Tools]?

Jack: When we wrote stuff on the board, because we knew what it meant when we wrote stuff on the board it came to be more useful...instead of just thinking what we thought it meant.

Gail: So was there something that helped you to understand it better?

Jack: Just all the stuff that we wrote on the board. It was useful information.

Betsy felt that the meetings made a significance difference for both Jack and Paul, but she especially mentioned that they were helpful for Paul:

Betsy: It seemed like once [Paul] started... the group meetings with other kids where they could throw out thoughts and ideas and ways to handle different things. It seemed like after that he just took it and ran with it.

Paul affirmed that creating the mind maps, in the meetings, was important to him. In fact when I asked him if there was anything that was more important than other things he said:

Paul: The mind maps helped, because you could look and if you couldn't remember really what it could [do to] help you [then] you could look and figure out what you didn't want to do. And if you didn't use them the right way, they might

not work so good. [It was important information] because if you know ahead of time what would not be good, maybe you wouldn't do it later on ... when it's really counting.

His last comments were about the fact that we included both efficient and inefficient use of each Building Block or Tool on the mind maps.

After each meeting I copied the mind maps that were created on the chalkboard onto paper. Then I put them into the computer using Corel flow to create a "print out" of exactly what the students had created together in their meetings. These computer reproductions (Appendix D) were put together in notebooks for the students.

The importance of the mind maps to Jerry was illustrated by the following stories. After completing the first computer reproduction of a mind map Jerry excitedly reviewed it in class. He told me that he did not want to put it in a book, but wanted to frame it and hang it in his bedroom. Later, in a parent meeting, when I was reporting to the parents about the students' experiences of creating the mind map in class and their response to seeing the first computer reproduction of their ideas, Carla stated that:

Carla: Jerry, was really excited about his [mind map].

Gail: He may have been the one that said, he wanted to put it in a frame.

Carla: I bet he was, he was really proud of that!

On another occasion, when Jerry came to class on the morning after a research team meeting, the chalkboard had not been erased. He seemed to relive the meeting as he wanted to review what was on the chalkboard before it was erased. He commented, "It was fun!" He was especially animated when he told about the things that he contributed in

the meeting. He excitedly pointed out certain ones and said things like, "I remember for impulsive Exploration, I said not being careful."

The Memory Card Book. was another tool that proved to be helpful to both the students and their parents. Although there were various names given to this tool, such as "little book" and "Building Block book," several gave comments about using this book at home or in Discovery (the name given to the educational therapy program at this school). Fred talked about using the Memory Card Book in class:

Fred: Like if something came up [in class] we would look in [the Memory Card Book] and read about it.

Gail: Okay, so do you remember opening that up? Was that helpful?

Fred: Yeh, cause you could always go back and look over it and like set a goal and find out the information about it.

Paul also talked about using the Memory Card Book in class:

Paul: We looked at the little book [in class] and read the definition and wrote down an "if . . . then" statement.

Both Jerry and Carla confirmed that the "little book" was really important to them.

Gail: What helped you the most learn about the Building Blocks and Tools?

Jerry: The little Building Block book. It has all of 'em in it with the definition and it has each section of different colors and it would have like all the Building Blocks on the one section on each page and it would tell you the definition on the bottom and it just . . . and that helped me a lot. I used it at home and I used it a few times in school. Right now it's at home on my dresser.

Carla gave further insight to Jerry's use of the Memory Card Book at home:

Carla: I still feel like the best tool has been the little book that we all use.

Gail: The little Memory Card Book?

Carla: Yes, of course that is just easily at hand and we can thumb through it. I mean, we keep that on our coffee table... if I'm having a particular problem, I will thumb through it and try to find something to revert back to.

Gail: Okay, so you are still doing that now?

Carla: Oh, yes, even today.

Gail: Well, Jerry is also very aware of the fact that the book is available to him. But, he told me that he kept it on his dresser.

Carla: Well, he takes it, you know, if we have looked through it, he takes it [to his bedroom], so it is still in use.

When Betsy was asked what she thought from her perspective was the most helpful for her boys she said:

Betsy: I think the small memory book, they used it quite often. And Jack [has] used it more than Paul . . . , well some of it was like when Jack was doing his Discovery homework I would see him get it [Memory Card Book] out and he would thumb through it and seemed to be looking for what he would need. And I would just watch him and see, you know, he would lay it open to a page and then he would get back to work.

"If ... then" Statements. I was surprised that during their exit interviews two of the students mentioned that writing "If...then" statements in their notebooks was something

that was an important part of their learning. I did not think this activity had affected their learning because the students did not do this as often as I had hoped. My assumption that this was not very helpful since they did not always have their notebooks with them and I found that, without a lot of guidance, it was somewhat difficult for students with learning difficulties to generate "If . . ., then . . . " statements. While my students could generate such statements and could apply the decontextualized principles to other settings, I observed that it took a lot of practice for them to become efficient in developing written strategies. However, Paul mentioned using writing "If...then" sentences in class and Jerry also commented that writing sentences in his notebook was helpful to him.

Gail: Tell me what you remember about learning [the Building Blocks and Tools].

Jerry: I would think and I would write sentences about them in my little notebook. And I would like just to think about them and write them down. And look over them and kind of remember them.

Gail: Okay, do you remember how the sentences began? What word did they begin with?

Jerry: I started with the Building Block, I think.

Gail: Did they start with the word "If I..." and then you put in the name of a Building Block?

Jerry: Oh, yeh, If I used Self-regulation, then I could just do what I needed to do and be good and stuff. That was one of 'em.

The notebooks were sometimes brought to the student research team meetings where each student added an "if. . . then" bridging statement to their notebooks. During

the meeting focusing on Problem Identification the students wrote the following statements:

Fred: If I use Precision and Accuracy, then I will not have to use Problem Identification as much in my work.

Paul: If I use Precision and Accuracy, then I might not have to use Problem Identification.

Jack: If I use Problem Identification, then it helps me find what is wrong.

Fred and Paul were surprised that they both had written almost identical bridging statements. They both defended their answers with the fact that even when Precision and Accuracy is used it does not ensure that a person will never make a mistake. They strongly supported why they had included the words "as much as" and "might not" in their statements. Our collaborative discussion helped the students and me see the importance of using more than one Building Block within the same learning experience.

Posters. It was interesting to me that none of the participants mentioned the posters that are still on the walls in my educational therapy station. The 12 Building Blocks of Thinking are divided into three categories: (a) Approaching the Learning Experience, (b) Making Meaning of the Learning Experience, and (c) Confirming the Learning Experience. The eight Tools of Learning are divided into two categories: (a) Understanding Feelings within the Learning Experience, and (b) Motivating Behavior within the Learning Experience. The five posters, one for each category, displays the name, a short definition and an icon for each of the Building Blocks or Tools in that category. (Appendix B) The posters are perhaps the most helpful tools to my learning. I

wonder, is that because I spend more time there than any of the other participants? Although I frequently used the posters to focus a student's attention on a certain Building Block or Tool or to help them see the relationship of one Building Block or Tool to another in the same category they apparently did not stand out for the students as a means for them to learn.

This section, "things" that helped us learn, included evidence that students learned in a variety of ways with each contributing to their understanding at different times. The student research team meetings were mentioned by both students and parents as very important. The students especially felt that the mind maps that were collaboratively constructed by them based on their own understanding was what helped them really understand the Building Block and Tools. Other tools that were helpful and mentioned by most participants were the Memory Card Books and the writing of "if...then" statements in their notebook/journals.

Learning With Others

The learning with others category includes sections on (a) parents learning with others, (b) students learning with others, (c) students learning together in research team meetings, and (d) my learning with others.

Parents' Learning With Others. The parents talked about the support and encouragement that was evident throughout this study. The following comments from the mothers occurred at different times throughout the study:

Carla: I think the meetings are good to kind of get together and explore what we're doing with the children.

Betsy: I think [the meetings] were good. It was nice like the same way that probably the boys felt. You got to see that you weren't the only one experiencing the same things and the same struggles . . . It was interesting to hear how other parents would use something and then you could take it and try it and see if it worked with yours. So I think it was very good.

Gina: I mean like the meetings here... We know we're discussing and we're learning a little bit from each other.

Betsy: I didn't always feel like we had given you what the information you were really reaching for, but I felt better as far as being encouraged myself when we left.

Gina: We didn't want to leave, [we] were so inspired. So I think that it was a good thing. It was like [we] were getting a burden lifted off of [us].

All of the mothers suggested that I should continue with small group meetings in the future with all students who are learning CEA and are in educational therapy:

Gina: Well, that's something like this you might want to do all the time, is bring in parents all the time and talk and see how they feel about things.

Gail: Do you think that makes a difference in how well you're helping your kids?

Gina: Yeh, in a way cause I see her problem and I think, "My, I don't have a problem like she does." When you open up and you talk about things and you find out, well, she's got the same problem.

In separate meetings, both Carla and Betsy suggested that once a month would be about right:

Carla: I would think once a month, with people's schedules it would probably be hard to do it any more frequent than that, but I think you know so much, so I think a monthly meeting would not be out of the question I wouldn't think.

Betsy: I think that [meeting once a month] was good. It's kind of like a small prayer cell. I think it was good.

I was surprised to learn how the parents wanted to continue to meet. Sometimes, I make an assumption, that parents don't want to have to come for "one more meeting." The data from this study suggests, however, that small group parent meetings are very important to the parents. They felt as if they gained by having a feeling of support and encouragement. The parents told me that even after the meetings were dismissed they continued talking out in the parking lot. They also shared that as they met together month after month they got to know one another and felt free to share openly with one another. After hearing the parents' responses to the meetings, I reflected on my assumption that parents don't want to meet and wondered if it was just me that did not want "one more meeting."

Students' Learning With Others. The students talked about learning that occurred in the student research team meetings. Paul talked about how at first he perceived that learning the Building Blocks and Tools was hard, but then they became easy, I asked him:

Gail: What made you change your mind?

Paul: When we would talk about them more when we had our little meetings and stuff. And we would understand them more. Get a better understanding of them and how to use them better.

Fred, Paul and Jack all told how meeting with others helped them learn:

Fred: I thought [the meetings] were pretty good because you can sit down with a couple of you'all and talk over it and share your ideas about it. I think the meetings helped you to learn it better.

Paul: If I didn't think of where it could help me and then like other people suggested it and I said, "Okay, that could work."

Jack: We could all meet together instead of seeing one person at a time.

Gail: How did it help you to listen to other people?

Jack: Because, figuring out what it really meant when we met together.

Jerry and I were talking about the mind maps that were created in the student meetings. When I asked him if he felt like he was helping others to learn he shared the following:

Gail: Did you feel you were able to give some information that was helpful to the rest of the group?

Jerry: Yeh, and they gave some definitions to me.

Paul demonstrated ownership for his part in the meetings when I asked him if he thought about the meetings ahead of time:

Paul: I was kind of thinking of what I could do to help and not just sit there and listen and not do anything. Because probably if you try and understand it without like, just listening and trying to work on it, you could probably understand it more.

The following portions of conversation from two of the student research team meetings are provided to help the reader observe how the students and I learned with each other in the process of creating a mind map for the Building Block or Tool that we were focusing on that week:

In a Research Team Meeting: Goal Directedness.

Gail: What are some things that you must do to be effective with goal directedness?

Fred: You gotta set a goal.

Gail: Okay, set a goal is one of the first things you have to do. What else?

Fred: You probably gotta make a plan, like a plan on how you're going to do the goal.

Gail: Anything else?

Jack: Not making a good goal.

Gail: Okay, that would be ineffective wouldn't it?

Paul: You gotta accomplish the goal.

Fred: Well, you don't want to break your goal.

Gail: Okay.

Fred: So you want to keep at it.

Paul: Um to make sure you get your goal done on time.

Gail: What comes at the end? After you work on it?

Jack: Accomplishing your goal.

Fred: Celebrate.

In a Research Team Meeting: Problem Identification.

Gail: If you are going to be effective with Problem Identification what are the two parts that you have to do?

Fred: You have to identify the problem.

Paul: You have to know what's wrong. You have to have a feeling that something is wrong.

Gail: That's right! What do you do after that?

Fred: You have to fix it.

Gail: What are some things that you have to do to fix it?

Fred: You have to get the information of what's wrong and after you gather the information you have to like re-write it and make another plan.

Gail: Anything else? Think about the other Building Blocks too.

Fred: Then you will be able to use Precision and Accuracy and be more accurate in what you are trying to do.

Gail: Now, does it mean that if you are using Precision and Accuracy all the time that you will never have any problems?

Fred: No, that's why I put "as much" [in my bridging statement].

Paul: And I put "might" [in my "if... then" statement].

Gail: Alright, do you think that anybody is exempt from having problems?

Fred: No.

Gail: So everybody's going to have problems. So all of us have to use Problem Identification everyday, don't we?

My Learning With Others. I enjoyed dialoguing with my students both in class and during the after-school meetings. It was especially enlightening to see students who ranged from third grade to eighth grade learning from one another. All of the students shared information and learned that each had something valuable to offer to the conversation. I observed that students who experience language problems, such as these students, were still able to understand and to use words such as "systematic, accurate, precision, effective, ineffective, accomplish, exploration, expression . . . " This suggested to me that collaborative learning experiences among students who have difficulty learning will take them into their zone of proximal development and allow them to learn from each other at a level beyond what they could have done on their own.

Another benefit of these meetings that I observed, is that the meetings contributed to a sense of community felt within my school. Parents who are new to our school often report to me that in other schools students in special programs are ridiculed, made fun of, and do not want anyone to know that they are receiving special help. Students in this study did not experience any of those difficulties and eagerly came after school to these meetings.

Using the Building Blocks and Tools

This section focuses on stories derived from my thematic analysis of the transcripts that share how the students and their parents used the Building Blocks and Tools in a variety of settings. Although the students were first exposed to each Building Block or Tool in the individualized setting of educational therapy, the reader will see that these experiences generalized to many aspects of their lives. First, I will share some incidences

of my mediating the students' use of various Building Blocks or Tools in educational therapy. Then, the stories of the students and their parents will take the reader to other settings where the Building Blocks and Tools are being used.

Mediating the Use of the Building Blocks and Tools in Therapy. The following stories are samples of the way that I mediated my students' learning in educational therapy. The data were gleaned from my anecdotal notes and reflective journal. They are dated to give the reader some feeling for the progression of learning that took place over the course of this research study. Examples of only two students are given although similar stories were repeated in various ways with all four students.

Jack, September 26, 1999: I introduced the Building Block of Awareness of Space and Time. Jack was doing page six of Rhythmic Writing on the chalkboard and was not aware of the need to make the motifs a certain size. His were all too large. After I mentioned that he needed to get at least three lines of motifs on the chalkboard before it was erased, he did better. After discussing this he seemed to understand how using smaller writing would affect his work and make it look neater. I also asked him if he was aware of "time." And he said, "No, not very often." I suspected that was true. I asked him how being aware of time could help. He said, "Knowing how long you had to complete something might help him get it done."

Jack, April 18, 2000: We were reviewing the essential elements of Selective Attention when Jack interrupted and said, "I had to use that one last night. I was writing a report for school and was looking for information on the computer. I saw something that looked very interesting, but it was not on my topic. If I hadn't used Selective

Attention I might have read that and not found the right information that would fit in my report. I wanted to read the other information, but I knew it didn't fit my topic so I chose not to read it right now." I encouraged him to go back and read it when he had time.

Jerry, November 3, 1999: When we were reviewing his homework assignment for the Buzzer technique I asked Jerry what Building Blocks he might use when he does his homework. He said that he would use Systematic Exploration not to look in his Blue Book but to search through his mind to get the right words (for the Blue Book analysis of his Buzzer word). I asked him what he might use when he is defining the word and he quickly said, "Precision and Accuracy."

Jerry, March 1, 2000: Today when Jerry was drawing an exact trapezoid (for the Forms technique), he was very careful and kept making adjustments until he felt that he had it correct. He, in fact, had it almost perfect. I asked him what Building Blocks or Tools he might have used. He said Controlled Expression and Self-Regulation. When I asked him why he needed those he said, "because I needed to go slowly to get it right." I was thinking that he should have said Precision and Accuracy so I told him that I wanted to check the mind map that we had recently done in the research team meeting on Precision and Accuracy. When we looked at the mind map, I was surprised to find that 'speed of doing things' was not on there. This was certainly a time that Jerry taught me something that I had not remembered very well. In our interactive dialogue about this 'discovery' we decided that it takes Self-Regulation to use

Precision and Accuracy and that in any learning experience there is probably a need for several Building Blocks or Tools.

Students Find Uses for the Building Blocks or Tools. Throughout this study and beyond the students frequently shared stories with me of how they have found uses for the Building Blocks or Tools in many settings outside school. I begin this section by telling stories of how the students used them in their school work and in other places. Some of these stories are initiated without my asking, sometimes stories are told when I ask, "Have you used any Building Blocks or Tools lately?" Additionally, stories are told if I more directly ask, "Have you used [Problem Identification] lately?" Whatever brings about the telling of stories, it is evident that the students have transcended the context of the educational therapy session where it was first introduced.

Just as Fred was leaving educational therapy, he turned to say:

Fred: Oh, when I was taking a quiz in History today I only missed one, and I had a Feeling of Competence about it before I took it."

Not too long ago, I asked Jack if he had used any Building Blocks or Tools lately. He said:

Jack: Yes, when I was doing my math homework last night I used Problem Identification when I didn't get the right answer to one problem. I had to also use my Working Memory to explore what was wrong and try to make a new Plan for how to solve the problem correctly.

During Fred's exit interview I asked:

Gail: Do you use [Building Blocks] in your school work?

Fred: Yes.

Gail: Can you talk about that at all, any example?

Fred: I had to do a project for history. I had to set a goal when I wanted to get it finished by a couple of days before it was supposed to be due. Then I had to gather some information about the country that I was going to do it on and then I had to make a plan about how I was going to do it. And then when I got through it to go back and look for any problems.

During Paul's exit interview he was talking about his science fair project and how he made a plan and gathered information. Toward the end of his story I asked him if he remembered the Building Block, Selective Attention, and if he needed to use that one.

Paul: Yeh, when I found stuff about my topic, I would choose which ones were important and which ones were not all that important. And maybe some interesting stuff.

Gail: So did you really think about the fact that you had to leave some stuff out?

Paul: Yeh.

Gail: And it's necessary to do that for what reason?

Paul: Because you don't want to put just whatever you found because it would be pretty boring.

Gail: Did you use any other Building Block from Confirming the Learning Experience?

Paul: I guess probably Problem Identification. I know we talked about how sometimes you can feel when there was something wrong but you didn't know

what. I guess that kind of helps when you can go back and check everything and pay attention more closely to your answers and what you are thinking and trying to figure out what you probably did wrong.

In a research team meeting the students shared how they would use Precision and Accuracy when playing baseball:

Gail: How might you need to use precision and accuracy in sports?

Jerry: Trying your best, running really fast and that kind of stuff. Never dropping out. [You] just have to try your best and hardly never stop.

Gail: Okay, what sport are you thinking of?

Jerry: I'm thinking of baseball.

Gail: Well, okay, how in baseball would it be important to use precision and accuracy?

Paul: You gotta run, you gotta catch, you gotta throw, you gotta

Gail: Well, let's take one of those things, like maybe throwing. How would you, why would you need to be precise and accurate in the way you throw it?

Jerry: You have to throw it either straight or sometimes high or

Paul: You gotta know how far to throw it.

Jack: You gotta throw it straight to him.

Paul: You gotta know how much strength to put into it.

Gail: Okay, good so you kinda got to judge all that don't you? What happens if you're not precise and accurate when you throw the ball?

Paul: It might land in the crowd.

Fred often talks about using one or more Building Blocks when he is out having fun with his friends. Just recently he shared this story:

Fred: Me and my friend were off-roading the other day and we saw a truck that was stuck in the mud and he asked us to help him. So, we hooked our trucks up together, but we didn't get him out. So I said to myself, "I need to make a Plan on how I can help them to get their truck out." And I had to look at the problem, how they was stuck and stuff like that.

Gail: Okay, did it help, when you thought about those?

Fred: Yeh.

Gail: How? Tell me more.

Fred: Because of how they were stuck. They were stuck on a rut. A couple of their tires wasn't touching the ground, so I said, "You need to get out your shovel and take some dirt off the side and put some rocks and dirt underneath them to lift the tires up." So I used Problem Identification to find out what the problem was.

Parents Use the Building Blocks and Tools. The parents talked about how they mediated their child's use, how their children used the learning strategies, or how they found uses for certain Building Blocks or Tools themselves. While I have included only two examples of their stories, Carla said several times that she uses the Building Blocks or Tools just about everyday with Jerry:

Carla: Just recently, we had to um, make a model of a sea creature. And uh, Jerry just kind of blows into things. I said, "Wait just a minute." Let's see what we need

to do before we even, (he was ready to jump into the plaster right off at the first), I said, "Let's stop and slow down and we have to make a game plan. And this was just a week ago. So I said, "I want you to sit down and write a list of all the materials you are going to need." Make your list and then, start gathering your materials and when you have it all here on the desk, then we will begin. So you know it's on a daily basis.

Betsy mentioned several times that she could use the Building Blocks or Tools herself. Here is one of her stories:

Betsy: [Take] Working Memory [for instance]. I find myself needing to use that quite a bit to help me remember some things... I need to do. To get some of my tasks done... in my job. Because I answer the phone, plus I have my work to do, plus e-mail I have to answer, so it's not just sit down and do one thing. You might have to stop. And I was thinking that might help me remember where I was with something when I stopped. And help me get a little more organized.

Carla also said that learning the Building Blocks and Tools was something she could use herself:

Carla: I mean it helps me on a daily basis and I'm thankful that I've had to deal with it with Jerry.

I have given only a small sampling of the many stories and anecdotes that the students or parents shared about how the Building Blocks or Tools could be used in various places. It seemed that the students were able to quite easily transfer the learning of

the Building Blocks or Tools from educational therapy to other places. In research team meetings, I usually did not have to "teach" the essential elements for each one. I found that they could recall and use what was learned during their individual educational therapy sessions to collaboratively build the mind maps for the Building Block or Tool we were focusing on that week.

How the Building Blocks and Tools Help in Life

This last section highlights the importance of helping students to learn to develop their own personal strategies for learning. Throughout Carla's exit interview she talked about how the Building Blocks and Tools impact Jerry's life on a daily basis:

Carla: I think it impacts our daily world still today.

Carla: It still has a very big impact.

Carla: I think it has greatly impacted Jerry. Everything from trying to make a plan, you know and gather all of his facts and you know we still everyday call it into play when we about to begin something. I think it's been wonderful.

Gina sees the difference that the Building Blocks and Tools have apparently made for Fred, although she has difficulty expressing just how.

Gina: Oh, I mean, so it has to be somewhere tied into where it's helped him know. He's put it together somehow.

The students also offered that learning the Building Blocks and Tools was helpful:

Fred: I felt... that they could help me out. Like you can go back and look over your stuff and you kind of know 'em all, you don't have to look for it and it helps you to get through things.

Jack: It was useful information.

Perhaps the most surprising response that I received during the exit interviews was when I asked Jerry, "Did you learn more about [the Building Blocks or Tools] anywhere else?" He replied:

Jerry: Life.

Gail: Life? (I thought maybe I had misunderstood him, but he repeated and clarified his response.)

Jerry: They help you with life.

At the end of the interview, I asked Jerry if he had anything more to add. His only response was to say again how he sees the Building Blocks and Tools impacting his life:

Jerry: It helps, it controls [your] attitude and helps [you] to get smart and it just helps in life. It is the rules of life, because you can be a nice gentleman or you can be a bad person that smokes and does bad things and stuff.

One other related topic that emerged from the parents' interviews was their belief about the way that the Building Blocks and Tools fit inside the NILD Educational Therapy™ program and how it brought about transfer.

Carla: I think the Building Blocks are so good, I think it is very helpful because I think it is something that the child can use in their daily life. I think when you tell them something like "you are going to have to self-regulate, you are going to have slow down" I mean I think that makes sense to them. Whereas some of the other things in the Discovery Program may not make sense and they don't

see how it's helping them. They don't understand even though there is a very real relationship there, they [just] can't link it like they do the Building Blocks.

Betsy: I think they just fit so well in with all the other Discovery stuff. You can just work them in with any of it. The transition is so smooth.

Mediated Learning as a Framework for Collaborative Learning Experiences

In this section I discuss my use of mediated learning as the framework for collaborative learning experiences for students who have difficulty learning. During this study I paid attention to what Greenberg (2000a) calls the "essential qualitites of effective mediators" (p. 35) adapted from Feuerstein (1980). Greenberg said that:

> For high quality mediated learning experiences to occur, mediators need to display four essential qualities when interacting with learners:
>
> (a) reciprocity: establishing a positive connection of acceptance, trust, and understanding; (b) intent: catching and focusing attention; (c) meaning: energizing awareness and making the experience personally relevant; and (d) transcendence: expanding understanding beyond the current learning context (2000a, p. 36).

Greenberg(2000a) also noted four characteristics that learners typically display when provided with high quality mediated learning. Learners will (a) develop the ability and desire to adapt to new situations, (b) learn how to learn, (c) transfer what they learn from one situation to other, and (d) become active generators of information" (p. 35).

As I reviewed my use of mediated learning throughout this research project I observed that all four essential elements of mediated learning were present and that the

learners displayed the four characteristics that typically exist in the presence of high quality mediated learning. To support my observations, I refer to incidents already cited.

The Impact of High Quality Mediated Learning Experiences. The first and second characteristics of learners when they experience high quality mediated learning are that they have the "ability and desire to adapt to new situations," and they "learn how to learn" (Greenberg ,2000a, p. 35). The present group of students displayed these characteristics as they gathered in the multi-age research team meetings. This was a new situation for all of them, but despite this, they all displayed an ability to learn in such an environment. They had never before been in a learning situation where they were expected to learn from and with others that were older or younger than themselves. I observed enthusiasm, respect for others, and a desire to learn in this way. Incidents giving evidence of this included: (a) Jack's comments that I should teach other students about the Building Blocks and Tools because "they will probably learn better and be able to do the stuff they are not good at," (b) Fred's remark that "the meetings helped you learn better because we could share ideas," and Paul's observation that when "I didn't think of where it could help me and then other people suggested it and I thought, 'Oh, that could work'." I also observed that these collaborative learning experiences demonstrated my students' ability to learn in a new situation. Both Paul and Jack said that the meetings helped "you learn the Building Blocks and Tools better," and then Jack went on to say that it helped to listen to other people "because we were figuring out what [the Building Blocks and Tools] really meant when we met together."

The third and fourth characteristics of learners who experience high quality mediated learning are that they will "transfer what they learn from one situation to others, and that they will "become active generators of information." (Greenberg , 2000a, p. 35). The present group of students demonstrated these characteristics through the research team meetings, but also in the stories that they told about using the Building Blocks or Tools in other places. Strong evidence of their ability to transfer learning was demonstrated by the fact that each student first learned the Building Blocks or Tools individually, within their NILD Educational Therapy™ sessions, but could easily talk about them when they met together in research team meetings. The students further demonstrated their ability to transfer learning by citing incidents including how they used the Building Blocks or Tools in school or in school-related tasks that they completed at home, in recreational settings, and/or in other non-school learning settings. The students were actively involved in generating information for one another in the research team meetings. Fred told why the meetings helped the students to generate information when he said, "because we were talking about it... and then we could go into a little more detail about it [than we did in class]."

The concluding sections of this chapter cite incidents of each of the essential elements of mediated learning that framed our collaborative learning experiences. As fellow researchers in the Collaborative Learning program at the University of Tennessee, Knoxville and I were analyzing the data for the mediated learning variables, we found that they occurred numerous times in one to two minute segments in a variety of settings.

Reciprocity. This must be present in every mediated learning experience for collaborative learning to occur. This means that the students must feel a sense of acceptance and trust between themselves and their educational therapist/mediator and the mediator must value the students' responses and seek to understand and learn from them. One example of reciprocity occurred as I fostered learning experiences that centered around the students being called my "research assistants." Paul said, "I could help you and learn better at the same time." Jerry said, "I could help you a lot." They knew what they had to say was important to me and they experienced the "feedback loop" that Feuerstein said must be present in reciprocity.

Reciprocity was also evident in the parent meetings as we dialogued with one other. One such example of this occurring was when Carla was trying to help Gina make the connection between the name of the Building Block and what Fred was doing in the "gun" story. At another time, Gina stated that "we're learning a little bit from each other" and Betsy said she always "left the meetings feeling encouraged," demonstrating the reciprocal relationship that existed in the parent meetings.

Students also reported experiencing reciprocity in research team meetings. Fred mentioned, "you could share ideas" and Jack said, "we could all meet together... and figure out what ... they meant." Jerry certainly expressed a feeling of reciprocity when I presented him with the Memory Card Book for the first time and he said, "I have the very best teacher there ever was . . . no other teacher would take the time to make me a book that I can use in so many ways."

Intentionality. This essential element is what "transforms any interactive situation from accidental into purposeful" (Kozulin, 1998, p. 66). Intentionality was evident when I focused my students' attention on the posters or the Memory Card Book in trying to help them learn about a Building Block or Tool. My first attempts, when introducing various Building Blocks or Tools as I saw a need, was targeted at mediating meaning, but I had not intentionally planned which Building Block or Tool I would use or how I would introduce it. I assumed that by intentionally preselecting a Building Block or Tool, rather than waiting for the student to demonstrate a need, it would not be as meaningful for the student. However, I found that, based on my students' past learning experiences, I could intentionally plan to incorporate a new Building Block or Tool within a specific NILD technique and that my students learned even better. Intentionality was present when my students and I used the Memory Card Book to learn about a new Building Block or Tool or to review one we had previously learned. Both Paul and Fred mentioned that looking in the "little book" was helpful to them. Using the Memory Card Book allowed me to focus the student's attention and give purpose to his learning experience.

Meaning. The mediation of meaning was present when my students, their parents, and I worked together to create meaningful experiences that were personally relevant. When they shared stories and it was not clear to me what they were saying, I often said, "help me understand" or "tell me more." Our working together to have clear understanding helps to mediate meaning for both participants.

One example of my mediation of meaning was when Jack said the Building Blocks were helpful and I said, "Okay, that's great. How were they helpful?". A specific example

of how a Building Block was meaningful to Jack was when he said, "Oh, I had to use Selective Attention last night..." Jerry felt that the mind maps were meaningful to him. He expressed this in two ways: (a) when he wanted to frame them for his bedroom, and (b) when he wanted to review what he had said from the previous night's research team meeting before the chalkboard was erased.

Transcendence. This occurs when the current learning experience goes beyond that experience to new and unrelated learning environments. Bridging, "a technique that nurtures transfer of cognitive processing knowledge in students" (Greenberg, 2000a, p. 130), has been used to foster transcendence. According to Haywood (1988), the role of the educational therapist/mediator is "not to provide bridging examples, but to have students draw examples from their own experiences or situations in which the same process could work" (p. 4). Students shared many examples of this throughout the study. The students exhibited transcendence by being able to talk about the Building Blocks or Tools with clarity in the research team meetings and by being able to give examples of how they could use them at home or in other settings. Jerry exhibited transcendence when he saw the Memory Card Book for the first time and said, "One of the things I need is Sharing Behavior, I need to learn to share better with my brothers when I am at home." Paul demonstrated his understanding of using his learning at other times when he talked about the importance of knowing the ineffective use of a Building Block or Tool and said, "because if you know ahead of time what would not be good, maybe you wouldn't do it later on... when it's really counting." Their ability to transfer learning helped me to know

they had developed meta-strategic knowledge that was useful in multiple learning situations.

As I reviewed the findings of this research project, I discovered that my students, their parents and I have all been changed as we have jointly shared in this learning process. Evidence of how the students changed was given by their parents, their teachers, their test scores and in the words of the students themselves about how learning to develop their own learning strategies helped them think more clearly about what they are learning. The mothers of the students talked about how paying attention to the process of learning helped them personally as they talked with their children. I found that as I focused on providing high quality mediated learning experiences, both in educational therapy and in small group settings, that my students and I found new ways of learning. The findings of this study suggested interactive dialogue resulting from high quality mediated learning became the framework for collaborative learning and impacted our ability to learn in many settings. The students, their parents and I all concurred that what we learned through this process was challenging, but something that helped us in many ways. In every case, we felt the learning strategies that we developed for ourselves are continuing to be useful in our everyday lives.

CHAPTER 5

IMPLICATIONS AND CONCLUSIONS

Purpose of the Study

The intent of this study was to look at my practice, as an educational therapist, to see what my students, their parents and I experienced as I focused on mediated learning to foster learning in a more collaborative way. I was led to this study as I was looking for ways to enhance my ability to mediate my students' learning and to make what occurred in educational therapy more meaningful to them.

In my search, I became acquainted with the Cognitive Enrichment Advantage (CEA) approach to learning. When I found that CEA was adapted from Feuerstein's theory of mediated learning and that it gave students an explicit way to learn how to learn, I felt it was very compatible with the NILD Educational Therapy™ program that I was already using. Therefore, I decided to incorporate CEA inside the NILD program. I wanted to find out if the learning that occurred in educational therapy could be more easily transferred to other settings if students with learning disabilities developed their own personally relevant learning strategies.

I chose CEA because it is presented as a comprehensive teaching approach that seeks to help students understand that it is necessary to pay attention to their affective and motivational needs in learning along with their cognitive needs. Although the CEA approach is designed for classroom use, I felt that it could easily be applied to a one-on-one educational therapy setting for students with learning disabilities. Students who have difficulty learning may be described as marginalized because they frequently do not view

themselves as able to learn and as a result may not be motivated to learn. They typically stay on the fringe of activities in the classroom or even choose to withdraw due to their poor self-concept. I concur with Greenberg (2000a) when she says, "Affect (feeling) and motivation are as much a part of learning as cognition and may, in fact, interfere with learning more than cognitive processing problems do" (p. 15). Therefore, I felt that my students and I would benefit from developing a shared vocabulary for: (a) understanding feelings about learning, (b) motivating behavior in learning, and (c) learning about cognitive processes that foster effective thinking. In addition, I felt that using the CEA approach would help me to: (a) look deeply at mediated learning, (b) learn to use meta-strategic knowledge, and (c) mediate the use of meta-strategic knowledge to help my students and myself to develop learning strategies that are useful in any setting. The parents of my students were included in this study because I found that the emphasis on a family-school partnership in CEA was in line with my belief that teachers, students and family members must work collaboratively to achieve success for students with learning disabilities.

I chose a case study approach using action research as a way to examine my practice systematically and carefully. My students and their parents assisted me with this research and were very much a part of the process and evaluation of what was occurring throughout the project. The findings of this study revealed that my students, their parents and I could learn to use and to develop meta-strategic knowledge. As I intentionally focused on the essential elements of mediated learning, I found that reciprocity leading to

meaning within a learning experience and transcendence outside the learning experience were the keys to collaborative learning for my students and me.

Rigor

Merriam (1998) suggested that for any given example of case study research the question of reliability is "not whether the findings will be found again but whether the results are consistent with the data collected" (p. 206). The triangulation of findings in this research study was checked for dependability through multiple methods of data collection and analysis. When the data were analyzed, I frequently found that the students and their parents said the same thing. Two important examples of triangulated data are that: (a) both the students and parents thought that learning the shared vocabulary of CEA was hard, but it was very helpful to them and is now something that is useful in their daily lives, and (b) the CEA approach easily fit inside the NILD Educational Therapy™ Model and helped to make the NILD techniques more meaningful.

Implications from My Findings

This section discusses what I know now that I did not know before this study. I discuss (a) what I have learned about myself as an educational therapist, (b) what I observed about how students learn and how parents learn together, (c) that learning how to incorporate the CEA approach inside the NILD Educational Therapy™ program takes time, and (d) how I changed because of this action research study.

What Have I Learned About Myself? I observed that the emphasis in CEA on developing high quality mediated learning enhanced my ability as an NILD educational therapist/mediator and impacted my students' ability to learn both in educational therapy

and in other learning situations. Because of this study, I will continue to focus on essential elements of mediated learning. I will guide my students in the NILD Educational Therapy™ program to learn to use meta-strategic knowledge to develop personally relevant learning strategies. The aim of my teaching is no longer to get the "one right answer," but to provide learning experiences that focus on the process of learning in a way that is respectful and meaningful for my students. I observed that by establishing an environment where my students felt and believed that their responses would be accepted (Hundeide, 1991; Greenberg, 2000a) that they felt free to participate in back and forth questioning as they sought to bring meaning into their learning experience. It was this kind of striving together that made our experience a collaborative learning experience. I discovered by laying aside my role of "expert" and by becoming a learner with my students, that students who are sometimes marginalized may be elevated to a new level of success. As a result of what I learned from this study, I will continue to use a collaborative learning model for administering educational therapy. I will continue to view myself as a learner along with my students by seeking to understand their assumptions and by helping them to learn new information in a way that is meaningful to them.

My Observations about How My Students Learned. Throughout this study, I found that dialogue (Meyers, 1988; Shotter, 1993; Vygotsky, 1978) was frequently mentioned as playing a key role in mediating the learning experiences of students who have difficulty learning. As I examined the data from this study, I found that the students commented on the importance of our conversations in helping them to learn. This suggests that all students, including those who have learning disabilities, can internalize meaningful

information that we talk about and use it at another time. In John-Steiner and Mahn's (1996) review of Vygotsky's work they noted how the idea of internalization allows students to take ideas or strategies developed collaboratively and to make them their own to use as their thinking dictates. Vygotsky (1978) believed that children develop higher mental functions and chase after higher levels of learning when they interact socially. These findings led me to a belief that, while students with learning disabilities need individualized help to internalize what they learn and to develop strategies for learning, they also need an opportunity to collaborate with their peers to help them become more aware of how these strategies are personally relevant and how they might transcend the one-on-one setting.

In a recent phone conversation, Zimmerman (personal communication, April, 3, 2001) stressed the importance of one-on-one educational therapy to teach students how to develop learning strategies, but confirmed that the collaboration that occurred in the student group meetings helped both the students and the educational therapist to see how the learning strategies developed in the educational therapy setting transferred to other formal and informal learning situations. She supported the idea of using the CEA approach within NILD Educational Therapy™ because, she said, "it [CEA] enables the students to see more clearly how they process information." Zimmerman stated that "it [CEA] is just clarifying what the NILD techniques are doing."

John-Steiner and Mahn (1996) discussed that dialogue between teachers and students helps students: (a) to reflect verbally on how the learning experience becomes meaningful, (b) to build a conscious awareness of the importance of the learning

experience, and (c) to use it in the future. I observed that metacognitive thinking could occur for students with learning disabilities if I helped them become aware of their thinking. Metacognition is fostered by asking various kinds of questions including Socratic (Meyers, 1988; Overholser, 1992; Elder and Paul, 1998) and probing questions (Dominowski, 1998). As students learn to "ask back" they eventually participate in dialogic conversations where they are seeking after knowledge and are aware of their own thinking. Dominowski (1998) also discussed that prompting students is sometimes necessary, although, it should be used sparingly since it does not lead to metacognitive thinking and may not lead to long term benefit for the student.

My Observations about Parents Learning Together. The findings suggest that the parents of the students in this study wanted to take an active role in helping their children learn how to learn. They enjoyed the monthly small group meetings as opposed to the larger meetings that are typically held three times a year. The parents stated that they felt supported by one another and by me. They concurred that CEA's emphasis on a family-school partnership gave them ways to help their children and that they found personal uses for the Building Blocks and Tools. I observed, however, that not all parents learned equally well how to use the Building Blocks and Tools for their own use or to mediate their children's learning. This suggested that some parents may need more time to process this type of information or that some parents may need more formalized training in how to use the CEA Family-School Partnership Handbook (2000c).

This Takes Time. Time impacted my thinking during this study and seems to have implications for future use. Although I found that incorporating CEA into the NILD

Educational Therapy™ Model helped me to develop the art of mediated learning and to deepen my intuitive ability as an educational therapist, I also discovered that it took extra time for me to prepare educational therapy sessions and to learn the CEA approach. I observed that as I gained experience in using the CEA approach and could implement it with greater ease, that my preparation time was somewhat less; but despite this change, I still expect that planning high quality mediated learning experiences for students will always take time.

The student research team meetings also took extra time and energy to plan and to gather the students together from different parts of our multi-building campus. As I reviewed the data, I found that all of the students said the research team meetings were very helpful to them, but I also observed that these meetings were helpful to me as I learned the CEA approach. From my perspective, the meetings were exciting and I enjoyed watching the students of different ages interact with each another as they learned. The meetings helped both the students and me to make explicit what we were learning. They also demonstrated that what we learned in educational therapy was transferable to other learning situations. I observed that my students could use meta-strategic knowledge to develop learning strategies that were meaningful and useful in multiple settings. And finally, I found that the students could easily use language to express learning strategies that some authorities might consider beyond their ability. It appeared that the benefits of these meetings for the students and me far outweighed the extra time and energy that they required.

Parent meetings were another facet of the study that took time. Although tri-annual meetings with all parents of students in the NILD Educational Therapy™ program have been part of my practice for several years, I had not been meeting with small groups of parents in monthly meetings, as I did in this study. When I looked back at the various elements of this study, I wondered if monthly small group parent meetings were really something the parents wanted or if they had complied with this because of this research study. I knew that scheduling these meetings was often difficult and required extra time and energy for both the parents and myself and therefore, I questioned their value. However, the data suggested that these small group meetings fulfilled a need for the parents by providing an opportunity for encouragement and support from other parents that was valuable to them. Every parent in this study suggested that monthly small group meetings should be included in the future.

It is interesting to note that other graduate students who have recently completed dissertations on collaborative learning also found that the theme of time showed up for them. One such example is Tisue (1999), who found in her study on facilitating dialogue and decision-making in a family business that, "The theme of time permeated all data sets . . . [and] referred to time for learning and change, time for meeting and practice, and time with a facilitator, and time without one" (p. 64).

Action Research for Change. I began this research project as a way to change or improve my practice as an educational therapist. Findings from this action research project brought about a greater freedom in me to facilitate student learning in ways that I had not done in the past. The cycles of action research allowed me to stand back and view what I

was doing and change those things that were not working as well as they could be. As the study progressed, I added components, such as student research team meetings and individual exit interviews, that brought about a new way of learning for both my students and myself that neither of us had experienced before. I have changed the way I now mediate my students' learning that has energized the power of the NILD techniques. I believe that I am more aware of the need for reciprocity that leads to the development of meaningful learning experiences for my students. I found that I have not only changed the way that I mediate my students' learning, but the way that I approach all individuals. I believe that as I have seen the value of being more collaborative with my students in educational therapy, it has also changed the way I view my role as the administrator of the educational therapy program in my school. I now use a collaborative approach in our faculty meetings that shows respect for and values everyone's contributions.

Limitations of this Study

> In qualitative [case study] research, a single case or small nonrandom sample is selected precisely because the researcher wishes to understand the particular in depth, not to find out what is generally true of the many (Merriam, 1998, p. 208).

My efforts to understand this single case of what it would be like for an NILD educational therapist to incorporate CEA inside his or her practice may not generalize to other settings. To some researchers, the question of whether or not it is possible to generalize from a single case becomes a limitation for this method of research. In addition, other limitations include:

1. The students and parents included in this study were chosen because they were those with whom I was already working. This small nonrandom sample suggests a possible limitation based on a convenience sample.
2. Although it is hoped that this report on the experiences of my students, their parents and myself will guide other educational therapists who want to incorporate CEA into their practice, there is no way to know if they would experience the same benefits that I observed.
3. My experience, couched within my graduate studies, may not be typical of the experiences of someone else who chooses to incorporate CEA into their practice. For the last five years, I have been in a doctoral program intensely studying mediated and collaborative learning and had the unusual opportunity to dialogue regularly, one-on-one, with the author of the Cognitive Enrichment Advantage approach to learning. Greenberg and I worked collaboratively to develop the posters and Memory Card books. My involvement in the development of these program materials may have fostered my learning in a unique way.

Implications for Future Research

This research suggests that it is important for an educational therapist to pay close attention to the essential elements of Feuerstein's theory of mediated learning. The results of this study also suggest that students who have difficulty learning can learn to use meta-strategic knowledge to develop learning strategies that are useful in both formal and informal learning situations inside and outside educational therapy. The findings of this

study suggest several implications for further study and corporate use of these results by the National Institute for Learning Disabilities.

Areas of Further Research. This study brought to light the need for further research in several areas. These include: the importance of collaborative learning for students with learning disabilities, the need for parent training workshops, the need for additional case studies or evaluation studies that might test the generalizability of this study.

First, since I looked at the collaborative learning experiences of one educational therapist with four students and their parents and found it to be beneficial, there needs to be further research on the importance of a collaborative model for educational therapy. The following areas of investigation may be considered:

1. The importance of a reciprocal relationship between the educational therapist and her students. Such research might give insight into the need for more collaboration between the educational therapist and student during the administration of educational therapy.
2. The role that collaboration with other students plays in helping students enrolled in one-on-one educational therapy to transfer what they learn in educational therapy to other settings. Although I found that the students felt that collaboration with other students helped them learn, I did not investigate why this occurred, or how much small group time is necessary.
3. The role of collaboration between parents and their children needs to be investigated, with special attention on the importance of the parent's

understanding in mediating their children's learning. There may be a need to examine how to do further parent training to help parents understand their role in mediating their children's learning outside of school. Although, this study demonstrated that parents could learn to use the CEA Building Blocks and Tools to mediate their children's learning, it also demonstrated that not all parents could do this with equal effectiveness. Perhaps a more formal means of training parents should be developed if CEA is to be included in other schools or NILD programs. Another look at how parents could use the recently published CEA Family-School Partnership Handbook (Greenberg, 2000b), might be warranted.

There is a need for other case studies to test the generalizability of this study. This could be accomplished in one of two ways:

1. I plan to teach the CEA approach to the other NILD educational therapists in my school. We could review the experiences of these educational therapists to determine what the outcome of incorporating CEA inside the NILD program might be for other therapists and students.
2. NILD educational therapists in other schools who decide to incorporate CEA inside their practice might conduct a study similar to this one. Comparing studies across cases is one way to test the generalizability of a phenomenon. To do this effectively the same or similar procedures, data collection, and data analysis methods would need to be used to enhance the generalizability of new findings.

NILD's corporate use of these findings. The findings of this study suggest that the power of mediated learning needs to be investigated further by the leadership of NILD. Consideration should be given as to how to help educational therapists develop a fuller understanding of the essential elements of mediated learning as they complete NILD training courses. While some aspects of mediated learning are implicit and cannot be taught, the essential elements of mediated learning can be taught explicitly so that educational therapists can learn to pay as much attention to their mediation of their students' learning as they do to their implementation of techniques. I have considered the three levels of training that are already in place for the NILD Educational Therapy™ Model and make the following recommendations:

1. The participants in the Level I course are already overwhelmed with new information that is given about the NILD Educational Therapy™ model. They need to learn the techniques well and have time to practice implementing them before incorporating the theory of mediated learning.
2. The Level II course could begin on the first day with an overview of the theory of mediated learning and in particular the four essential elements of mediated learning: reciprocity, intentionality, meaning, and transcendence. Throughout the course, the instructors and participants should reflect on the use of each of these elements during therapy student demonstrations, instructor's modeling of techniques, participant demonstrations during class time, and participant technique demonstrations at the end of the course. If there is an emphasis on mediated learning throughout the Level II course, participants would leave the

course with an awareness of the need to foster mediated learning experiences in their practices.

3. Consideration should be given to the explicit teaching of meta-strategic knowledge during the Level III course. As experienced educational therapists learn to develop meta-strategic knowledge they can help their students to develop learning strategies that readily transcend the educational therapy process. The Level III course already includes information on Feuerstein's deficit cognitive functions. These are presented from the viewpoint of helping educational therapists do a better job of identifying their students' deficit areas. It is recommended that information about Feuerstein's deficit cognitive functions be presented in a more positive light. Such information might be taught so that educational therapists learn how to use an explicit vocabulary to develop meta-strategic knowledge. To help educational therapists learn to develop and to use meta-strategic knowledge, it is recommended that the CEA approach to learning be examined.

Conclusions

The intent of this research project was not to validate the NILD Educational Therapy™ Model or to suggest that there is a need for any changes in the techniques themselves. The findings in this study, however, do suggest that other educational therapists could improve their practice in much the same way that I have, by looking more deeply at the way they mediate the learning of their students. I am awed by the changes that I observed in myself as a mediator and my students and their mothers as learners. The

collaboration that we enjoyed, as we learned together, has changed forever the way that I will approach learning experiences in the future. I cannot go back to being the expert that holds the keys to all the right answers. I have learned that when students with learning disabilities experience learning with others they have the ability to learn and to use language that is often considered by others to be beyond them. I have learned to pay attention to the essential elements of mediated learning and see the value of doing so as I have observed my students reaping the benefits of high quality mediated learning. Maybe what I have done, is really what another experienced educational therapist said to me, "This is doing educational therapy in the finest way that it can be done." Perhaps the most powerful statement given during the exit interviews was generated by Jerry, the youngest participant in this study when I asked him if I should use this idea to teach other boys and girls. He told me "Yes," because "This is all about life, it's about the rules of life."

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APPENDICES

Appendix A: CEA Building Blocks of Thinking, Tools of Learning

CEA Building Blocks of Thinking

Building Blocks for Approaching the Learning Experience:

Exploration:	to search systematically for information needed in the learning experience
Planning:	to prepare a detailed method for approach the learning experience
Expression:	to communicate thoughts and actions carefully in the learning experience

Building Blocks for Making Meaning of the Learning Experience:

Working Memory:	to use memory processes effectively
Making Comparisons:	to discover similarities and differences spontaneously among some parts of the learning experience
Getting the Main Idea:	to identify spontaneously the basic thought that hold ideas together
Thought Integration:	to combine pieces of information into a complete thought and hold onto them while needed
Connecting Events:	to find relationships spontaneously between past, present, and future learning experiences

Building Blocks for Confirming the Learning Experience:

Precision & Accuracy:	to know there is a need to understand and use words and concepts correctly and to communicate thoughts and actions spontaneously when the need arises
Space & Time Concepts:	to understand how things relate in size, shape, and distance; how events occur in time and order; and how to use this information effectively in the learning experience
Selective Attention:	to choose between relevant and irrelevant information and to focus on the information needed in learning experiences
Problem Identification:	to experience a sense of imbalance spontaneously and define its cause when inconsistencies occur in the learning experience

Building Blocks of Thinking (from Cognitive Enrichment Advantage Teacher Handbook (2000a) by Katherine H. Greenberg, SkyLight Training and Publishing, Inc. Adapted by permission of publisher, 800-348-4474)

CEA Tools of Learning:

CEA Tools of Learning

Tools for Understanding Feelings within the Learning Experience

Inner Meaning:	to seek deep, personal value in learning experiences that energizes thinking and behavior and leads to greater commitment and success
Feeling of Challenge:	to energize learning effectively in new and complex experiences
Awareness of Self Change:	to recognize and understand feelings about personal growth and to learn to expect and welcome change and development
Feeling of Competence:	to energize feelings, thoughts and behaviors by developing beliefs about being capable of learning and doing something effectively

Tools for Motivating Behavior within the Learning Experience

Self Regulation:	to reflect on thoughts and actions as they occur to energize, sustain and direct behavior toward successful learning and doing
Goal Orientation:	to take purposeful action in consistently setting, seeking, and reaching personal objectives
Self Development:	to value personal qualities and to enhance personal potential
Sharing Behavior:	to become interdependent by sharing thoughts and actions effectively, by enhancing collaborative learning, and by participating actively as learner and peer-mediator

Tools of Learning (from Cognitive Enrichment Advantage Teacher Handbook (2000a) by Katherine H. Greenberg, SkyLight Training and Publishing, Inc. Adapted by permission of publisher, 800-348-4474)

Appendix B: The Posters displaying the CEA Building Blocks of Thinking and Tools of Learning:

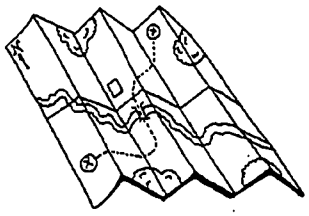
Building Blocks of Thinking

Approaching the Learning Experience

Exploration

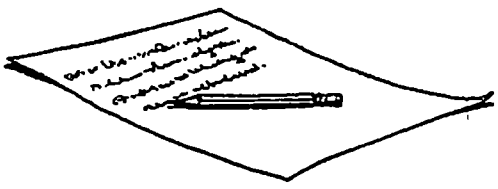
Gather Information Systematically

Planning



Use an Organized Approach

Expression

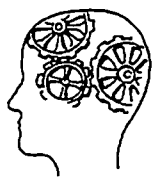


Communicate Clearly and With Control

Building Blocks of Thinking

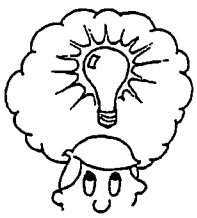
Making Meaning of the Learning Experience

Working Memory



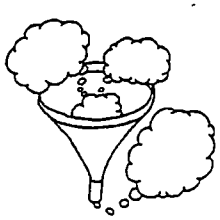
Use Memory Processes Effectively

Getting the Main Idea



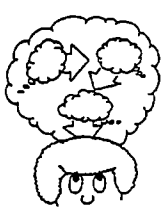
Identify the Basic Thought

Thought Integration



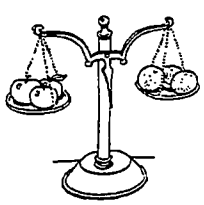
Combine Pieces of Information

Connecting Events



Find Relationships among Learning Experiences

Making Comparisons

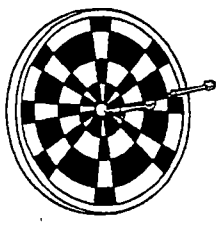


Discover Similarities and Differences

Building Blocks of Thinking

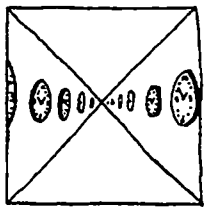
Confirming the Learning Experience

Precision & Accuracy



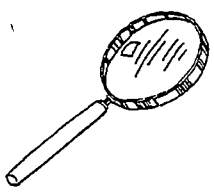
Understand and Use Words and Concepts Correctly

Space & Time Concepts



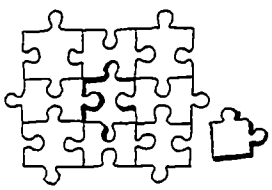
Understand and Use Space and Time Information

Selective Attention



Focus on Relevant Information

Problem Identification

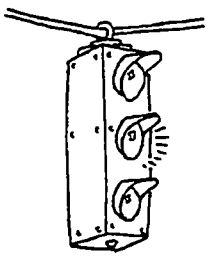


Experience an Imbalance When a Problem Occurs

Tools of Learning

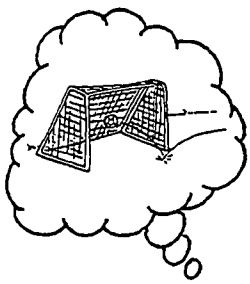
Motivating Behavior within the Learning Experience

Self-Regulation



Reflecting on
Thoughts and Actions

Goal Orientation



Taking
Purposeful Action

Self-Development

Valuing My Uniqueness

Sharing Behavior

Becoming
Interdependent

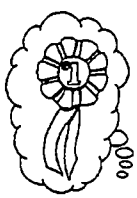
Tools of Learning

Understanding Feelings within the Learning Experience

Inner Meaning

Seek Personal Value in Learning

Feeling of Competence

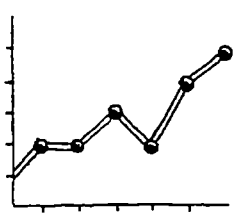


Energize Learning by Feeling Secure about Abilities

Feeling of Challenge

Manage Reactions to New and Complex Learning

Awareness of Self Change

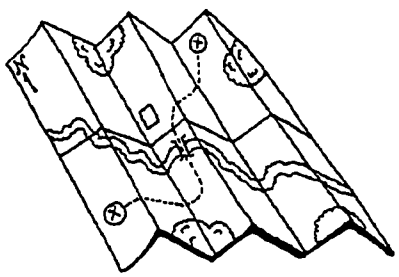


Recognize and Welcome Personal Growth

Appendix C: Sample Page from Memory Card Book

Front of page:

Planning

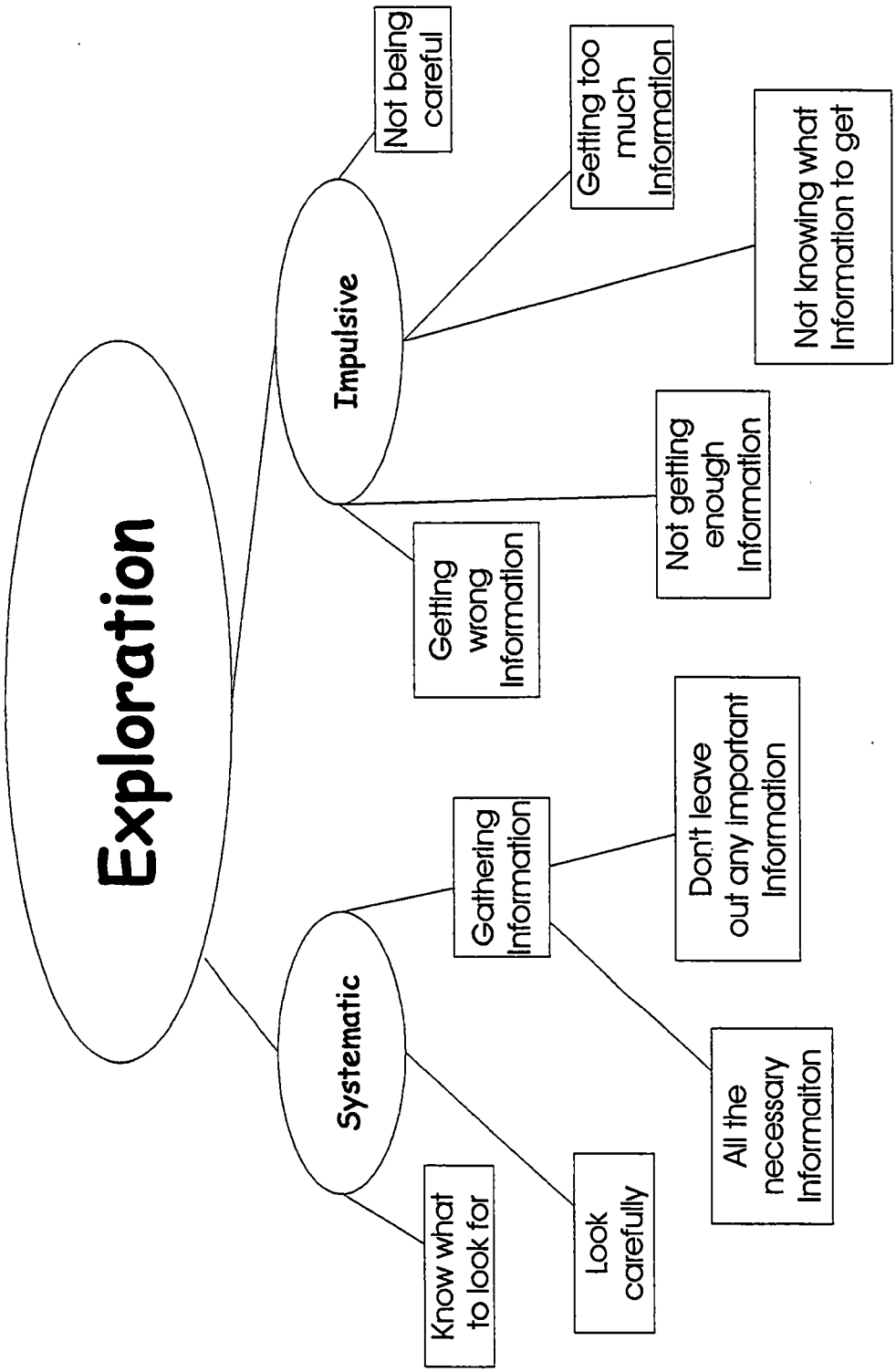


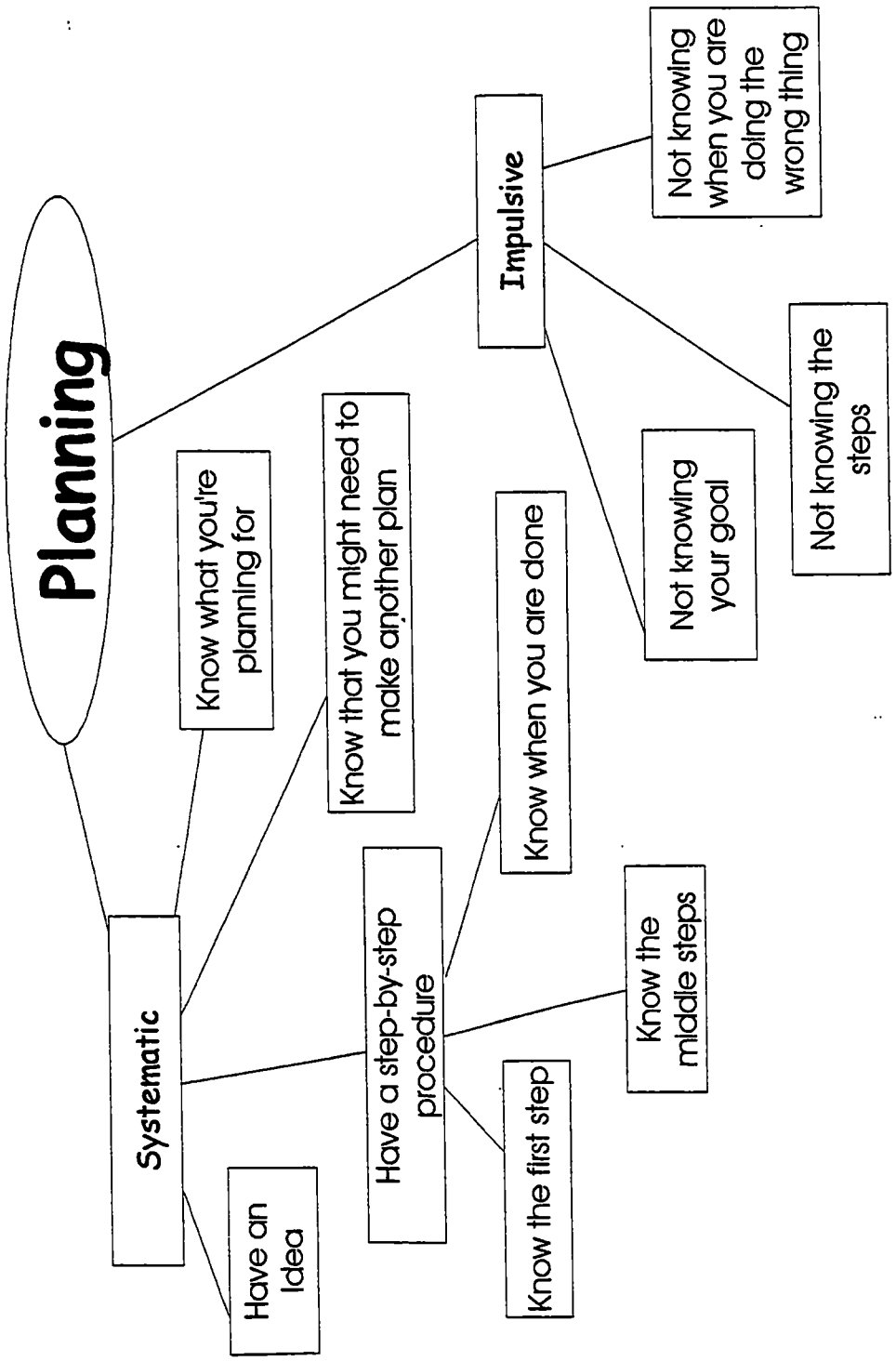
Use an Organized Approach

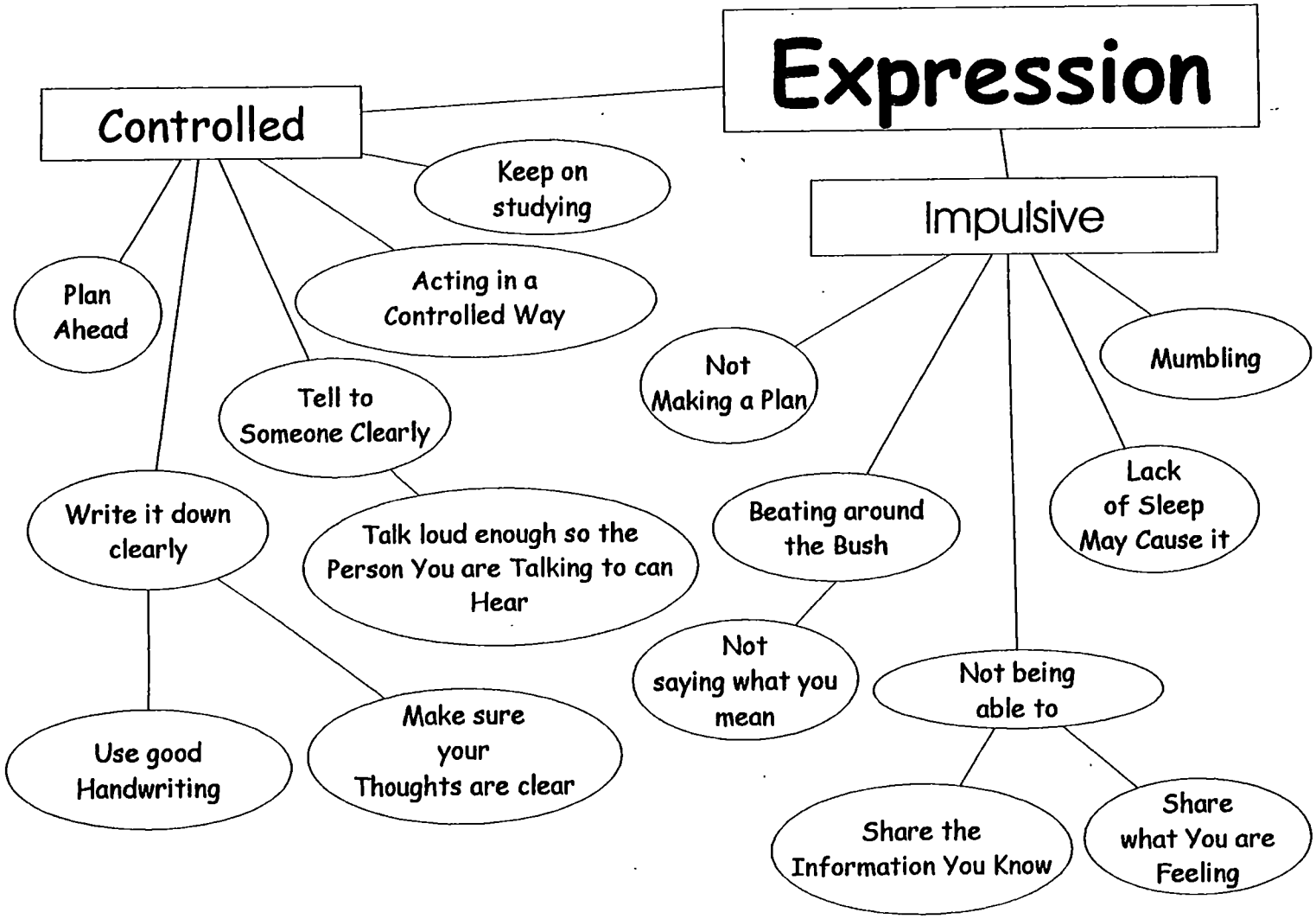
Back of Page:

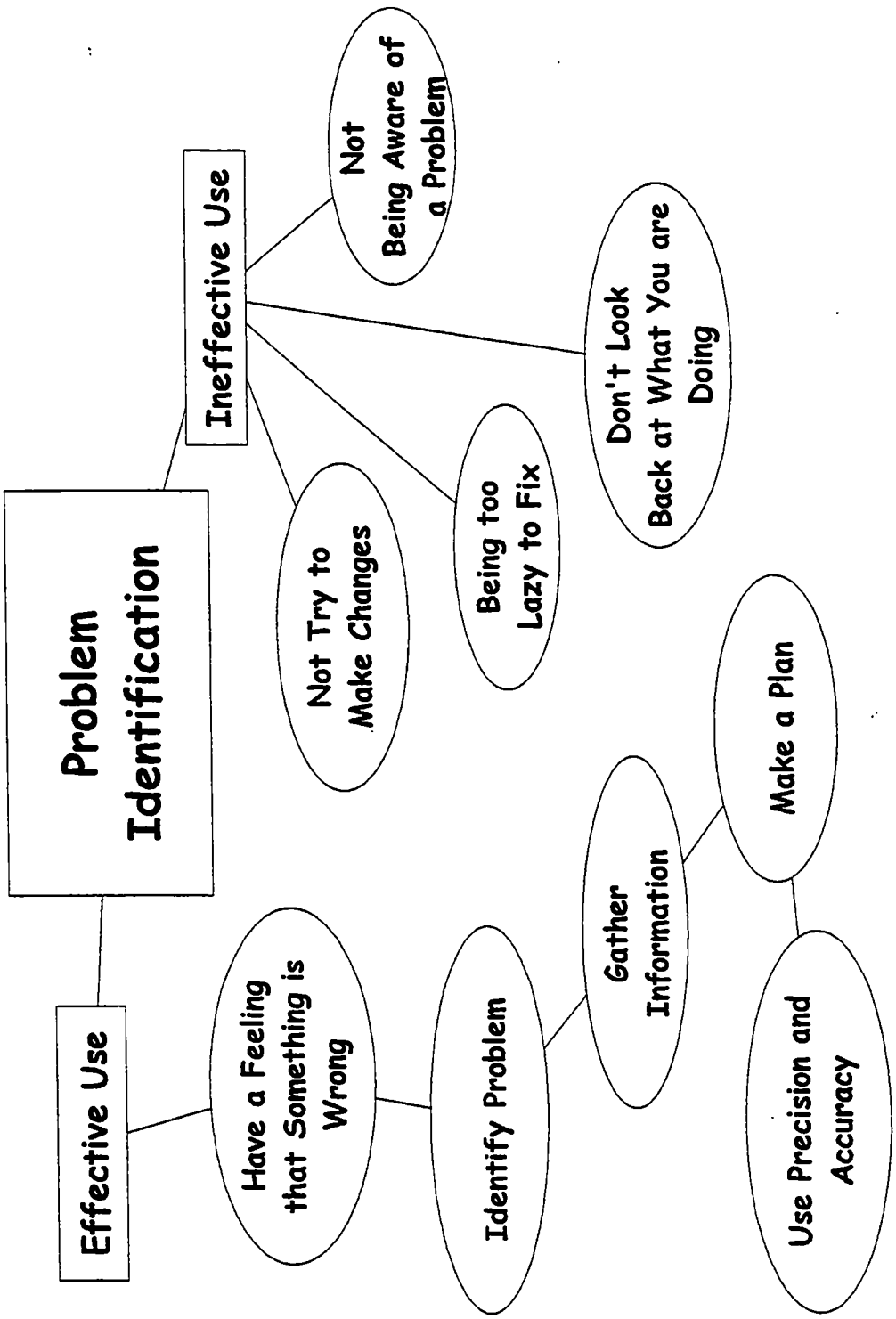
To prepare and use an organized approach in the learning experience.

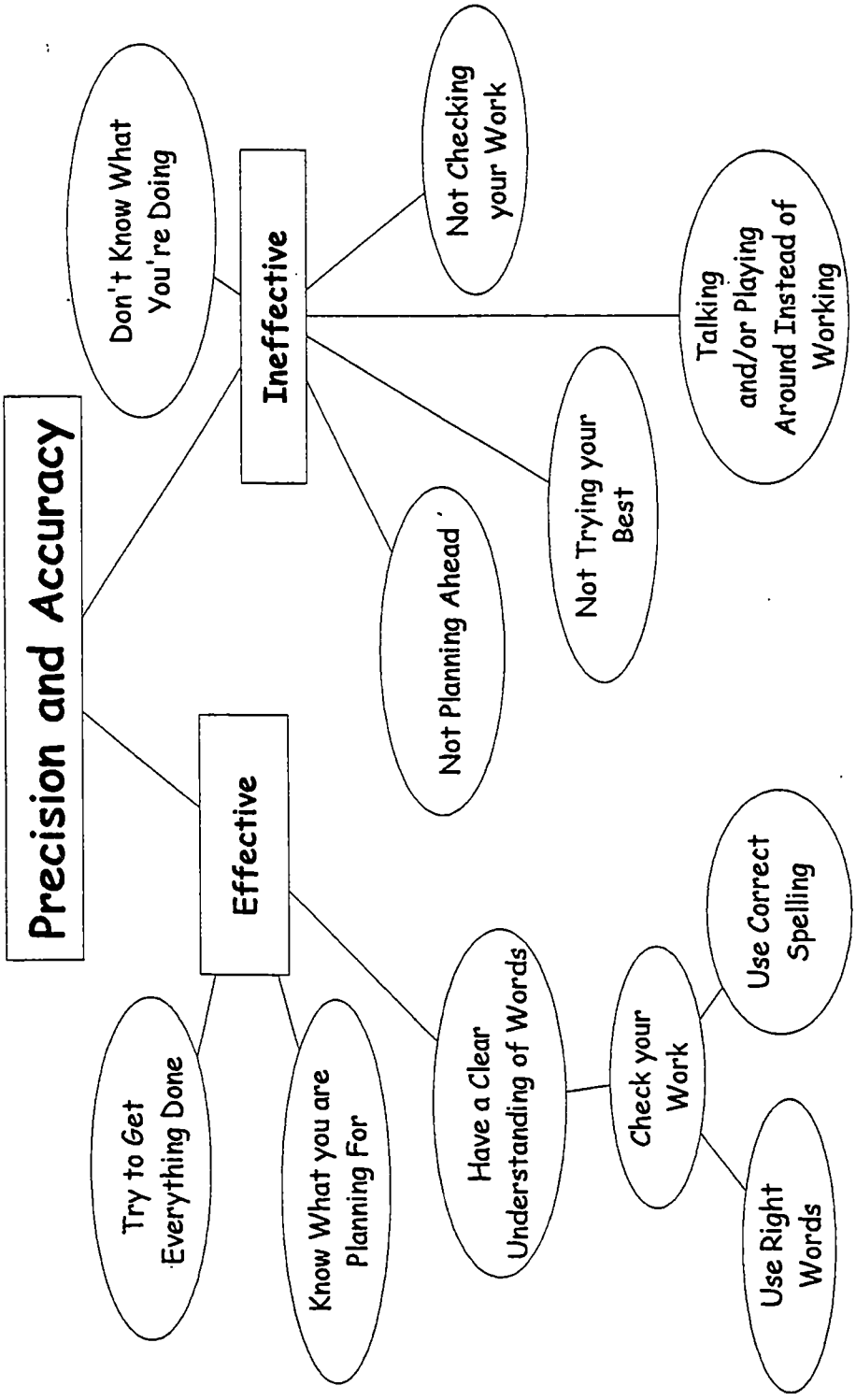
Appendix D: Mind Maps that Students Created in Research Team Meetings

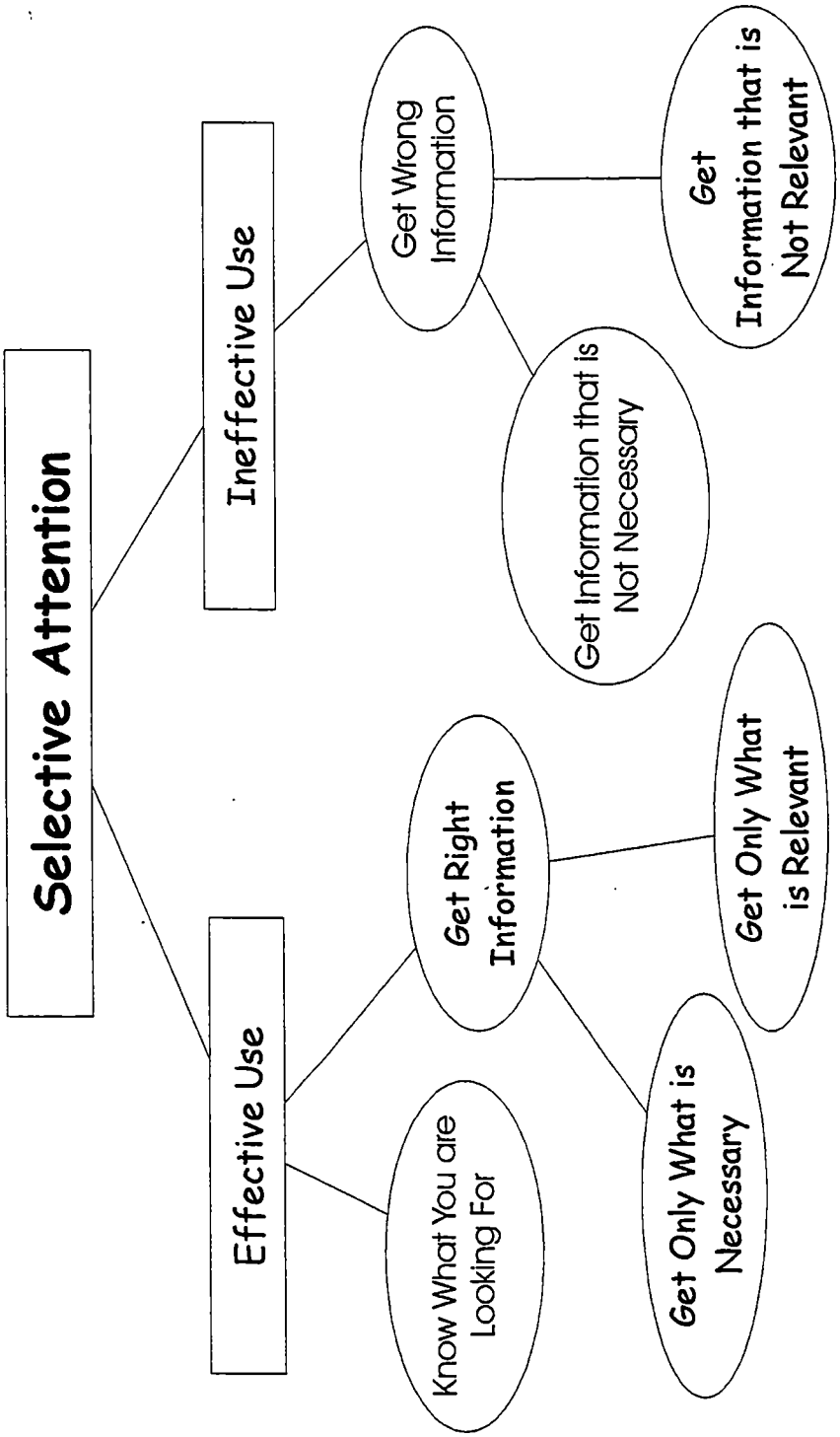


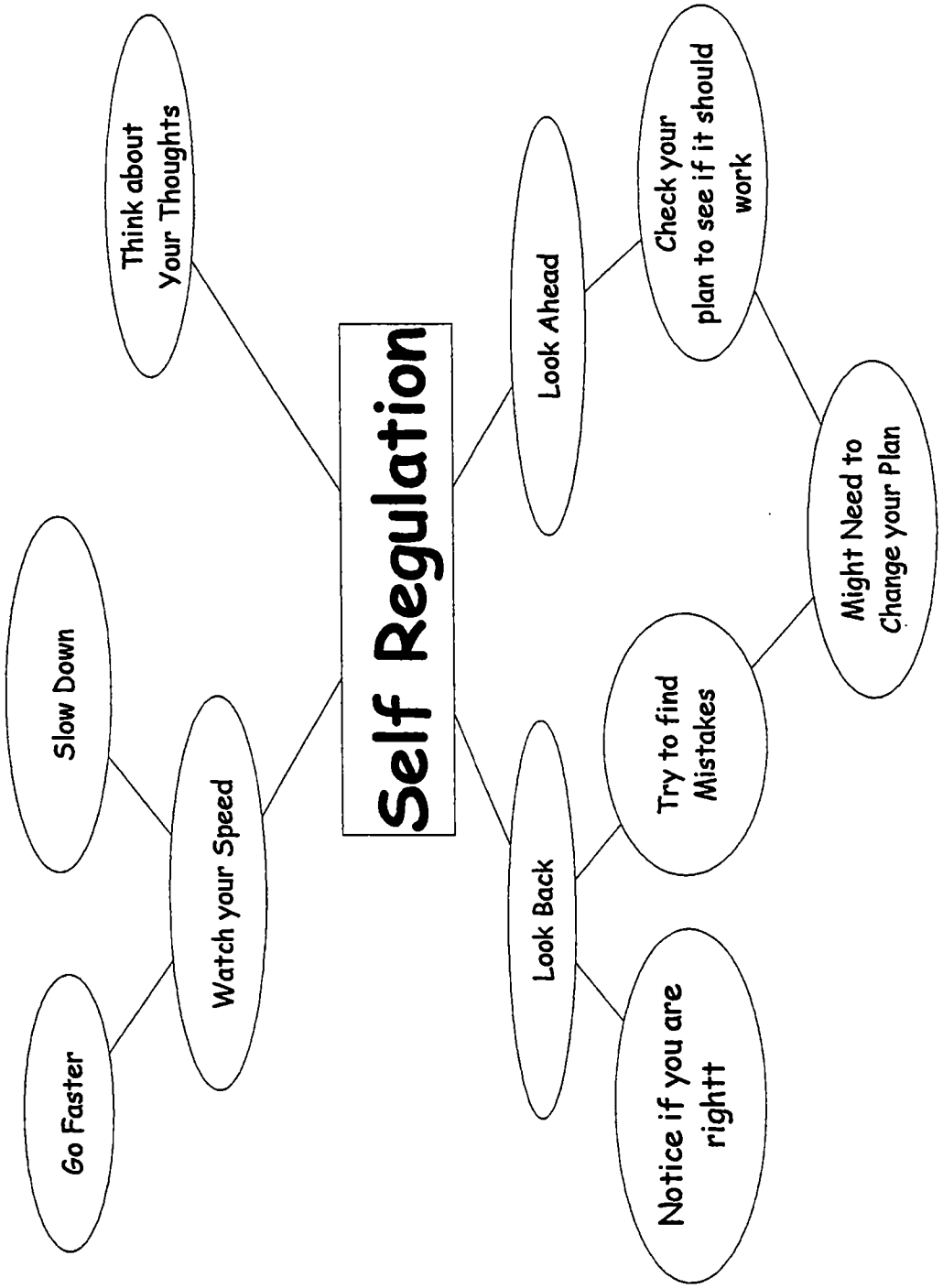

Planning
Impulsive
Not knowing when you are doing the wrong thing
Not knowing the steps
Not knowing your goal
Know when you are done
Know that you might need to make another plan
Know what you're planning for
Systematic
Have a step-by-step procedure
Know the middle steps
Know the first step
Have an Idea


Expression
Controlled
Keep on studying
Plan Ahead
Acting in a Controlled Way
Tell to Someone Clearly
Write it down clearly
Talk loud enough so the Person You are Talking to can Hear
Use good Handwriting
Make sure your Thoughts are clear
Impulsive
Not Making a Plan
Mumbling
Lack of Sleep May Cause it
Beating around the Bush
Not saying what you mean
Not being able to
Share the Information You Know
Share what You are Feeling


Problem Identification
Effective Use
Have a Feeling that Something is Wrong
Identify Problem
Gather Information
Make a Plan
Use Precision and Accuracy
Ineffective Use
Not Being Aware of a Problem
Not Try to Make Changes
Being too Lazy to Fix
Don't Look Back at What You are Doing


Precision and Accuracy
Ineffective
Don't Know What You're Doing
Not Checking your Work
Not Planning Ahead
Not Trying your Best
Talking and/or Playing Around Instead of Working
Effective
Try to Get Everything Done
Know What you are Planning For
Have a Clear Understanding of Words
Check your Work
Use Correct Spelling
Use Right Words


Selective Attention
Ineffective Use
Effective Use
Get Wrong Information
Get Information that is Not Necessary
Get Information that is Not Relevant
Get Right Information
Get Only What is Relevant
Know What You are Looking For
Get Only What is Necessary


Self Regulation
Think about Your Thoughts
Watch your Speed
Slow Down
Go Faster
Look Ahead
Check your plan to see if it should work
Might Need to Change your Plan
Look Back
Try to find Mistakes
Notice if you are right


Goal Directedness
Effective Use
Ineffective Use
Set a Goal
Be sure you are Working on Right Goal
Make sure you get Goal done on Time
Make a Plan for Doing the Goal
Keep Working on your Goal
Accomplishing your Goal
Celebrate Getting to your Goal
Keep Remembering your Goal
Forgetting your Goal
Not Setting a Goal
Stop Working on your Goal
Stop Caring about your Goal

Appendix E: Descriptions of the NILD techniques that are cited in to this study.

The techniques cited in this study include: Blue Book, Buzzer, Dictation and Copy, Forms, Math Block, Puzzles, and Rhythmic Writing. Although, there are many techniques that may be included in NILD educational therapy sessions, the ones I cited were particularly useful in mediating my student's use of the CEA Building Blocks of Thinking or Tools of Learning. The following descriptions of each technique are given to help the reader understand the basic objectives and procedure of each technique, but does not serve as a list of instructions for implementing each technique. This information was taken from the Level I NILD Course Manual (1999).

Blue Book

Goals and Objectives include:

Visual: to improve visual decoding skills (reading), encoding skills (spelling), and long term visual sequential memory.

Auditory: to promote phonemic awareness and to improve long-term auditory sequential memory

Cognitive: to improve ability to apply spelling generalizations

Materials include: *The Blue Book, Phonics Spelling Workbook, Teacher's Word List, Student Reference Sheets,* KEYWO, *The Blue Books Tapes.*

Implementation: *The Blue Book* is a key word approach to reading and spelling. *The Blue Book* contains key words with sounds (phonetic spelling of those sounds), and spellings that are divided into separate pages according to the similarity of either the sound or the spelling. (For example one page contains all the spellings of long "a," while another page contains the sounds that "ch" makes in a word.) In this technique the student (a) memorizes an assigned *Blue Book* page, (b) writes one or more words for each different spelling or sound in their *Phonics Spelling Workbook* as dictated by the therapist from the *Teacher's Word List*, and (c) for homework adds one additional word for each different spelling or

sound from their *Student Reference Sheets*. Movable alphabet and selected spelling books are used with this technique to reinforce *Blue Book* spellings or spelling rules.

Buzzer

Goals and Objectives:

Visual: to strengthen visual imagery

Auditory: to improve auditory sequential skills and auditory short-term memory

Cognitive: to improve vocabulary skills and word analysis skills

Materials include: Buzzer, Morse Code card, buzzer word (selected by the educational therapist according to the student's need at the time.)

Implementation: The educational therapist selects a word that is relevant for the student based on vocabulary or spelling needs. The student watches the Morse Code card while the word is "buzzed" one letter at a time. The letters are held in memory until the word is known. The student then says the word, defines the word, uses it in a sentence, and may be expected to tell the part of speech. Sometimes words with multiple meanings and/or parts of speech are given to encourage flexible thinking. The student completes a *Blue Book* analysis of the word using key words that were memorized from *The Blue Book* to isolate each phonetic element of the word. Portions of this technique are completed in written form for homework.

Dictation and Copy

Goals and Objectives:

Visual: to improve near-point copying and to develop proofreading skills and long-term visual memory

Auditory: to improve auditory memory

Cognitive: to develop understanding of paragraph structure, to improve reading comprehension and language processing, and to encourage application and transfer of spelling rules

Materials include: *Getting the Main Idea* (from the Barnell-Loft specific skills series), student composition book

Implementation: The educational therapist reads the first sentence of a paragraph from *Getting the Main Idea*. The student and the educational therapist discuss the meaning of the sentence and the student writes the dictated sentence, checks for spelling errors and then proofreads with the *Getting the Main Idea* book. The student writes the second sentence of the paragraph from dictation in class and then copies the remaining portion of the paragraph for homework. During the student's next class he/she must retell a paraphrased version of the paragraph from memory. The student may be assigned other appropriate tasks for homework, such as selecting a main idea, outlining the paragraph, or writing an inquiry question that goes beyond the context of the paragraph.

Forms

Goals and Objectives:

Visual: to improve visual perception of size and shape, visual-motor coordination, visual figure-ground perception, and visual recall skills

Cognitive: to improve expressive language and vocabulary

Materials include: Forms (sets of various geometric shapes with multiple sizes, pegboard, pegs (golf tees), paper, and pencil

Implementation: This technique includes three stages: match, copy, and recall. To begin, the educational therapist places one set of forms on the table in front of student, arranged in descending order. The student is seated at the table while he/she is shown one form at a time to match with one from the set of forms on the table. The matched form is placed on the table below the form indicated by the student as the matching form. The student visually checks for accuracy. This continues until the entire set of forms have been matched correctly. During the copy stage, the student reproduces on the pegboard one of the forms from the set of forms used at the match stage. The accuracy of his/her reproduction is checked by the student. During the recall stage, the student draws the same form from memory. This reproduction is checked for accuracy by the educational therapist.

Math Block

Goals and Objectives:

Visual: to improve formation and retention of visual image

Auditory: to improve auditory attention and listening skills

Cognitive: to develop problem solving ability and mathematical vocabulary and concepts, to improve mathematical reasoning, logical thinking, and language processing, to internalize basic math facts

Materials: *Bellwork. Versa-Tiles* book and cases, Numerical progressions, MULTI, *Exercises and Problems in Arithmetic,* Bonus points, and math manipulative such as fraction pieces, place value rods, clock with movable hands, and money

Implementation: A variety of oral and written math problems or exercises are completed in a ten-minute math block. The student should visually demonstrate his understanding of math concepts by drawing pictures or solving math calculations on the chalkboard. A problem is assigned for homework based on what was covered in educational therapy.

Puzzles

Note: There are several different kinds of puzzles that may be used in educational therapy. These include: Design Tiles, Pythagorus, Square Puzzles and Tangrams. The goals and objectives vary for each type of puzzle but they all basically include:

Goals and Objectives

Visual: to improve visual memory and spatial orientation

Cognitive: to improve problem-solving skills, expressive language skills, and knowledge of geometric forms, to develop planning strategies and inhibit impulsivity

Materials: The materials vary depending on the puzzle used.

Implementation: This varies depending on the puzzle used. There is not sufficient room to describe the implementation of each of these puzzles. However, for most puzzles there is a good deal of interactive language between the student and the educational therapist as the student develops a strategy for how he/she will solve this puzzle from memory.

Rhythmic Writing

Goals and Objectives:

Visual: to improve visual-motor integration

Cognitive: to establish hemispheric specialization for language, to develop the ability to do intermodal tasks and sensory integration, and to improve directionality

Materials: Motif card (portions of the alphabet (such as A-F) are written in cursive handwriting with each motif representing parts of the letters given), chalkboard, chalkholder, chalk, eraser, marker for writing frame, and mat ruled with 2" lines

Implementation: The student traces three different figure 8's that are drawn on the chalkboard by the educational therapist. These include a vertical 8, horizontal 8, and a double 8. The student says the direction he is going as the 8 is traced. The therapist gives directions such as "change" or a math problem that is solved while the student continues to trace the 8 and name the direction he is going.

The educational therapist draws lines on the chalkboard and the student says what he is doing while writing the motifs on the chalkboard. (Such as "over-back-around" while making a lower case 'c') This continues until all motifs for a given page are completed on the chalkboard.

The student sits at a table where the mat has been place. He/she writes one line of each letter for the page done on chalkboard. Each line contains the same letter repeated and written in cursive handwriting. The student also writes several nonsense syllables that practices the letters for that page connected together.

VITA

Gail L. Collins was born in Detroit, Michigan. She lived in Michigan until 1973. She received her B.S. and M.A. Degrees in Special Education from Eastern Michigan University in Ypsilanti, Michigan in 1968 and 1970.

From 1968 until 1973 she worked as a teacher for children with Orthopedic disabilities in Dearborn Public Schools in Dearborn, Michigan. From 1973 until 1978 and again in 1980 she taught in the education department of Tennessee Temple University in Chattanooga, Tennessee. From 1985 until the present she has worked at Grace Academy in Chattanooga, Tennessee. For the first three years of her tenure at Grace Academy, she taught a resource class. Then, in 1988, she received training from the National Institute for Learning Disabilities (NILD) and became an educational therapist for students with learning disabilities. In 1989, Gail became the administrator of the NILD educational therapy program at Grace Academy, a position she continues at the present time. In 1994, she added a new role as an instructor, conference speaker, and consultant for the National Institute for Learning Disabilities, a role that she continues at the present time. In 1996, she began her doctoral studies in the College of Education at the University of Tennessee, Knoxville.

Currently, Gail lives in Chattanooga, Tennessee with her husband, Peter A. Collins. She balances her professional life with her commitment to Christ, her family, and a love of the mountains, waterfalls, hiking, and camping to personally experience and enjoy God's creation.