

AN INVESTIGATION OF PRINCIPALS' ATTITUDES TOWARD THE
KNOWLEDGE AND USE OF LEARNING STYLES WITH STUDENTS IN
THERAPEUTIC SETTINGS

by

RENEE PANCOAST

B.A. University of Central Florida, 1978
M.Ed. University of Central Florida, 1981

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the Department of Educational Research, Technology, and Leadership
in the College of Education
at the University of Central Florida
Orlando, Florida

Summer Term
2006

Major Professor: Dr. Rosemarye Taylor

© 2006 Renee S. Pancoast

ABSTRACT

In March, 2006 the Principal's Attitudes Toward the Knowledge, Value, and Application of Learning Styles with Students in Therapeutic Settings survey developed by the author was distributed to 120 principals belonging to the National Association of Therapeutic Schools and Programs. Two mailings yielded a return of 68 (56.6%) usable survey instruments from which principals' self-reporting on knowledge, value and application of learning styles was examined.

Focus for this study was provided through three research questions: (a) to determine to what extent principals in therapeutic settings self-reported general knowledge of learning style applications, (b) to determine to what extent principals exhibit positive attitudes toward the use of learning style theory- supported instructional methods and materials, and (c) to determine to what extent principals in therapeutic settings support the application of learning style theory.

All administrators reported general knowledge of learning style theories, three basic learning styles, and matching teaching strategies with learning styles. All administrators believed that students do exhibit different learning styles, learning styles have a place in education, and teachers should receive learning style training. They also expressed the belief that learning styles impact student learning, matching teaching strategies to learning styles was important for academic success, a learning style inventory was necessary, and matching mental health disorders to learning styles was important for academic achievement. The most documented change due to learning style-based instruction was evidenced by test scores and earned grades.

All administrators wanted to learn more about learning styles. Almost 90% of administrators indicated that they were providing learning style training. Almost 100% (95.6%) reported they observed improvement on academic achievement due to learning style-based instruction.

To the memory of my parents.
In Honor of my family,
And to the Glory of God,
with Whom all things really are possible!

ACKNOWLEDGMENTS

I would like to thank Dr. Barbara Murray and Dr. Carl Balado for serving on my dissertation committee. Their knowledge and suggestions helped guide this study. I extend my deepest gratitude to Dr. Tary Wallace for her expertise and infinite patience, and to Dr. Rosemarye Taylor as my dissertation chair and advisor for her guidance and support.

I would also like to thank Dr. Mary Ann Lynn for coming full circle with me as my first advisor and my editor. A special thanks is also extended to my classmates whose encouragement helped me on this journey.

I extend love and appreciation to my colleagues and friends at work and home. Their encouragement and support never wavered and kept me going through out this process.

Finally all my love and gratitude go to my brother Brian, my daughters, Kyra and Sarah, and most especially to my wonderfully supportive husband, Jim. You all really are the wind beneath my wings!

TABLE OF CONTENTS

LIST OF TABLES	ix
CHAPTER 1 PROBLEM STATEMENT AND DESIGN COMPONENTS	1
Introduction.....	1
Purpose.....	2
Statement of the Problem.....	3
Definition of Terms.....	3
Delimitations.....	4
Limitations	4
Assumptions.....	5
Significance of the Study	5
Conceptual Framework.....	6
Research Questions.....	8
Population	8
Instrumentation and Data Collection	9
Data Analysis.....	10
Organization of Study.....	10
CHAPTER 2 REVIEW OF THE LITERATURE	11
Introduction.....	11
Accommodations	11
Learning Differentiation	17
Six Major Mental Health Disorders of Childhood and Adolescence	20
Learning Styles	28
Learning Styles Instruction.....	41
Principal Support for Professional Development	46
Summary.....	50
CHAPTER 3 METHODOLOGY	51
Introduction.....	51
Problem Statement.....	51
Population	52
Data Collection	52
Instrumentation	53
Research Questions.....	55
Data Analysis.....	56
Data Analysis for Research Question 1	56
Data Analysis for Research Question 2	57
Data Analysis for Research Question 3	57
Summary	57

CHAPTER 4 ANALYSIS OF DATA	59
Introduction.....	59
Population and Demographic Characteristics.....	60
Research Question 1	63
Research Question 2	66
Research Question 3	70
Summary.....	79
CHAPTER 5 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	81
Statement of the Problem.....	81
Methodology.....	81
Population and Data Collection	81
Instrumentation	82
Data Analysis.....	83
Summary and Discussion of the Findings	83
Research Question 1	83
Research Question 2	85
Research Question 3	86
Conclusions.....	90
Implications and Recommendations	92
Recommendations for Future Research.....	94
APPENDIX A SURVEY INSTRUMENT	96
APPENDIX B PRE-LETTER OF INFORMATION TO ADMINISTRATORS.....	102
APPENDIX C COVER LETTER ACCOMPANYING SURVEY	104
APPENDIX D FOLLOW-UP LETTERS.....	106
APPENDIX E INSTITUTIONAL REVIEW BOARD APPROVAL	109
LIST OF REFERENCES	111

LIST OF TABLES

Table 1	Personal and Professional Characteristics of Respondents (N=68).....	61
Table 2	Institutional Characteristics (N=68).....	63
Table 3	Extent of Learning Style Knowledge (N=68).....	65
Table 4	Principals' Acquisition of Learning Style Knowledge	66
Table 5	Extent of Belief in Learning Style Instruction (N=68).....	67
Table 6	Extent and Evidence of Documented Change in Academic Achievement.....	69
Table 7	Extent and Evidence of Learning Style Training.....	71
Table 8	Extent of Academic Improvement and Evidence of Teaching Strategies	72
Table 9	Extent and Evidence of Respondents as Role Models.....	74
Table 10	Extent and Evidence of High Expectations	75
Table 11	Extent and Evidence of Teacher Motivation and Support by Respondents	76
Table 12	Extent and Evidence of Provision of Resources.....	78
Table 13	Extent and Evidence of Coordination of Learning Style Training	79

CHAPTER 1

PROBLEM STATEMENT AND DESIGN COMPONENTS

Introduction

Learning is an interactive process, the product of student and teacher activities within a specific learning environment. These activities, which serve as the key elements in the learning process, have shown an extensive variation in pattern, style, and quality (Keefe, 1979). Learning problems have frequently been related to the type of cognitive process required to learn the material as opposed to the difficulty of the subject matter (Dunn & Dunn, 1988).

Gregorc and Ward (1977) have claimed that if educators are to successfully address the needs of the individual, they have to understand what “individual” means. They must relate learning style to teaching style. Learning style is a concept that is important not only in determining teaching practices but also in highlighting issues that help teachers and administrators think more deeply about their roles in facilitating student learning and academic achievement.

Improved student achievement is an important rationale for effective professional development. As the leader of a learning organization, the principal must motivate teachers to continue to grow professionally throughout their careers. Effective instructional leaders need to provide teachers with practical information about how to address students’ learning styles. Informed principals need to lead the way in integrating the research on learning styles into classroom practice (Beglane, 2001).

Purpose

Researchers in the early 21st century have placed an emphasis on diversity in student populations. They have suggested that a student's style of learning, if accommodated, can result in improved attitudes toward learning and an increase in thinking skills, academic improvement, and creativity (Irvine & York, 1995).

Researchers have also determined that educational reform occurs at the building level (Beck & Murphy, 1992). Demands for educational change and student achievement have continued to escalate and required principals to ensure that all teachers are prepared, through professional development, to bring about school reform and improved learning for all students.

Beglane (2001) has stressed the importance of understanding and implementing learning style information for principals in a therapeutic learning environment for the success of the unique population being served. The very traits and characteristics that have been identified as symptoms of a mental health disorder can be linked to traits and characteristics of various learning styles according to the National Institute of Mental Health (2000).

The Professional Development Inventory (1991) has been used to assess principals' responsibilities in the areas of instruction, organizational development, supervision and evaluation of faculty, communications, and human relations. This assessment, however, has not addressed leadership skills as they relate to improving student achievement or principals' attitudes toward improving student achievement or their roles in professional development.

While many instruments have been used to assess principals' leadership skills, few have assessed their attitudes. Thus, the need was clear to assess principals' attitudes toward learning styles in terms of knowledge, value, and support for professional development.

Statement of the Problem

The problem of this study was three-fold: To assess the attitudes of principals in therapeutic settings as they pertained to (a) their perceived knowledge of learning styles, (b) the value of learning styles, and (c) the support given to the professional development subject of learning styles.

Definition of Terms

Following are definitions of terms used in this study:

Accommodations: A wide variety of teaching techniques and support systems that help a student with a disability receive meaningful equal opportunities to be successful. Accommodations are made for the way students learn and how they are tested (Tobias, 1994).

Exceptional Student Education/Special Education: Educational programs and assignments including special classes and programs or services designed to develop educational potential of children with disabilities. This includes classroom instruction involving techniques, exercises, and subject matter designed for students whose learning needs cannot be met by regular education. (Tobias, 1994).

Learning Styles: A set of cognitive, emotional, characteristic and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment (Dunn, 1990).

Mental Illness: A disorder of the brain that results in a disruption in a person's thinking, feeling, moods, and ability to relate to others (Burland, 2001).

National Association of Therapeutic Schools and Programs (NATSAP): A national resource for programs and professionals assisting young people beleaguered by emotional and behavioral difficulties.

Therapeutic Educational Setting: An environment that provides an integrated educational milieu with an appropriate level of structure and supervision for physical, emotional, behavioral, familial, social, intellectual, and academic development (Center for Mental Health Services, 1996).

Delimitations

The study was delimited to the responses of all principals from schools that belonged to the National Association of Therapeutic Schools and Programs (NATSAP). Responses from the population were obtained through a self-administered survey instrument mailed to the principals.

Limitations

Results of this study were limited by the accuracy of principal responses obtained on the self-administered survey instrument.

Assumptions

The specific assumptions of this study were:

1. It was assumed that principals would respond honestly to the survey questions.
2. It was assumed that the survey instrument was appropriate to elicit principals' attitudes toward learning styles.
3. It was assumed that the survey sample was representative of the population of therapeutic school principals from around the country.
4. It was assumed that the responses would provide accurate data regarding principals' attitudes toward learning styles.

Significance of the Study

The attitudes of principals in a therapeutic educational setting toward accommodating students' learning styles were thought to be of interest as related to improving academic achievement. Principals in a therapeutic setting would then need to provide learning styles staff development in order for the teachers to accommodate a particular learning style. Findings from this study have the potential to help in determining a relationship between a childhood or adolescent mental health disorder and a particular learning style that might permit a teacher to quickly use the appropriate teaching strategies to provide the opportunity for academic success. The attitude of principals in therapeutic settings in regard to the importance of their students' learning

styles could influence the usage by classroom teachers and, therefore, improve the likelihood of academic success.

Conceptual Framework

With the shift from an instructional to a learning paradigm, there has been a growing acceptance that understanding the way students learn is one key to educational improvement (Stone, 1992). Stone asserted that teachers have needed to provide interventions that are compatible with the students' learning styles in order to achieve a desired learning outcome.

Learning styles researchers have attempted to categorize learners by ability and have produced some convincing results. Kolb (1984) identified four learning styles and four learning modes. Dunn and Dunn (1978) developed a comprehensive model dealing with environmental, emotional, sociological, physical, and psychological learning style elements and claimed these elements could provide information directly related to teaching strategies.

Researchers and authors have presented information about learning styles and their potential to help faculty become more sensitive to the differences students bring to the classroom. This information can also serve as a guide in thoughtfully and systematically designing learning experiences that match students' styles. Diagnosing and interpreting learning styles provides data as to how individuals perceive, interact with, and respond to the learning environment (Jensen, 1998). The starting point in teaching has been to respond to the learning styles needs of students. This implies knowledge of

students' preferences and a conscious effort by teachers to expand their range of strategies to respond to student diversity (Irvine & York, 1995).

Knowing how students learn and matching learning style with specific teaching strategies can provide for academic success. By diagnosing a mental health disorder, then identifying a learning style, educators can implement strategies that accommodate for the special needs of these students. Such information would appear necessary for the success of the unique population served. Because it should matter "that" children learn, it does matter "how" they learn (Tobias, 1994).

While research has been conducted on learning styles, little effort has been related to students with a diagnosed mental health disorder. Principals in therapeutic educational settings have not necessarily acquired a strong knowledge base or understanding of the relationship between their students and learning styles. Dunn and Dunn (1993) suggested that implementing an effective learning styles program which improves student achievement requires the administration of a learning styles inventory, analyzing the results, matching a particular learning style with a specific mental health disorder, and then the implementation of corresponding teaching strategies. The staff development of teachers and the facilitation of the necessary accommodations, modifications, and effective teaching techniques require an ongoing time commitment and financial obligation according to Klavas (1993).

The principal's perspectives of his or her role in the change process, the relationships the principal maintains with teachers, the amount of time the principal can devote to change, and the understanding of the issues involved are all factors that have

influenced the process (Fullan, 1994). The success of the change process must be enhanced by a collaborative leadership style that empowers teachers with the knowledge, skills, and resources needed to successfully implement learning styles instruction in their classrooms. Student success, according to Fullan, will also fuel the change process.

Research Questions

1. To what extent do principals in therapeutic settings self-report general knowledge of learning style theory applications?
2. To what extent do principals in therapeutic settings exhibit positive attitudes toward the use of learning style theory-supported instructional methods and materials?
3. To what extent do principals in therapeutic settings support the application of learning style theory?

Population

The population of this study was comprised of 120 principals of therapeutic schools who belonged to the National Association of Therapeutic Schools and Programs (NATSAP). NATSAP members have provided residential, therapeutic, and/or education services to children, adolescents, and young adults entrusted to them by their parents or guardians. The common mission of NATSAP members has been to promote the healthy growth, learning, motivation, and personal well being of their program participants.

Instrumentation and Data Collection

Data were collected using the survey instrument, Principals' Attitudes Toward the Knowledge, Value, and Application of Learning Styles with Students in Therapeutic Settings, (Appendix A) designed by the researcher to measure the attitudes of principals as they pertained to learning styles. Additional questions designed to identify specified organizational and personal demographic variables were formulated and included in the survey. As the instrument was being developed, feedback was provided by practicing administrators who had experience with learning style instruction and professional development. A pilot study was also conducted by administering the instrument to doctoral level educational leadership students and current administrators. There were no changes made to the survey instrument. The participants in the pilot study provided only positive feedback in regard to the clarity of the instructions, format, and questions.

For this study, a pre-letter was mailed informing the principals of the coming survey (Appendix B). The survey was then mailed with an accompanying cover letter (Appendix C) explaining the purpose of the study and a self-addressed stamped envelope. To encourage participation, a follow-up letter (Appendix D) was mailed to potential respondents who did not respond to the original request.

The final survey instrument consisted of three sections in which respondents' were requested to indicate their knowledge about, value of, and support for the application of learning styles. Additional items sought personal and professional information for use as variables in the data analysis.

Data Analysis

Statistical analysis of the data obtained in this research study was performed using the *SPSS Graduate Pack 10.0 for Windows*. Analyses of the collected data concerning personal and professional demographic information were completed by the researcher and reported using frequencies and percentages for each of the variables. Participant responses for 23 survey items were translated into numerical scores for each item scored with a four-point Likert-type scale. Descriptive statistics were used in the analysis of multi-answer survey items not scored with a Likert-type scale. Frequencies and percentages were obtained for each of these survey items.

Organization of Study

Chapter 1 has introduced the problem and its design components. Chapter 2 presents a review of the literature and related research relevant to the problem of this study. Chapter 3 presents the methodology and procedures used for data collection and analysis. Chapter 4 presents the results of the analysis of the data organized around each research question. Chapter 5 offers a summary and discussion of the findings, implications for practice and recommendations for future research.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

This chapter presents a review of related literature on accommodations, learning differentiation, learning styles and instruction, child and adolescent mental health disorders, and principals' roles in professional development. The present study was focused on principals in therapeutic settings and their attitudes as related to learning style knowledge, value, and support of implementation of learning styles staff development.

This literature review is presented in six sections. Section one provides an overview of literature related to accommodations necessary to individualize student learning. Section two focuses on learning differentiation. Section three presents the six major mental health disorders of childhood and adolescence. Section four details research based learning style theories. Section five concentrates on the effects of learning style instruction in improving student learning. Section six highlights principals' support of learning style staff development.

Accommodations

Lambie (1980) believed that in the classroom, accommodating for a student's emotional, behavioral, and academic needs was necessary to ensure a student's success. In reviewing the literature, terminology used to describe activities associated with addressing students with special needs was varied. Terms such as accommodation,

adaptation, modification, and alteration were typically used interchangeably by teachers. Lambie provided an informal distinction by associating adaptation with material, modification with instruction, and alteration with assignments. Even though Lambie associated these terms with specific instructional areas where changes may need to be made, she did not define them or discuss their differences. The term, accommodation, has been commonly used in the field of special education and human services as an umbrella term for addressing individual needs. For this reason, it was adopted as the term of choice in this review.

Bruner and Majewski (1990) concluded that accommodations involved a wide variety of techniques and support systems that helped a student with a disability find success. Accommodations have been recognized as adjustments in the way students are taught or the way they are expected to show what they have learned. Instructionally related accommodations have been able to be organized into four categories which emerged as an adaptation of a model for curriculum development developed by Maker and Nielson (1996). According to Maker and Nielson, the content domain referred to changes in curricular areas relating to the knowledge and skills students learn. In the second domain, materials accommodations have been related to selection, use, and development of specific print and non-print materials used in classrooms. The instruction domain included a variety of teacher-directed, student-directed, and peer-directed variables related to the effective delivery of instruction. The fourth domain involved accommodations associated with assignments given to students and the products they were asked to generate as a part of the learning experience.

Maker and Nelson (1996) cited basic principles that teachers should consider before implementing accommodations. These principles cut across the four major domains and pervaded the day-to-day operation of teachers working in any educational setting where there were special needs students receiving instruction. The first principle related to one's knowledge of self and students (Fiore, 1993). It was imperative that teachers understood their particular perspectives regarding their own teaching style and the learning styles of their students. The reality of 21st century classrooms has required teachers to become informed about their students' many differences academically, socially, and emotionally and to get to know their students well enough to determine how to teach them.

The second principle, noted by Fiore (1993), stressed making accommodations only when needed. Teachers simply do not have enough time to make unnecessary accommodations. One way for quickly determining whether accommodations are necessary has been the use of classroom-level assessment techniques. An inventory to determine learning styles of students has been one way to identify various instructional dimensions that may require some form of accommodation (Hoover & Patton, 1997).

Fiore's (1993) third principle focused on the value of the accommodative practices in assisting additional students who may also be experiencing learning related problems. He stressed the benefits to other students in the classroom of changes to curricular content, instructional materials, instruction, and assignment/products utilized with special needs students.

Butler (1984) suggested that teachers must always be looking for new ideas and ways to accommodate individual learning styles and needs. New practices, especially in the area of technology, have emerged. Teachers are able to take advantage of the work of other teachers and already developed resources. Professional periodicals, conferences, workshops, projects, and resource materials can be useful information on accommodative practices (Butler).

Fiore's (1993) final principle stresses the need to evaluate regularly the accommodative capacity of the classroom and the effectiveness of the accommodative practices being used. The reevaluation of the types and quality of classroom accommodations as a function of student needs was strongly recommended. Successful practices should be identified, maintained, and shared among teachers. Ineffective practices must be improved or discarded in favor of other tactics that have a greater chance for producing academic success (Dowdy, Patton, Polloway, & Smith, 1997).

If a student has been diagnosed with a mental health disorder, it is even more essential that accommodations be individualized specifically for the student's ability to learn since a mental health disorder severely disrupts a person's ability to function socially, academically, and emotionally (Sulner, 2001). According to the National Institute for Mental Health (2000), mental health disorders in children and adolescents have been caused by biology, environment, or a mix of both. Examples of biological factors are genetics, chemical imbalances in the body, and damage to the central nervous system (Sulner). Many factors in a young person's environment can affect his or her

mental health, such as exposure to violence, extreme stress, and the loss of an important person.

On January 3, 2001, the Surgeon General of the United States released a report stating that 12% of American children under the age of 18 had a diagnosable mental health disorder (Burland, 2001). These students have required accommodations in teaching strategies in order to be successful academically (Sulner, 2001). Because of the large population of students with a diagnosable mental health disorder, schools have had the responsibility of being a mental health provider for these students. Largely unprepared for this responsibility, educators and parents have needed to work closely together to help students with a mental health disorder learn to the best of their capability.

Brunner and Majewski (1990) addressed issues related to students with disabilities who had been evaluated and staffed or placed into the exceptional student education (ESE) program and were eligible for accommodations. Exceptional education, known as special education in some states, included learning disabilities, mental or physical impairment, visually impaired, hearing impaired, emotionally handicapped, or other health impaired. These students had an Individualized Educational Plan (IEP). Among other functions, the IEP team looked at the student's present level of performance and educational needs and decided what accommodations were needed (Brunner and Majewski).

Accommodations may be incorporated into the design of a lesson and provided as part of an effective instructional strategy. They may also be made in instructional methods and materials, assignments and assessments, time demands and schedules,

learning environment and with special communication systems. Accommodations for testing programs may come in the form of flexible format, flexible response, flexible schedule, and flexible setting (Carbo & Hodges, 1989).

Beginning in the late 20th century, an increasing number of children have been labeled Attention Deficit Hyperactivity Disorder (ADHD). The conditions associated with ADHD cause or exacerbate many learning, social, and emotional problems and have been estimated to affect 3-5% of the school age population (Greenburg, 1991). As a result, students with ADHD have experienced great learning difficulty in school where attention and impulse control are requirements for success. A total of 230 ADHD 5th-grade students (187 males, 43 females) from 2 elementary schools in New Jersey participated in an investigation utilizing accommodations. All participants were medically treated for ADHD. The accommodations in the classroom included the use of study carrels, allowing movement around the classroom, facilitating instruction in self-regulating behavior, and providing a quiet area to which students could retreat when necessary. The accommodations for testing included allowing more time, using alternate response modes, and dividing the test into smaller increments (Greenburg).

Greenburg (1991) declared that after implementing these accommodations, students' grades on specific mathematic assignments improved from Ds and Fs to As and Bs. Grades on language arts assignments showed an overall increase of 40%. Students' reading comprehension and word recognition improved between first and second grade level students and older third and fourth grade level students. These findings gave educators some positive direction in the use of further accommodations. This

instructional procedure needs to be an ongoing analytical process, with continuous reviews and self-assessment by the student (Greenburg).

Learning Differentiation

Snider (1990) reasoned that a working understanding of the nature of learning was important in understanding the characteristics of the participant learner. In order for teachers to have a clear understanding of what they needed to best teach their students, they first needed to understand how their students learn. Knowledge about the various theoretical approaches to learning has proven useful in curriculum development for a broad variety of learners. When teaching special populations of students, it is imperative to determine how they learn (Snider).

Tomlinson (1995) wrote of student differences in experience, readiness, interest, intelligences, language, culture, gender, and mode or style of learning. He referred to the comments of one elementary teacher who justified differentiating instruction in response to the natural differences of students. Tomlinson saw differentiation as an organized yet flexible way of proactively adjusting teaching and learning to help students achieve maximum growth as learners. Since children do not know how to differentiate their own curriculum successfully, teachers need to make accommodations for students.

Classrooms that ignore student differences were thought to be unlikely to maximize potential in any student who differed significantly from the norm. Students cannot, according to Tomlinson (1999), be expected to modify themselves to fit the curriculum.

Sarason (1990) emphasized the importance of best practice as the starting point for

differentiation and indicated that any classroom efforts not empowered by an understanding of what keeps children eagerly pursuing knowledge were doomed to fail.

Tomlinson (1999) further related the benefits for virtually all students of classrooms grounded in best-practices modified to be responsive to student differences. Differentiation addressed the needs of students for whom English was a second language and students who had strong learning style preferences. It addressed gender differences and cultural differences. As Gardner (1983) suggested, even if one could transform “everyone” into a brilliant violinist, an orchestra also needed a wide range of top-quality musicians who played woodwinds, brass, percussion, and strings. Gardner supported differentiation as an effort to produce high-quality performance for all individuals and give students the opportunity to develop their particular strengths.

According to Sizer (1992), people do not learn in precisely the same way. He viewed syllabi as providing a pattern or guidepost for teachers as they dealt with students whose readiness and interest varied widely. Sizer took issue with common assumptions that most, if not all, students were equally ready, interested and could learn and be tested in a standardized fashion. Rather, Sizer felt there were among individuals varied learning styles, sources of abstract reasoning and sensing powers. Different “intelligences” resulted in some students being auditory or visual learners. Likewise, while some students grasped complexity by sequential analysis, others used a more inductive process (Sizer).

Sizer (1992) argued that a thoughtful teacher would accept these differences and use them constructively not only as an act of respect for each student’s individuality but

also as an act of simple efficiency. If the purpose of schooling was to help each student move from ignorance to understanding, then using the proper teaching style for that particular student made obvious sense.Sizer did not see teaching students in a variety of ways as compromising academic standards. Instead, it was a modeling of good scholarship, an example of the use of knowledge in practice, which took serious account of what was known about human learning and the variability of styles of learning. Sizer concluded the price of student anonymity was costly and inefficient. Teachers and students needed to know what was expected of them and at what standard. Goals needed to be clear; individual differences needed to be respected; and students needed to be permitted to learn in the ways most powerful for them. Each student deserved the opportunity for success.

Dunn (1996) suggested that there were six optimum conditions for learning and that students learned best when these six conditions were met:

1. They feel the need to learn and have input into what, why, and how they will learn.
2. Learning's content and processes bear a perceived and meaningful relationship to past experience, and experience is effectively utilized as a resource for learning.
3. What is to be learned relates optimally to the individual's developmental changes and life tasks.
4. The amount of autonomy exercised by the learner is congruent with that required by the mode or method utilized.

5. Students learn in a climate that minimizes anxiety and encourages freedom to express.
6. Students' learning styles are taken into account.

Six Major Mental Health Disorders of Childhood and Adolescence

The National Institute for Mental Health (2000) suggested that matching the way a student learns with the symptoms of a mental health disorder was one way to encourage success not only academically but also socially and emotionally. Students' symptoms have resulted in behaviors contributing to poor functioning in school and have led to avoidance of tasks, unsatisfactory progress and ultimate failure. These students have also become targets for bullying, criticism, and rejection. Untreated mental health disorders have robbed students of their childhood in that they have not been able to benefit from an important span of development typically experienced by healthy children (Burland, 2001).

According to a 1996 report of The Center for Mental Health Services (CMHS), there were six major, diagnosable childhood and adolescent mental health disorders found in students. The following are summaries of these disorders and the emotional and behavioral problems that have been associated with them during childhood and adolescence.

The CMHS (1996) stated anxiety disorders were among the most common of childhood disorders. They affected an estimated 8 to 10 of every 100 children and adolescents. Anxiety disorders have been responsible for excessive fear, worry,

discomfort, and unease in generally unthreatening situations and interfere with the activities of daily living. The Center for Mental Health Services (1996) confirmed that this disorder manifests itself in various ways: (a) phobias involving the overwhelming fear of some object or situation; (b) panic disorder in which individuals experience terrifying panic attacks that included physical symptoms such as rapid heartbeat and dizziness; (c) obsessive-compulsive disorder in which individuals are trapped in a pattern of repeated thoughts and behaviors such as counting or hand washing. Children also were reported to suffer from separation anxiety and had excessive school absences. They presented as overly nervous, exhibited constant worrying, displayed avoidant behavior and refused to participate in any class activities. They “melted down” when activities were forced upon them. The CMHS report indicated that in adolescence, the risk of drug and alcohol dependency increased as young people attempted to reduce anxiety by self-medicating. Panic attacks occurred when children were placed in performance situations. Adolescents shut down and refused to communicate due to social phobia and fear of failure.

The Center for Mental Health Services (1996) reported that as many as 1 in every 33 children suffered from depression. The rate of depression among adolescents was reported closer to that of depression in adults and was thought to be as high as 1 in 8. It was noted that the core symptom in children was irritability and aggression as opposed to sadness, and their overall behavior could appear to be somewhat regressed. This mood disturbance also has been known to manifest itself in somatic illnesses such as persistent headaches or stomachaches and almost always a drop in school performance. According

to the research conducted by the CMHS, depressed children have typically exhibited low self-esteem and become isolative, displaying no interest in play. It was further reported there were changes in appetite or sleep patterns and vague physical complaints for both children and adolescents.

The Center for Mental Health Services report (1996) characterized depression in teens as sometimes being masked by outstanding school performance, school leadership, and perfect behavior. Conversely, other depressed youths drew no attention to themselves at all. These young people became anti-social and often engaged in illegal behavior. They associated with a more negative teen culture, engaged in high-risk behaviors to themselves and others, and began to self-medicate. Their grooming and personal hygiene was of little or no importance to them. They believed they were ugly, unable to do anything right and displayed a feeling of worthlessness and low self-esteem. The quality of their schoolwork declined. They commonly had morbid thought patterns and were preoccupied by death.

Teachers and administrators have increasingly been asked to vigilantly watch for signs of depressed mood and sadness in their students, since the first signs of mental health disorders have frequently been observed in classrooms. The stakes have proven to be high when depression has not been noticed. Identifying and taking action to help a potentially depressed student has been essential in meeting the academic and social needs of the student and for maintaining the overall learning environment (Schlozman, 2001).

The third disorder, bipolar, has involved exaggerated mood swings between depressive lows and manic highs according to the National Institute for Mental Health

(NIMH) reporting in 2000. Children with bipolar disorder might be silly and full of energy one minute and suddenly become angry, disruptive, and defiant. These children could change quickly from being charming and funny to intrusive and obnoxious. They often expressed feelings of superiority and grandiosity could become highly irritated, and their mood instability was evident. Their anger was often expressed in rages with verbal and physical aggression. The NIMH identified devastating setbacks when bipolar disorder struck during adolescence. Talents and strengths were replaced with unrealistic expectations. When manic, reckless behaviors could include drug and alcohol abuse, spending sprees, and drinking and driving, and result in episodes bringing embarrassing notoriety. Depressive episodes were typically accompanied by tremendous fatigue, lethargy, constant physical complaints, school avoidance, self-isolation, and suicidal thoughts. Active participation in school life was almost impossible for these young people. (Schlozman, 2001).

Of adolescents who have committed suicide, 90% have had a psychiatric diagnosis of bipolar and alcohol/substance abuse. Most of these students have suffered significantly for at least two years before committing suicide (Bostic, Rustuccia, & Schlozman, 2001). Suicide was the third leading cause of death among adolescents ages 15-19, and Schlozman (2001) confirmed that the most common precipitant to a student suicide was an interpersonal conflict or loss, usually with parents or a romantic relationship. Ongoing family conflict, physical or sexual abuse, and impending legal or disciplinary matters have also been associated with suicidal acts. Girls have displayed a higher rate of attempted suicide; boys have completed more suicides and have been at a

higher risk if they drank heavily (Burland, 2001). Educators increasingly have seen students who appear desperate or exhibit self-destructive behaviors. Worse, teachers have felt increasing pressure to improve students' academic progress and test scores but have feared saying or doing something that might contribute to a student's suicidal behavior (Schlozman).

Self-mutilation has also become more common according to the Center for Mental Health Services (1996). Students who have mutilated themselves have reported that cutting or scratching made them feel better briefly and gave them a sense of control and a way to express bad feelings. Different from suicidal behavior, repetitive self-mutilation still warrants attention. Bostic et al. (2001) indicated that a more benign activity might be writing bad feelings on paper and then destroying the paper.

A child or adolescent with Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD) has typically exhibited behaviors for six months or longer that generally violate acceptable behavioral norms. These children may enact serious violations of rules and laws. According to the Center for Mental Health Services (1996), as many as 4-10 of every 100 children and adolescents had ODD or CD. Willful behaviors that exist in ODD are inflexibility, belligerence, hostility, and defiance. Intentional behaviors exhibited in CD are physical aggression, cruelty, destructiveness, deceitfulness, and a lack of remorse. Carbo and Hodges (1989) confirmed that these children were being constantly punished at school and had multiple referrals, suspensions, and expulsions.

Without proper interventions and treatment, these adolescents can present a considerable threat to society. The offenses that these children and adolescents commit

often become more serious over time. Examples include lying, theft, truancy, firesetting, and vandalism. These young people have frequent encounters with the juvenile justice system, early sexual activity, drug and alcohol abuse, and chronic failure in school. The Center for Mental Health Services (1996) reported that their sociopathic behaviors manifest themselves in physical and sexual abuse and general intimidation and lawlessness.

Burland (2001) indicated that half of ODD children have Attention Deficit Hyperactivity Disorder (ADHD), and 40% with CD have ADHD with similar numbers suffering from depression. The National Institute for Mental Health (2000) reported that 94% of adolescents with bipolar disorder have symptoms of ADHD.

For a diagnosis of ADHD, the core symptoms of inattention, impulsivity, hyperactivity, and low frustration tolerance must be present for at least six months and cause clinically significant impairment in two or more settings (Greenburg, 1991). Three different types of ADHD have been identified. These types are referred to as inattentive, hyperactive-impulsive, and combined attention-deficit/hyperactivity disorder. ADHD has been found in as many as 1 in every 20 children. Boys with ADHD have outnumbered girls according to the National Institute of Mental Health (2000). For students, functional limitations have been reflected in difficulty with an assortment of school-related activities including academic and nonacademic activities.

ADHD has been a hidden disability because there are no specific physical characteristics associated with the condition; it is only through behavioral manifestations that it becomes recognizable (Dowdy et al., 1997). Burland (2001) grouped behaviors

that might be associated with ADHD and manifest themselves in classroom settings into the following categories: attention and concentration, reasoning information processing, memory, executive functions, e.g., planning and organizing actions, social and emotional areas, communication, and academic performance. Some symptoms of ADHD are distractibility, excessive talking, daydreaming, disorganization, intrusiveness, not listening, fidgeting, and not completing schoolwork. ADHD students have been identified as chronic underachievers with low motivation and productivity. Adolescents with ADHD have been poor school performers, had difficulty with peer relationships, and exhibited low self-esteem. They attach themselves to “outcast” school groups, exhibit repeated delinquency, and increasingly display anti-social behavior. Burland reported that the school dropout rate for this group was 12 times greater than the rate among teens not affected by ADHD.

An appropriate school-based approach to addressing the needs of students with ADHD must be comprehensive. Dowdy et al. (1995) have identified four fundamental intervention areas: medical management, environmental management, student-regulated strategies, and instructional accommodations. Although school personnel have not been involved in the prescription of the medication, they do play an important role in monitoring its usage; therefore, it is imperative, according to Fiore (1993) that school personnel communicate with parents and physicians regarding the effects of the medications that a student is taking. Everyone involved with the treatment program must be alert to the desired outcomes as well as the negative side effects and be willing to make adjustments when necessary.

Environmental management has been defined by Dowdy et al. (1995) as all teacher directed activities that support the efficient operations of the classroom and lead to the establishment of optimal conditions for learning and order. Changes to the classroom setting and implementation of behavior management systems are examples of environmental management. These management dimensions include physical changes, psychosocial relationships, instructional accommodations, procedural policies, and an increase of desirable behaviors along with a decrease of negative behaviors.

Fiore (1993) explained that students with ADHD typically exhibit certain behaviors for which self-regulatory interventions are appropriate and warranted. Student-regulated strategies, though initially taught by the teacher, can be viewed as interventions that students will eventually implement independently. Rooney (1995) concurred and recognized that students with ADHD could benefit greatly from accommodations made to their instructional programs. These accommodations may involve curriculum, materials, instructional processes, and the products that are produced as a result of instruction. Accommodations may include providing study skills and social skills instruction. A variety of materials could be used including technology, advanced organizers, and graphic aids. Allowing alternative final products, portfolios, making test accommodations and granting grade considerations are all examples of product accommodations. Rooney believed that these accommodations would increase focus, decrease impulsivity, enable students to “talk-through” their assignments and problems, and develop positive and appropriate social and interpersonal skills.

Mamchur (1996) saw adapting to the process of learning or focusing on how a student learns as another accommodation. This supported the use of cooperative learning situations, active involvement of students in the lesson, guided practice, and making accommodations regarding speed, accuracy, and amount of assigned work that had been recommended by Dowdy et al. (1995).

Learning Styles

A learning style is a method used by a person in the acquisition of knowledge. It is the way in which a person perceives, conceptualizes, and recalls information (Callan, 1996). Learning styles are closely interwoven with the affective, temperamental, and motivational structures of the total human personality. A core personality structure is manifested in the various levels and domains of psychological functioning (intellectual, affective, motivational, defensive), and its manifestation in cognition is cognitive style (Messick, 1976). Several learning styles have been based on Jung's (1927) theory of personality type. In Jung's view, there were two functions for perceiving (sensing and intuition) and two for making judgments (thinking and feeling). Jung ascertained that one perceived either concretely by sensing or abstractly by intuition. Judging or processing information occurred logically by thinking or subjectively by feeling.

Myers and Briggs (1977), creators of the Myers-Briggs Type Indicator, applied Jung's work in an effort to further understand specific differences in human learning through personality type. Although learning style theorists have interpreted the personality in various ways, nearly all models have had two things in common (Silver,

Strong & Perini, 1997). Learning style models have tended to concern themselves with the process of learning or how individuals absorb information, think about information, and evaluate the results. Learning style theorists have also generally believed that learning is a result of a personal, individualized act of thought and feeling.

Silver and Hanson (1995) designed a learning style model based on Jung's (1927) four dimensions of learning theory (sensing, thinking, feeling, and intuition). They described four basic learning styles, the first of which was the "mastery" style learner. A mastery style learner was also known as a sensing-thinking learner, one who was realistic, practical, and matter-of-fact. Absorbing information concretely and processing it sequentially, the sensing thinking learner was results-oriented and highly efficient. The mastery style learner displayed a high energy level to accomplish tasks that were logical, useful, and practical. (Silver & Hanson).

The "understanding" style learner was also known as the intuitive-thinking learner. This learner was viewed as theoretical, intellectual, and knowledge oriented and focused more on ideas and abstractions. Learning through a process of questioning, reasoning, and testing, this learner preferred to be challenged academically and was curious about ideas. The intuitive-thinking learner had a tolerance for theory and evaluated learning by standards of logic and the use of evidence (Silver, Hanson, Strong, & Schwartz, 1996).

The "self-expressive" style learner used feelings and emotions to look for images implied in learning. These learners were curious, insightful, and imaginative. Also known as intuitive-feeling learners, these learners dared to dream, were committed to their

values, and open to alternatives. These learners judged the learning process according to its originality, aesthetics, and capacity to surprise and delight (Silver & Hanson, 1995).

The fourth type of learner, thought to be sociable, friendly, and interpersonally oriented, was known as an “interpersonal” style or sensing-feeling learner. This learner judged learning in terms of its potential use in helping others and focused on concrete, palpable information, preferring to learn socially (Silver & Hanson, 1995).

In their work with the National Association of Secondary School Principals’ (NASSP) Learning Styles Task Force, Keefe & Monk (1986) defined learning styles as “the characteristic cognitive, affective, and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment” (Keefe & Monk, p. 23). Dunn & Griggs (1988) also included such factors as perceptual modality preferences (for example, visual, auditory or kinesthetic ways of processing), preferences for cooperation versus competition, and individual desires regarding classroom environmental factors such as lighting or temperature as important in understanding learning styles. Learning style advocates have argued that a student’s style of learning, if accommodated, could result in improved attitudes toward learning and an increase in thinking skills, academic achievement, and creativity (Dunn & DeBello, 1999).

According to Hoover (1993), learning styles are characteristic ways in which students respond to instruction and relate to the successful implementation of curriculum accommodations. Learning styles have varied across individuals with many learners using and emphasizing a few select responses or strategies. Curriculum accommodation

needs may be best met if students use different learning strategies as various learning opportunities dictate. Hoover expressed the belief that determining which learning strategies may be most appropriate for specific students began with the identification of a student's learning style preferences.

In order to understand learning styles, Hoover & Patton (1997) indicated the need for teachers to identify associated cognitive styles such as field, tolerance, tempo, categorization, persistence, anxiety, and locus of control: Field referred to how students view an experience, idea, or situation; tolerance was the willingness of students to accept experiences that vary significantly from everyday reality; tempo pertained to the speed and adequacy of information processing, i.e., reflective or impulsive; categorization was the way students tend to group items; anxiety referred to the levels of anxiety and apprehension experienced by students in academic situations; and locus of control dealt with the extent to which students tend to attribute behavior and achievement to internal or external factors.

Dunn & Dunn (1992) addressed the importance to the classroom teacher of the identification of learning styles which, in turn, would guide curriculum accommodation decisions. In the thinking of these theorists, the learning styles associated with each cognitive style could be viewed as two extremes with most students exhibiting a tendency toward one or the other extreme; however in some students, a balance in the use of learning styles could be observed.

Kolb (1984) identified four learning stages and four learning styles. Kolb's conceptual framework of learning theory was based on what he referred to as an

experiential learning model. The learning stages he defined were: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Kolb & Fry (1975) viewed the learning cycle as a continuous cycle, but believed it could begin at any one of the four points. They felt the learning process normally began with a concrete experience such as a person carrying out an action and then examining the effect of that action. In the reflective observation stage, the person attempted to understand and generalize to other situations the effects of that action. In the abstract conceptualization stage, the relationship between the action and the effects of that action were examined. During the last stage, active experimentation, the action could be applied to new circumstances within the range of generalized situations (Kolb & Fry).

A learning style, according to Kolb (1984), described the way in which information was acquired, learned, and used to solve problems. Kolb's styles were converger, diverger, accommodator, and assimilator. The core of the model was a simple description of the learning cycle of how experience could be translated into concepts and then used as guides in the choice of new experiences (Kolb, 1981). On Kolb's Learning Style Inventory, a converger was a problem solver who attained high scores in the abstract conceptualization stage and the active experimentation stage. A diverger earned high scores in the concrete experience and reflective observation stages. A diverger had the ability to view concrete situations from many different perspectives and was thought to be better at recognizing problems.

Assimilators were skilled in defining and formulating theories and earned high scores in the abstract conceptualization stage and the reflective observation stage. Finally,

an accommodator achieved high scores in the concrete experience and active experimentation stages. Good at implementing plans, acting in new experiences, and taking risks, according to Holoviak, (1990), an accommodator was viewed as being successful at adapting to specific, immediate circumstances. Kolb (1981), however, believed that most people develop learning styles that emphasize certain learning abilities over others as a result of hereditary equipment, past experiences, and the demands of present environments.

McCarthy's (1986) model of learning styles is drawn from the work of Kolb's (1981) construct that all people sense and feel, observe and think, and experiment and act. McCarthy's (1982) four-step model, the 4Mat System, has been explained using the following labels and attributes: Innovatives were curious, aware, and perceptive; analytics were critical, fact seeking, and philosophizing; common-sense people were hands-on, practical, and oriented toward the present; dynamics were risk taking, adaptive, inventive, and enthusiastic.

McCarthy (1982) stipulated that inherent in the 4Mat System were two major premises: (a) People have major learning styles and hemispheric processing preferences; and (b) Designing and using multiple instructional strategies in a systematic framework to teach to those preferences can improve teaching and learning. McCarthy developed an overlay of hemisphericity, identifying the left brain function as being associated with verbal, field-independent activity and the right-brain function as being responsible for visuo/spatial, field-dependent activity (McCarthy, 1986).

The concept to the 4MAT System has been based on a spiral approach to learning. According to McCarthy (1986), the learner entered into the spiral through a right brain, structured activity designed for motivational arousal; this was the sensing/feeling activity for innovative learners. The next component was dissection of the activity in great detail, providing the investigative, intellectual exercises that appeal to analytic learners. Once the concept had been formulated, learners practiced working with the concept. The left-brain goal was to achieve mastery of the concept and was related to common sense hands-on practice and personalization. In the final step, the learner was asked to make right-brain choices of alternatives and apply as many as possible to real world situations. This relates to the dynamic learner, the action oriented doer who thrives on implementing programs. In McCarthy's model, all four styles are presented with accompanying left/right hemispheric activities in every lesson. Using this spiral concept of full-circle training, regardless of the individual's learning style, has been thought to provide all students with the opportunity of being taught using their style 25% of the time and, in McCarthy's view, to be challenged 75% of the time.

One of the earliest teams of researchers in the field of learning styles were husband and wife, Kenneth and Rita Dunn. Dunn and Dunn (1978) developed a comprehensive model dealing with environmental, emotional, sociological, physical, and psychological learning style components aimed at providing information directly related to teaching strategies. These 5 groups contain 21 subcategories or elements. It was the Dunn's view that these elements did not impact equally on all learners to inhibit or stimulate learning. Those elements that strongly affected individuals were referred to

simply as strong preferences. Others that were important, but less influential, were referred to as preferences. Somewhere between 5 and 14 of the 21 elements were thought to affect most students, and it was these that formed an individual's learning styles (Dunn & Dunn, 1993).

The environmental stimulus included the elements of sound, light, temperature, and design (Dunn & Dunn, 1992). Concerns as to whether students (a) learn with sounds present, such as when others whisper, breathe loudly, sneeze or cough; (b) are bothered by outside traffic or sound transmitted by overhead fluorescent lights; (c) prefer bright or subdued lighting; (e) are more comfortable with warm or cool temperatures; (f) use upright seats or prefer sitting in an informal position were addressed through these elements.

Emotionality included motivation, persistence, responsibility, and structure. These elements determined the extent to which students (a) were motivated to be in school; (b) were persistent or preferred rest breaks; (c) were responsible or irresponsible; and (d) responded to authoritative structure or liked to be self-paced were determined (Dunn & Dunn, 1993).

Dunn and Dunn (1993) theorized the sociological stimulus included the elements of learning alone, in a pair, with peers, or as a part of a team, with a collegial or authoritative teacher. Students' grouping preferences for (a) learning in many different ways or through patterns and routines; and (b) self-, peer-, group-, adult- oriented activities or a combination depending on the task at hand were considered in these elements.

Physical elements included perceptual modalities, the need for intake while learning, time-of-day energy periods, and the need for mobility versus passivity. Considered in these elements were students' (a) perceptual strengths (auditory, visual, tactile, or kinesthetic modalities); (b) need to move around while learning or in between learning segments; (c) morning or afternoon time preferences; (d) need to eat or drink to maintain energy levels during learning (Dunn & Dunn, 1988).

The psychological dimension included global/analytic, hemisphericity, and impulsive/reflective characteristics (Dunn & Dunn, 1990). Preferences in this dimension included students' information processing preferences (sequential/analytical or holistic/global). Overall, learning style preferences have been influenced by genetic make-up, previous learning experiences, culture and societal variables.

Learning styles researchers, Barbe and Swassing, presented three modes of sensory perception (ways of remembering) that have been used in varying degrees: auditory, visual and kinesthetic (Barbe, 1985). According to the Barbe-Swassing model, when information is taken in or perceived, one or more of the senses or modalities is being used to understand and remember.

Visual learners learn through seeing and use strong visual associations to remember what they learned. These learners gather information best by looking, reading, and watching as they "see" ideas in the mind's eye, remember visual details, and think in pictures. They learn best from visual displays such as charts, illustrated explanations, diagrams, overheads, videos, flipcharts, and handouts. These are the students who will take detailed notes during a lecture to retain the information (Barbe, 1985).

Auditory learners are listeners and talkers, and they learn well by group discussions and verbal lectures. They learn by listening to verbal instructions and remember by forming the sounds of words. Of this population, 30% may need to repeat instructions, even silently, to mentally “hear” information as they commit it to memory (Tobias, 1994). Auditory learners interpret the underlying meaning of speech through listening to tone, pitch, speed, and vocal inflection.

According to Barbe (1985), kinesthetic learners learn through moving, doing, and touching. These students become physically involved and actually do something with what is being learned. The kinesthetic learner will remember best what he learned while on the move. Students who are kinesthetic learners want to actively explore their surroundings and learn best with a hands-on approach. They have difficulty sitting for long periods and may become easily distracted (Barbe & Swassing, 1979).

The contribution of the Herman Witkin model of learning styles has been to improve understanding of the fundamental differences in the way each individual receives and communicates information to others. Students, according to Witkin (1997), process information either analytically or globally. Analytical learners examine information by breaking it down little by little and arranging it logically in order to ensure predictability, a plan to follow, and rules to provide boundaries. Global learners organize by clustering information into wholes with broad sweeping strokes. Global learners often are impatient and can appear disorganized as they jump from idea to idea randomly. In a prior writing, Witkin & Goodenough (1981) had addressed the potential for creativity or chaos that the spontaneity of global learners could provoke.

One of the most effective models for understanding learning style differences has emerged from Gregorc's (1985) research. The basis of Gregorc's model was that learning style consisted of distinctive, observable behaviors that providing clues to the functioning of individuals' minds and how they relate to the world. Those mind qualities suggested that individuals learn in combinations of dualities, specifically, perception and ordering (Gregorc & Butler, 1984). Perception abilities are the means through which one grasps information or the ability you have to see through the mind's eye. In this model, there are two perceptual qualities that each mind possesses: concrete perception and abstract perception.

When individuals use their concrete abilities, they use their five senses (Tobias, 1996). Concreteness is a mind quality that enables one to deal with the tangible or the obvious and to grasp and mentally register data through the direct use and application of the physical senses.

Abstract perception allows individuals to understand what they cannot actually see. This is the mind quality that permits one to apprehend and perceive that which is invisible and formless to the physical senses. Abstract perception enables reading between the lines and discovering subtleties and nuances. Gregorc and Ward (1977) believed that though individuals used both concrete and abstract perceptual abilities, each person exhibited a dominant ability.

According to Gregorc (1985), individuals have used two methods of ordering what they know. An individual's ordering abilities permit arranging, systematizing, referencing, and disposing of information and occur by sequencing or by randomly

storing information. When using sequential ability, a logical train of thought is followed. Sequence is a mind quality that disposes one's mind to grasp and organize data from the environment in a linear, step-by-step, methodical, predetermined order (Gregorc, 1985). Sequential learners prefer a plan and do not act on impulse.

Random ordering organizes information in no particular sequence. This mind quality disposes the mind to grasp and organize information in a nonlinear, galloping, leaping, and varied manner. Large quantities of information can be imprinted on an individual's mind in a fraction of a second and enable one to deal with diverse and independent elements of information and activities (Gregorc & Butler, 1984). A task will be completed, but the process may appear disorganized and impulsive.

Gregorc (1985) believed that each individual was equipped with all learning qualities but that most individuals were predisposed strongly toward one or two styles. In Gregorc's thinking, few individuals were equally strong in all four styles, and each combination of perception and ordering abilities revealed a particular quality to how information received from the environment would be processed. Dominant learning styles which emerged from Gregorc's study of perception and ordering are: Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR).

Gregorc (1985) stated that concrete sequential learners acquired knowledge through direct hands-on experience and were appreciative of order and direct step-by-step instruction. The concrete sequential style enables labeling, remembering, and controlling

discrete parts of the physical environment. It is the ability to follow specific directions and to move steadily toward the goal of completing carefully developed plans.

Concrete random learners have been best characterized by experimental attitudes and behaviors. Using the trial and error approach, they have tended to make intuitive leaps. The concrete random style prompts curiosity and questioning, encourages unconventional thinking, trouble-shooting, and investigative thinking (Gregorc & Butler, 1984).

Abstract sequential learners have been described as having excellent decoding skills with written, verbal, and image symbols. They prefer to learn in a rational and sequential manner, and learn better from authorities than through active experimentation. The abstract sequential style deals with abstract ideas, theories, and hypotheses. It prompts intellectual, logical, and rational thinking. This style views the overall picture, develops a blueprint, and visualizes the final product (Gregorc & Butler, 1984).

Abstract random learners have been distinguished by their attention to human behavior and their capacity to interpret vibrations. Their preferences have included discussions and activities that involve multi-sensory experience and the receipt of information in an unstructured manner. The abstract random style provides opportunities to experience the total environment--the temperature, sights, and sounds, body language, attitudes and moods in the classroom (Gregorc, 1985).

Once learning styles have been evaluated, accommodations can be made to best meet the needs of each individual student. One's learning style can affect how well one performs in an educational setting. According to Beglane (2001), learning how to

recognize and appreciate learning styles can help identify the natural strengths and tendencies each individual possesses. By observing patterns of behavior, listening to the way a student communicates, experimenting with what works and what does not, and focusing on strengths not weaknesses, students can be provided with more opportunities for success regardless of their mental disorders. Knowing the characteristics of these illnesses, sensing the triggers, evaluating the learning styles, then providing the most appropriate avenues for learning will establish an academic atmosphere of support and nurturance and, therefore, success (NIMH, 2000).

It has been typical that students have one or two styles that work best for them when they learn. Tobias (1996) would stress the importance of an educator relying on learning style strengths as students are acquiring new knowledge and developing academic skills. Unfortunately, some strengths can become obstacles when a student encounters incongruent academic demands in the classroom. Understanding learning styles and how styles relate to the dominant characteristics of students exhibit, will enable educators to empower students with solutions (Beglane, 2001).

Learning Styles Instruction

In June 1987, prior to the introduction of learning styles instruction, only 25% of the mildly handicapped students in Frontier's Central High School District in Hamburg, New York, passed state competency tests and were eligible to receive diplomas. During 1987-88, the first year that learning styles were introduced in Hamburg, that number increased to 66%; in 1989-90, the second year, 91% were successful. That year, a greater

ratio of purportedly handicapped students passed state competency tests than regular education students (Brunner & Majewski, 1990).

At Roosevelt Elementary School in Hutchinson, Kansas, the Dunn and Dunn learning styles program was implemented during the 1980s. The Learning Style Inventory (LSI) was administered, teaching strategies were matched, and accommodations were made for the corresponding learning styles. The faculty saw improved test scores, better work habits, and higher test scores when instruction was matched with the students' learning style preference (Lemmon, 1985). When the students took the Iowa Test of Basic Skills during their time-of-day preference, startling results occurred. Between 1981 and 1984, students made significant gains each year in reading and math scores, with composite scores starting at 3.3 in 1981 and reaching 6.7 in 1984 (Lemmon, 1985).

In Greensboro, North Carolina at Brightwood Elementary, Dunn and Dunn's learning styles program was also implemented. Standardized test scores on the California Achievement Tests (CAT) in reading and math also made steady gains—from the 30th percentile in 1986 to the 40th percentile in 1987 (Klavas, 1994). In 1988, the CAT scores ranged between the 74th and 77th percentile in those same subject areas. By 1989, students' CAT scores at Brightwood Elementary were at the 83rd percentile, among the highest in North Carolina (Klavas, 1994).

Cain and Norwood (2000) reported that in South Carolina, the Kershaw County School District began using the Dunn and Dunn model of learning styles in 1996. All students in the district completed the Learning Styles Inventory. This allowed teachers to

understand the dominant learning preferences of their students. These preferences were then used to guide teacher planning to meet students' needs for learning new, difficult material. The district administration sought to gauge the results of schools' varying levels of implementation of learning styles methods and student achievement. Students in a school not implementing learning styles at an advanced rate served as a comparison group. These students were matched with students from a school with advanced learning style use. In the advanced learning styles environment, students showed acceleration in their learning rate as the program was implemented, and they maintained that acceleration while scores in the comparison group tended to plateau. Over a four-year period, the advanced learning styles group achieved a learning rate that was 24.7% faster than the comparison group (Cain & Norwood).

Cain and Norwood (2000) further explained that although the emphasis on learning styles was countywide, the initiative was by no means standardized. Teachers had flexibility in incorporating environmental and instructional accommodations into their classrooms. Teachers' efforts were discussed at faculty meetings and during staff development days, and teachers were encouraged to share their experiences and ideas. Further, the principal chose these activities and implementation plans as the focus of classroom observations and shared the successes with the faculty. After a comparable start in grades 1-3, scores began to spike in the 4th grade advanced learning styles group. Scores continued this trend in the move from 4th to 5th grade. At 5th grade, the score growth difference accounted for all percentile rank attainments. That earned the advanced learning styles group top 10 status in the state for reading, math and language at the 4th

grade level and for math and language at the 5th grade level (Cain and Norwood). Those results provided strong evidence that the intensity of the implementation of learning styles methodology was accompanied by an improvement in student achievement. The superintendent resolved to fully apply learning style approaches throughout the district.

McCarthy's Teaching Style Inventory was administered to the faculty at Fort Mill High School in South Carolina in 1988. After discussion, the faculty wanted to investigate student learning styles and to compare them with teaching styles. A review of available inventories led to the selection of the NASSP Learning Style Profile (LSP) because it measured cognitive, affective, and environmental elements (Allred & Holiday, 1995). The study of student learning styles was conducted during a 3-year period, 1989-1991. The LSP was administered to all ninth graders (N = 611) in the spring of each year during standardized testing time. After the first administration in 1989, there appeared to be a significant difference between students achieving GPAs of B and above and those students achieving GPAs below C.

The results from the three-year comparison were very similar to the results from the first year. The study revealed an effect size of .37; that is, 37% of the difference between high-achieving and low-achieving students was accounted for by the learning style of students. Low-achieving students had low scores in the analytic, spatial, categorizing, and memory subskills. The visual subskill was lower, and the persistence subskill 3 was significantly lower than that of high-achieving students. There were no significant differences for any of the environmental/physiological elements (Allred & Holliday, 1995).

With an effect size of .37, the LSP was considered to be a valid predictor of a student's school achievement. Students with high scores in analytic, spatial, categorization, and memory subskills would be expected to be high achievers in terms of grade point averages. Students who have visual perceptual strengths and who had high persistence scores were expected to be academically successful (Allred & Holliday, 1995).

The teaching style results indicated that teachers were spending a great deal of time telling facts to students and requiring them to memorize these facts. Allred & Holliday (1995) posited that analytical students, those who persisted and could categorize and memorize, would do well with these teachers. Students with poor memory skills, weak analytic, categorizing, and spatial skills would perform poorly in these classes. Allred and Holliday (1995) contended that this latter group could become unmotivated, take lower level classes, and become behavior problems. The most significant impact of the administration of the LSP was creating awareness among students, teachers, and parents. The LSP had provided substantial evidence that the needs of all the students were not being met.

Callan (1996) reported that during the 1993-94 academic year, 6,218 high students were selected to participate in a study that examined the relationship between perceived academic achievement and learning style preference. These students were from 19 schools in the northern and southern regions of South Carolina. The sample represented a population of approximately 60,000 students. Kolb's Learning Style Inventory and a student data questionnaire were administered to each student.

On the Student Demographic Questionnaire, students rated their academic achievement as excellent, good, average, fair, or poor. Callan (1996) noted after analyzing the data, that learning style showed a significant relationship to the ratings of students on perceived academic achievement. Students who selected the Converger style of learning rated themselves as higher achievers than students who selected the Diverger, Assimilator, or Accommodator styles. Convergengers are task and problem oriented. Their knowledge is organized so that through hypothetical-deductive reasoning, they can focus their attention on specific problems (Kolb, 1981).

Students in the Diverger learning style rated themselves lower than did their counterparts in other styles. Divergers are imaginative and emotional as well as interested in other people. They are best at concrete experiences and reflective observations.

Students in the Accommodator and Assimilator styles had similar ratings in academic achievement. Accommodators, with their opposite learning strengths from those of Convergengers, are people oriented, active, and eager to carry out plans and experiments. Assimilators excel in inductive reasoning and prefer abstract concepts and theories to interaction with other people (Kolb, 1981). The results of this study, based on self-ratings, confirmed that a relationship exists between learning styles and academic achievement.

Principal Support for Professional Development

Payne and Wolfson (2000) addressed the importance of teacher professional development to the success of school improvement initiatives and student achievement.

They further emphasized the need for principals to ensure that all teachers were able to meet the many challenges the classroom presents by helping to provide meaningful and effective professional development opportunities. Teacher support has been viewed as essential for the success of any new endeavor in the school, and teachers have needed to acquire additional knowledge and skills to implement the desired changes. Principals have been called on to play a critical role in ensuring that teachers are prepared through appropriate professional development to bring about school reform and improved learning for all students (Payne & Wolfson, 2000).

In this regard, the principal has served as a role model for continual learning and motivates and inspires others to pursue learning opportunities and further their own knowledge. Fullan (1994) supported this in discussing the need for principals to advance their own professional growth. This could be accomplished through additional certification or advanced degrees, by staying abreast of current information, and by attending conferences and professional meetings in order to learn and share skill development with others.

The principal has also been viewed as the leader of a learning organization who sets high expectations. This includes the expectation of lifelong learning for everyone in the building. In *Breaking Ranks* (NASSP, 1996), principals were encouraged to stress the importance of the teachers focusing on their own professional growth and working cooperatively with others to increase student learning. That professional development was to be linked to school improvement and the mission, beliefs, and goals of the school.

Payne and Wolfson (2000) recognized the power of the principal to motivate and support development by assisting teachers and removing barriers and obstacles that frequently inhibit professional growth and prevent positive change. The principal communicates a sincere interest in teachers pursuing professional growth opportunities when they share information about topics, conferences, and workshops of interest to teachers and disseminate articles, websites, tapes, and books to the staff. Time, money and support have also been required in order to learn new strategies and techniques to improve student learning. Principals must often be creative in finding these resources given the typical constraints on time and budget. (NASSP, 1996).

Finally, the principal has been called on to serve as the facilitator for professional development activities, arranging for outside consultants, and coordinating the logistics for school wide professional development. The principal also recruits teachers from within the school to conduct professional development activities. By providing time, resources, and support for teachers to plan and prepare for their training, the principal has affirmed their own expertise and acknowledged their valuable role as contributors to the continual professional growth of their colleagues (Payne & Wolfson, 2000).

Stone (1992) reported that the Wilson School in Charlotte, North Carolina, housed all of the district's fourth, fifth, and sixth grade Behavioral/Emotionally Handicapped (BEH) students. The principal of the school arranged to test these students using the Dunn and Dunn's Learning Styles Inventory. After reviewing the results, the principal, curriculum coordinator, and selected faculty attended a five-day workshop on

learning styles. Staff development was then provided to remaining faculty prior to putting into practice what had been learned.

According to Stone, every classroom was redesigned to respond to individual students' needs for sound, light, seating, and mobility. Kinesthetic activities were incorporated into the core curriculum, and the instructional schedule was revised to permit as many children as possible to be taught at their best time of day. Students were grouped according to their kinesthetic, auditory or visual strengths (Stone, 1993). Standardized test scores rose from the 20th and 30th percentiles to the 50th, 60th, and even 70th percentiles in math and science. Fewer discipline problems were observed, and there was a noticeable improvement in teacher morale. The BEH students were mainstreamed one period at a time beginning with science, then math. Gradually added were lunchtime, physical education, reading and language arts. Students were mainstreamed to regular instruction within a matter of months and were succeeding. Students classified as learning disabled, educationally mentally handicapped, and emotionally handicapped all achieved grade level in reading (Stone, 1993).

Dunn (1990) reported on one principal's success at Robeson High School in South Carolina and described how her faculty had embraced learning styles based instruction and the staff development provided. Students were taught to use their strengths. The reported result included improved behavior, attitudes, and achievement for each grade. In Oakland Junior High School in Columbia, Missouri, an 8th and 9th grade reading teacher converted her classroom into a learning style pilot program to see if reading achievement would be increased at a greater rate. During 1988-89, 12% of

students reached 9 months of growth. During the 1989-90 school year, after the incorporation of learning styles instruction, 64% of the students reached 4 months or more of growth in a 4-month period (Dunn, 1990).

Summary

The purpose of this chapter was to review related literature and research on learning styles, accommodations and instruction, mental health disorders of children and adolescents, and principals' roles in professional development that would serve as the conceptual background for this study. The literature review was presented in six sections. Section one focused on accommodations necessary to address the diverse needs of learners. Section two summarized the need for learning differentiation. Section three detailed the mental health disorders of childhood and adolescence. Section four provided a detailed summary of different learning style theories. Section five presented examples of learning style instruction and student achievement. The sixth and final section focused on the principal's role in professional development. The following three chapters will contain a description of the methods and procedures used in the study, a report of the data analysis and a summary and discussion of the findings.

CHAPTER 3

METHODOLOGY

Introduction

The methodology and procedures used in determining the attitudes of principals toward the knowledge, value of, and support for the application of learning styles in therapeutic settings is described in this chapter. A total of six sections are used to present the procedures used in conducting the study. The first section contains a statement of the problem. The population is described in the second section. The third section outlines the process used in the collection of data. Section four contains a description of the instrumentation. The fifth section presents the research questions. The procedures used in the data analyses are described in the sixth section, and a summary is used in concluding Chapter 3.

Problem Statement

This study was developed to produce data about the attitudes of principals in therapeutic settings towards the knowledge, value and application of learning styles. The problem of this study was three-fold: To assess the attitudes of principals in therapeutic settings as they pertained to (a) their perceived knowledge of learning styles, (b) the value of learning styles, and (c) the support given to the professional development subject of learning styles. The results of this study added to the research on the importance of learning styles to students' academic achievement. The results may be

valuable to researchers interested in principals' knowledge and attitudes as they pertain to Learning Style theory, and their attitudes related to their roles in professional development for their teachers.

Population

The population of this study consisted of the 120 principals of schools with therapeutic educational settings throughout the United States that belonged to the National Association of Therapeutic Schools and Programs (NATSAP). Programs included residential treatment centers, therapeutic boarding schools, wilderness programs, emotional growth boarding schools, outdoor therapeutic programs, and group homes located in 31 states.

These NATSAP schools offered a wide range of programmatic types, sizes of programs, grade and age ranges and gender specifications. The objective of all the therapeutic and educational programs has been to provide treatment that is rooted in good-hearted concern for the participants, to respect them as human beings, and to be sensitive to their individual needs and integrity.

Data Collection

The survey instrument (see Appendix A) and a cover letter (see Appendix B), explaining the purpose of the study were mailed to the 120 identified principals on March 7, 2006. The letter requested that principals complete and return the survey in the pre-

addressed and stamped envelope that was included with each survey instrument and letter.

Returned responses were considered unusable if respondents failed to complete 50% or more of the survey items. The first mailing yielded a return of 40 usable survey instruments (33%) as of March 24, 2006. To encourage participation, a follow-up survey with a new cover letter was mailed to non-respondents on March 27, 2006. Principals were again asked to complete and return the survey in the self-addressed stamped envelope provided.

The second mailing yielded a return of an additional 28 survey instruments. The combined mailings for this study resulted in a total of 68 usable returned survey instruments for a 56.6% usable rate of return.

Instrumentation

Data were collected using the survey instrument, Principal's Attitudes Toward the Knowledge, Value, and Application of Learning Styles with Students in Therapeutic Settings. The instrument was designed by the researcher to measure respondents' perceived general knowledge of learning style theories and their value and application in their respective settings.

The procedure for the development of this instrument involved an extensive review of the related literature. The instrument is based on the theoretical foundations of learning style knowledge and acquisition; value and implementation of learning style

instruction; provision and application of learning style training; and the principals' role in professional development for learning style instruction.

A small panel of five doctoral level educational leadership students and practicing principals provided early feedback on the instrument. Further feedback on the instrument and clarity of survey items was obtained from a small sample (57) of doctoral students who are also practicing school administrators. A pilot study was conducted by administering the survey to these 57 selected students and then obtaining reliability of the instrument from the data collected. Further feedback on the instrument and clarity of survey items was obtained with an additional set of questions given to the students. The feedback received on the clarity of instructions, format, and questions was positive, and no additional changes to the instrument were needed.

The final survey instrument consisted of four sections. Section one contained three survey items (items 1-3) and measured principals' perceived general knowledge of learning style theory and how their knowledge had been acquired. Section two contained five items (items 4-8) and measured the attitudes (value) of principals toward the use of learning styles. Respondents were asked to indicate the impact on academic achievement of learning style instruction and sources of evidence. Section three was used to gather data about principals' support for the application of learning style theory. A total of 15 items (items 9-23) were used to elicit information as to the application or the extent, of support for learning style application and how this was exhibited in each principal's setting.

In each of these three sections, respondents were asked to rate the extent to which the identified items or conditions applied to their school using a 4-point Likert-type scale where 4 = Great extent, 3 = Some extent, 2 = Small extent, or 1 = Not at all).

Respondents were asked to provide detailed information regarding methods of acquisition, and specific applications by indicating with “check” marks all items that applied in various listings or sub-sections of items.

Section four requested personal and professional data from respondents. Each respondent was asked to provide information on: (a) position/title, (b) years in therapeutic setting, (c) grades included, (d) genders included, (e) type of program, (f) highest degree earned, and (g) college major. Data from these items served to create variables useful in the presentation and analysis of the data for the study.

Research Questions

The following research questions were generated based on an extensive review of literature:

1. To what extent do principals in therapeutic settings self-report general knowledge of learning style theory applications?
2. To what extent do principals in therapeutic setting exhibit positive attitudes toward the use of learning style theory-supported instructional methods and materials?
3. To what extent do principals in therapeutic settings support the application of learning style theory?

Data Analysis

The researcher completed all analyses of the collected data. All statistical computations were performed using the statistical software *SPSS Graduate Pack 10.0 for Windows*. The results were presented in tabular form and discussed.

Participants' responses for 23 survey items were translated into numerical scores for each item scored with a four-point Likert-type scale where 4 = Great extent, 3 = Some extent, 2 = Small extent, and 1 = Not at all. Respondents' scores were totaled for each survey item and for the overall survey resulting in individual and overall respondent scores for each item. Descriptive statistics were used to analyze the 9 multi-answer survey items not scored with a Likert-type scale. Frequencies and percentages were obtained for each of these survey items. Analyses of the collected data concerning personal and professional demographic information were reported using frequencies and percentages for each of the variables.

Data Analysis for Research Question 1

Research Question 1 focused on the extent to which principals in therapeutic settings self-reported general knowledge of learning style theory applications and how that knowledge was acquired. The frequencies and percentages of respondents' answers as to the type of knowledge were calculated in order to determine the present level of self-reported knowledge where 4 = Great extent, 3 = Some extent, 2 = Small extent, and 1 = Not at all. Frequencies and percentages regarding the acquisition of learning style knowledge were also calculated and discussed.

Data Analysis for Research Question 2

Research Question 2 addressed the extent to which principals in therapeutic settings exhibited positive attitudes toward the use of learning style theory-supported instructional methods and materials. In order to answer the question, frequencies and percentages of respondents' answers for each positive belief were calculated to determine the level of belief in learning style instruction where 4 = Great extent, 3 = Some extent, 2 = Small extent, and 1 = Not at all. Frequencies and percentages were also calculated and reported regarding types of changes exhibited in academic achievement due to the implementation of learning style instruction.

Data Analysis for Research Question 3

To answer Research Question 3 as to the extent principals in therapeutic settings supported the application of learning style theory, data were grouped by type and extent of support for learning style application. Frequencies and percentages of respondents' answers for each type were calculated where 4 = Great extent, 3 = Some extent, 2 = Small extent, and 1 = Not at all. Frequencies and percentages were also calculated and reported regarding evidence related to each type.

Summary

This chapter presented the methods and procedures used to determine principals' attitudes towards the knowledge, value and application of learning style theory in therapeutic settings. It contained a description of the population and a statement of the

problem. The development of the survey instrument and the statistical procedures used in data analysis were also presented.

Data analysis was completed using 68 responses to the survey instrument for a usable return rate of 56.6%. Chapter 4 contains the presentation of the analysis of data. The results of the statistical analyses are displayed in tabular form along with supportive and descriptive narratives. Conclusions, discussion and implications for practice and future research are presented in Chapter 5.

CHAPTER 4

ANALYSIS OF DATA

Introduction

This study was developed to gather data about the attitudes of principals in therapeutic settings toward the knowledge, value, and application of learning styles. It was also intended to contribute to the existing body of knowledge on learning styles and the principal's role in professional development. Three research questions were formulated to provide guidance and focus for the investigation. These questions are:

1. To what extent do principals in therapeutic settings self-report general knowledge of learning style theory applications?
2. To what extent do principals in therapeutic settings exhibit positive attitudes toward the use of learning style theory-supported instructional methods and materials/
3. To what extent do principals in therapeutic settings support the application of learning style theory?

Data on the respondent's attitudes were collected using a survey instrument designed by the researcher. Additional data identifying personal, professional, and institutional variables were also collected.

Chapter 4 has been divided into two sections. The first section includes a description of the study's population and demographic characteristics. The second section

contains a description and presentation of the data analysis for each of the research questions generated by the response items.

Population and Demographic Characteristics

The population was comprised of 120 principals from therapeutic schools that belong to the National Association of Therapeutic Schools and Programs (NATSAP). Data were generated from 68 principals (56.6%) who responded to the survey instrument. Tables 1 and 2 present the demographic information obtained through a descriptive analysis of frequencies and percentages for the eight demographic items on the survey instrument. Items 1, 2, 7, and 8 were used to obtain personal and professional information on each respondent. Items 3, 4, 5, and 6 were used to obtain institutional characteristics for each school.

Table 1 presents the personal and professional demographics for the respondents. Of the 68 respondents, 32 (47.1%) had the title of Director of Education, 28 (41.2%) had the title of Principal, 6 (8.8%) of the respondents were titled Academic Director, and 2 (2.9%) were known as Headmasters. With respect to the number of years in their current positions, there were six categories. A total of 32 (47.1%) of the respondents had been in their current positions for 0-5 years; 12 (17.6%) for 6-10 years; another 12 (17.6%) for 11-15 years; 5 (7.4%) for 16-20 years; 4(5.8%) for 21-25 years; and 3 (4.4%) for 26 years or more.

Table 1
 Personal and Professional Characteristics of Respondents (N=68)

Characteristics	n	%
Titles		
Director of Education	32	47.1
Principal	28	41.2
Academic Director	6	8.8
Headmaster	2	2.9
Total	68	100.0
Years in Current Position		
0-5	32	47.0
6-10	12	17.6
11-15	12	17.6
16-20	5	7.3
21-25	4	5.9
26+	3	4.4
Total	68	100.0
Highest Degree		
Bachelor's	13	19.1
Master's	34	50.0
Specialist	15	22.1
Doctorate	6	8.8
Total	68	100.0
Major		
Special Education	14	20.6
Educational Leadership	14	20.6
Administration & Supervision	13	19.1
Psychology	12	17.6
Counseling	8	11.8
Curriculum & Instruction	4	5.9
Education	3	4.4
Total	68	100.0

As to highest degree earned, 13 (19.1%) of the 68 respondents had earned a bachelor's degree; 34 (50.0%) respondents had earned master's degrees; 15 (22.0%) had earned specialist degrees, and 6 (8.8%) had earned a doctoral degree .In the highest degree earned, there were 3 (4.4%) education majors, 14 (20.5%) educational leadership

majors, and 13 (19.1%) respondents who had majored in administration and supervision. There were 12 (17.6%) majors in psychology; 8 (11.8%) majors in counseling; 14 (20.6%) majors in special education; and 4 (5.9%) respondents who majored in curriculum and instruction.

Table 2 presents institutional information from demographic survey items 3-6. Item 3 asked respondents to record student enrollment. There were 6 (8.8%) schools with 25 students or less, and 15 (22.1%) schools had enrollments of 26-50; 16 (23.5%) had 51-75 students, while 12 (17.6%) enrolled between 76-100 students. A total of 13 (19.1%) schools had an enrollment of 101-125 students; 4 (5.9%) schools listed enrollment of 126-150; and 2 (2.9%) schools indicated enrollment of 150 or above. A total of four grade level configurations were indicated. The grade levels represented by respondents were: K-5 with 4 (5.9%) schools; grades 6-8, 19 schools (27.9%); grades 9-12 with 24 schools (35.3%); and grades 6-12 with 21 (30.9%) schools.

Demographic survey item 5 asked respondents to report the genders served by their schools. Of the 68 responding schools, almost half 32(47.1%) served both males and females, 19 (27.9%) enrolled only females, and 17 (25.0%) served only males.

Demographic survey item 6 asked respondents to identify the types of programs offered by their schools. There were 38(55.9%) residential treatment centers, 18 (26.5%) therapeutic boarding schools, and equal numbers 6 (8.8%) of emotional growth programs, and wilderness programs.

Table 2
Institutional Characteristics (N=68)

Characteristics	n	%
School Enrollment		
<25	6	8.8
26-50	15	22.1
51-75	16	23.5
76-100	12	17.6
101-125	13	19.1
126-150	4	5.9
150+	2	2.9
Total	68	100.0
Grade Level		
K-5	4	5.9
6-8	19	27.9
9-12	24	35.3
6-12	21	30.9
Total	68	100.0
Type of Program		
Residential Treatment Center	38	55.9
Therapeutic Boarding School	18	26.5
Wilderness Program	6	8.8
Emotional Growth	6	8.8
Total	68	100.0
Gender		
Male only	17	25.0
Female only	19	27.9
Male & Female	32	47.0
Total	68	100.0

Research Question 1

To what extent do principals in therapeutic settings self-report general knowledge of Learning Style theory applications?

In order to address Research Question 1, responses from each of the participating principals were first examined for items associated with each of the categories of general knowledge so as to determine the extent or level of learning style knowledge. Table 3

presents the self-reported responses of principals as to the extent of learning style knowledge. Responses are presented using a Likert-type scale where 4 = Great extent, 3 = Some extent, 2 = Small extent, and 1 = Not at all.

The greatest number and percentage of administrators, 32 (47.1%), ranked some as the extent of their knowledge of both learning style theories and three basic learning styles. A total of 30 (44.1%) respondents indicated they were knowledgeable, to some extent, in regard to matching teaching strategies with learning styles. A lesser number of , 26 (38.2%) indicated knowledge about learning style inventories and 25 (36.8%) were knowledgeable about learning style theorists.

A total of 20 (29.4%) respondents indicated they were knowledgeable to a great extent about matching teaching strategies with learning styles, and 18 (26.5%) respondents were knowledgeable about learning style theories and three basic learning styles to a great extent. A total of 16 (23.5%) respondents indicated that, to a great extent, they were knowledgeable about learning style inventories with 15 (22.1%) indicating a similar level of knowledge about learning style curriculum.

A total of 15 (22.0%) respondents indicated they were not at all knowledgeable about empirical studies, descriptive studies, or curriculum having to do with learning styles. A smaller number of 13 (19.1%) respondents indicated they were not at all knowledgeable about learning style theorists. In contrast, all respondents indicated they had knowledge at least to a small extent regarding learning style theories, three basic learning styles, and matching teaching strategies with learning styles.

Table 3
Extent of Learning Style Knowledge (N=68)

Descriptors	Great Extent		Some Extent		Small Extent		Not at all		Totals	
	n	%	n	%	n	%	n	%	n	%
Learning style theories	18	26.5	32	47.1	18	26.5	0	0	68	100.0
Learning style theorists	12	17.6	25	36.8	18	26.5	13	19.1	68	100.0
Learning style inventories	16	23.5	26	38.2	15	22.0	11	16.2	68	100.0
Empirical studies	13	19.1	18	26.5	22	32.3	15	22.1	68	100.0
Descriptive studies	14	20.8	15	22.1	24	35.3	15	22.1	68	100.0
Three basic learning styles	18	26.5	32	47.1	18	26.5	0	0	68	100.0
Learning style curriculum	15	22.1	20	29.4	18	26.5	15	22.1	68	100.0
Matching teaching strategies with learning styles	20	29.4	30	44.1	18	26.5	0	0	68	100.0

Respondents were also queried as to how their knowledge had been acquired and were able to draw their responses from nine source categories and indicate as many of the sources as were applicable. Some respondents provided multiple sources of evidence.

Table 4 presents the frequencies and percentages for the sources principals cited in their acquisition of learning style knowledge.

Table 4
Principals' Acquisition of Learning Style Knowledge

Sources Cited by Principals	n	%
Staff Development	28	41.2
Journal Article	25	37.8
On-the-job training	22	32.4
Additional degree	21	30.9
Continuing education course	20	29.4
Conference presentations	20	29.4
Colleagues	19	27.9
Professional reading	19	27.9
Distance Learning	13	19.1

Note: Some respondents provided multiple sources of evidence.

A total of 28 (41.2%) respondents acquired their knowledge of learning styles, at least in part, through staff development with 25 (36.8%) acquiring their knowledge through journal articles. Almost one-third, 22 (32.4%), of the respondents listed on-the-job training. A total of 21 (30.9%) administrators indicated they had acquired their knowledge through an additional degree with 20 (29.4%) reporting continuing coursework and conference presentations. The lowest category for acquisition of knowledge of learning styles was distance learning with only 13 (19.1%) respondents indicating this method of acquiring learning styles knowledge.

Research Question 2

To what extent do principals in therapeutic settings exhibit positive attitudes toward the use of learning style theory-supported instructional methods and materials?

In order to address Research Question 2, participating administrators' responses to seven items associated with their beliefs in learning style instruction were examined.

Table 5 presents the responses of administrators as to the extent of their beliefs.

Responses are presented using a Likert-type scale where 4 = Great extent, 3 = Some extent, 2 = Small extent, and 1 = Not at all.

Table 5
Extent of Belief in Learning Style Instruction (N=68)

Descriptors	Great Extent		Some Extent		Small Extent		Not at all		Totals	
	n	%	n	%	n	%	n	%	n	%
Students exhibit different learning styles	55	80.8	13	19.1	0	0	0	0	68	100.0
Learning style theories have a place in education	41	60.3	27	39.7	0	0	0	0	68	100.0
Learning style instruction impacts student learning	41	60.3	25	36.8	2	2.9	0	0	68	100.0
Teachers should obtain learning style training	42	61.8	26	38.2	0	0	0	0	68	100.0
Matching teaching strategies to learning styles is important to academic success	40	58.8	24	35.3	4	5.9	0	0	68	100.0
Using a learning style inventory is necessary to determine a particular style	39	57.4	23	33.8	6	8.8	0	0	68	100.0
Matching mental health disorders to learning styles is important for student achievement	42	61.7	20	29.4	6	8.8	0	0	68	100.0

When asked if they believed that students exhibit different learning styles, 100% of administrators replied affirmatively, 55 (80.9%) to a great extent and 13 (19.1%) to some extent. All 68 (100%) of the respondents also indicated they believed that learning

styles have a place in education to a great extent, 41 (60.3%), or to some extent, 27 (39.7%). All 68 (100%) of the administrators also reported their belief that teachers should obtain learning style training with 42 (61.8%) reporting great extent and 26 (38.2%) indicating some extent.

Four of the belief statements received some small extent rankings. The belief that learning style impacts student learning received rankings of great extent, 41 (60.3%); some extent, 25 (36.8%); and small extent, 2 (2.9%). A total of 40 (58.8%) respondents indicated they believed to a great extent that matching teaching strategies to learning styles is important to academic success with rankings of 24 (35.2%) some extent and 4 (5.9%) small extent. A total of 39 (57.4%) administrators reported that to a great extent they believed that using a learning style inventory is necessary to determine a particular style. One third, 23 (33.8%), responded that this was true to some extent with 6 (8.8%) indicating small extent. A total of 42 (61.8%) of the respondents ranked great as the extent of their belief that matching mental health disorders to learning styles is important for student achievement. A total of 20 (29.4%) administrators ranked some and 6 (8.8%) ranked small as the extent of their belief in this area. None of the respondents used the response category, not at all. Administrators cited the extent of their belief in learning style instruction as being at least small and most frequently great or some.

Respondents were also asked about the extent to which they had documented evidence of a change in academic achievement due to the implementation of learning style instruction. Table 6 presents the responses of administrators as to the extent and evidence of this change. Equal numbers and percentages, 13 (19.1%), of administrators

ranked great and some as the extent of their documented evidence. A total of 28 (41.2%) of the respondents ranked the extent as small. An additional 14 (20.6%) administrators reported not at all, thus indicating that they had no documented evidence of a change in academic achievement when learning style instruction was implemented.

Table 6
Extent and Evidence of Documented Change in Academic Achievement

Descriptors	n	%
Extent of documented change in academic achievement		
Great extent	13	19.1
Some extent	13	19.1
Small extent	28	41.2
Not at all	14	20.6
Total	68	100.0
Evidence of documented change in academic achievement		
Test scores	26	38.2
Grades	26	38.2
Reading levels	19	27.7
Math levels	20	29.4

Note: Some respondents provided multiple sources of evidence.

Table 6 also contains frequencies and percentages for the types of documented evidence of change in academic achievement when learning style instruction is implemented. Multiple responses were permitted. A total of 26 (38.2%) respondents reported that test scores and grades were an evidence of change due to learning style instruction. A total of 19 (27.9%) principals indicated they had evidence of change from reading levels and a total of 20 (29.4%) had evidence of change in their math levels.

A concluding item of the value/beliefs section of the survey was used to ask respondents to indicate the extent to which they would like to learn more about learning

styles. A total of 27 (39.7%) administrators responded with great extent; 26 (38.2%) indicated some extent; and 15 (22.0%) showed interest to a small extent. No respondents indicated they had no interest at all in learning more about learning styles.

Research Question 3

To what extent do principals in therapeutic settings support the application of learning style theory?

In order to answer Research Question 3, respondents were asked a series of questions related to the manner in which learning style theory was being applied in their school settings and the role(s) they played in the process. In each instance respondents were requested to indicate the extent to which the application was occurring using the Likert-type scale where 4 = Great extent, 3 = Some extent, 2 = Small extent, and 1 = Not at all. Respondents were then asked to indicate as many specific sources of evidence as appropriate from listings provided in the survey. The tables which follow present the extent to which application was occurring and the supportive evidence as self-reported by respondents.

Administrators were asked to indicate the extent to which they provided learning style training for their teachers. Table 7 presents the results of the data analysis. Over one-third of the administrators, 25 (36.8%), ranked some as the extent of learning style training they had provided for their teachers. A total of 16 (23.5%) reported they had provided learning style training to a great extent. Slightly more, 19 (27.9%) respondents indicated they had provided learning style training to a small extent, and 8 (11.8%) respondents reported they provided no learning style training at all.

Table 7
Extent and Evidence of Learning Style Training

Descriptors	n	%
Extent of learning style training		
Great extent	16	23.5
Some extent	25	36.8
Small extent	19	27.9
Not at all	8	11.8
Total	68	100.0
Evidence of learning style training		
On-site training	25	36.8
Off-site training	21	30.9
Journal articles	19	27.9
Books	18	26.5
Use of inventories	17	25.0
Expert speakers	17	25.0
Videos	10	14.7

Note: Some respondents provided multiple sources of evidence.

Administrators were provided with a listing of types of training and asked to indicate as many as appropriate in identifying sources of learning style training they had provided for their teachers. Some respondents provided multiple sources of evidence. The resulting frequencies and percentages for the types of learning style training provided are displayed in Table 7. A total of 25 (36.8%) respondents reported on-site training was provided for learning style training. Off-site training provided was reported by 21 (30.9%) of the respondents with 19 (27.9%) reporting training by using journal articles and 18 (26.5%) reporting the use of books for learning style training. The use of 2 sources, inventories and expert speakers, was noted as identical by 17 (25.0%) administrators.

Administrators were asked about the extent to which they observed improvement in academic achievement when students were instructed according to learning styles.

Table 8 presents these frequencies and percentages.

Table 8
Extent of Academic Improvement and Evidence of Teaching Strategies

Descriptors	n	%
Extent of academic improvement due to learning style instruction		
Great extent	20	29.4
Some extent	30	44.1
Small extent	15	22.0
Not at all	3	4.4
Total	68	100.0
Evidence of teaching strategies based on learning style instruction		
Cooperative learning	31	45.6
Flexible scheduling	31	45.6
Visual aids	30	44.1
Individual exercises	30	44.1
Computer assisted instruction	27	39.7
Flexible classroom design	26	38.2
Graphic organizers	26	38.2
Auditory devices	25	36.8
Mobility	24	35.3
Copies of notes provided	24	35.3
Auditory devices	19	27.9
Adapted temperature	4	5.9
Adapted lighting	2	2.9

Note: Some respondents provided multiple sources of evidence.

A total of 30 (44.1%) administrators reported that to some extent, they observed academic improvement. Respondents who reported observing academic improvement to a great extent totaled 20 (29.4%). A total of 15 (22.1%) reported observing academic improvement to a small extent, and only 3 (4.4%) indicated no improvement.

Table 8 also presents the frequencies and percentages for the specific teaching strategies based on learning style theory that administrators observed in their schools. Some respondents provided multiple sources of evidence. The highest number of respondents, 31 (45.6%), reported that flexible scheduling was one teaching strategy observed. The same number, 31 (45.6%), reported cooperative learning as an observed teaching strategy. A total of 30 (44.1%) respondents noted that both visual aids and individual exercises were teaching strategies observed in their schools. Computer assisted instruction was an observed teaching strategy by 27 (39.7%) of the respondents. A total of 26 (38.2%) administrators noted both flexible classroom design and graphic organizers as observed teaching strategies based on learning style instruction. The use of manipulatives was observed by 25 (36.8%) of the respondents, and a total of 24 (35.3%) reported observing both mobility and copies of notes provided as teaching strategies.

Table 9 is the first of five tables that presents the respondents' roles in continual learning for learning styles. Each table presents a different role and the corresponding evidence of this role. The respondents were queried as to the extent they acted as role models for continual learning about learning styles.

The largest number of respondents, 29 (42.6%), reported that to some extent they acted as role models. A total of 18 (26.5%) reported they acted as role models to a small extent, and 17 (25.0%) respondents reported they acted as role models to a great extent. Only 4 (5.9%) of the respondents reported they did not act as role models at all for continual learning for learning styles.

Table 9
Extent and Evidence of Respondents as Role Models

Descriptors	n	%
Extent of role modeling for continual learning about learning styles		
Great extent	17	25.0
Some extent	29	42.6
Small extent	18	26.5
Not at all	4	5.9
Total	68	100.0
Evidence of role modeling by respondents		
Attending conferences	27	39.7
Reading professional journals	26	38.2
Disseminate and discuss current research and literature	25	36.8
Attending professional meetings	23	33.8
Reading books	20	29.4

Note: Some respondents provided multiple sources of evidence.

In regard to evidence provided, some respondents provided multiple sources of evidence. A total of 27 (39.7%) respondents indicated they attended conferences as evidence of acting as role models. A total of 26 (38.2%) of the respondents indicated the reading of professional journals as evidence. Disseminating and discussing current research and literature was the evidence noted by 25 (36.8%) of the respondents. One-third of the respondents, 23 (33.8%), reported they attended professional meetings; and 20 (29.4%) reported they read books as evidence of acting as role models for continual learning about learning styles.

Table 10 displays frequencies and percentages for the extent of the roles respondents indicated they played in setting high expectations for continual learning about learning styles and the evidence of these expectations. A total of 22 (32.4%)

respondents indicated they set high expectations for continual learning to some extent. Identical numbers of respondents, 21 (30.9%), reported setting expectations to a great extent or to a small extent. A total of 4 (5.9%) of the respondents reported setting no expectations at all for continual learning about learning styles.

Table 10
Extent and Evidence of High Expectations

Descriptors	n	%
Extent of setting high expectations for continual learning about learning styles		
Great extent	21	30.9
Some extent	22	32.4
Small extent	21	30.8
Not at all	4	5.9
Total	68	100.0
Evidence of high expectations of respondents		
Encouraging professional development plans	23	33.8
Assisting faculty in setting personal learning goals	16	23.5
Mentoring programs	12	17.6
Integrating technology	10	14.7
Using data to set professional growth opportunities	10	14.7

Note: Some respondents provided multiple sources of evidence.

Of the respondents asked, some provided multiple sources of evidence. A total of 23 (33.8%) indicated encouraging professional development plans as evidence of setting high expectations for continual learning for their teachers. A total of 16 (23.5%) reported they assisted their faculty in setting personal learning goals with respect to setting high expectations for continual learning about learning styles. A total of 12 (17.6%) set high expectations by providing mentoring programs for their faculty. Identical numbers of

respondents 10 (14.7%) reported they integrated technology for setting high expectations and used data to set professional growth opportunities in the area of continual learning about learning styles.

Administrators were asked about motivating and supporting their teachers with regard to learning styles. Table 11 presents the extent to which this was occurring and sources of evidence of motivation and support. Some respondents provided multiple sources of evidence.

Table 11
Extent and Evidence of Teacher Motivation and Support by Respondents

Descriptors	n	%
Extent of motivation/ support for teachers regarding learning styles		
Great extent	16	23.5
Some extent	30	44.1
Small extent	22	32.4
Not at all	0	0
Total	68	100.0
Evidence of motivation and support by respondents		
Sharing articles, websites, tapes, books, information	24	35.3
Supporting teachers' new initiatives	23	33.8
Encouraging teachers to share best practices	18	26.5
Encouraging teachers to make conference presentations	6	8.8

Note: Some respondents provided multiple sources of evidence.

Of the respondents, 30 (44.1%) reported they motivated and supported their teachers regarding learning styles to some extent. A total of 22 (32.4%) respondents indicated they motivated and supported their faculty regarding learning styles to a small

extent. To a great extent, 16 (23.5%) of the administrators indicated they motivated and supported their teachers with regard to learning styles.

In examining how specifically, teachers were motivated and supported, respondents were asked to indicate as many sources as appropriate from the listing shown in Table 11. The respondents, 24 (35.3%) indicated they motivated and supported their teachers by sharing articles, websites, tapes and books with them. A total of 23 (33.8%) reported they supported their teachers' new initiatives with respect to learning styles. Encouraging teachers to share best practices about learning styles was the evidence of motivation and support by 18 (26.5%) respondents, and 6 (8.8%) of the respondents reported they motivated and supported teachers by encouraging them to make presentations at conferences with respect to learning styles.

Table 12 presents the extent that respondents provided resources for learning style training and the evidence of the provision of resources. Some respondents provided multiple sources of evidence. A total of 39 (57.4%) of the administrators indicated they provided resources to some extent. To a small extent, 13 (19.1%) of the administrators provided resources for learning style training. Responses of 8 (11.8%) for both great extent and not at all, revealed the wide range of support in providing resources, time and funding for learning style training.

A total of 26 (38.2%) of the respondents noted they provided time for staff development for learning styles. When asked about provision of resources, 24 (35.3%) indicated they allocated funds for training or purchased curriculum and materials for learning style training. A total of 18 (26.5%) provided flexible scheduling for training

and 12 (17.6%) provided team planning time. Only 6 (8.8%) of the respondents purchased a learning style inventory as a resource for learning style training.

Table 12
Extent and Evidence of Provision of Resources

Descriptors	n	%
Extent of provision of resources, time and funding for learning style training		
Great extent	8	11.8
Some extent	39	57.4
Small extent	13	19.1
Not at all	8	11.8
Total	68	100.0
Evidence of provision of resources		
Providing time for staff development	26	38.2
Purchase of curriculum, materials, tools	24	35.3
Allocating funds for training	24	35.3
Flexible scheduling for training	18	26.5
Team planning time	12	17.6
Purchase of learning style inventory	6	8.8

Note: Some respondents provided multiple sources of evidence.

Table 13 displays the extent to which the respondents coordinated learning style training and the evidence of these training opportunities. Respondents were asked to indicate as many examples of coordination as appropriate from the listing in Table 13, and some cited multiple sources of evidence. A total of 30 (44.1%) respondents reported they coordinated learning style training to some extent. To a small extent, 22 (32.4%) of the respondents coordinated training and 10 (14.7%) reported they did not coordinate learning style training at all. A total of 6 (8.8%) respondents indicated they coordinated learning style training opportunities to a great extent.

The most frequently cited evidence of coordination of training opportunities was reported by 15 (22.1%) of the respondents in the two areas of arranging for outside consultants and handling the logistics of the training. A total of 14 (20.6%) administrators also indicated they arranged site visits for their teachers, and 12 (17.6%) of the respondents prepared agendas as evidence of coordination for learning style training. A total of 6 (8.8%) arranged substitutes, and 4 (5.9%) respondents reported they coordinated presentations by national speakers with respect to learning style training.

Table 13
Extent and Evidence of Coordination of Learning Style Training

Descriptors	n	%
Extent of coordination of learning style training		
Great extent	6	8.8
Some extent	30	44.1
Small extent	22	32.4
Not at all	10	14.7
Total	68	100.0
Evidence of coordination of learning style training		
Arranging for outside consultants	15	22.0
Handling logistics	15	22.0
Arranging site visits	14	20.6
Preparing agendas	12	17.6
Arranging substitutes	6	8.8
Presentations by national speakers	4	5.9

Note: Some respondents provided multiple sources of evidence.

Summary

An analysis of the data obtained by utilization of the Principals' Attitudes Toward the Knowledge, Value, and Application of Learning Styles with Students in Therapeutic Settings survey along with selected demographic information was presented in this

chapter. The results of data analyses in the form of frequencies and percentages were displayed in tabular form and discussed.

A summary and discussion of these findings are presented in Chapter 5. Conclusions drawn from this research are presented along with implications and recommendations for practice and future research.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Statement of the Problem

This study was developed to produce data about the attitudes of principals in therapeutic settings towards the knowledge, value and application of learning styles. The problem of this study was three-fold: To assess the attitudes of principals in therapeutic settings as they pertained to (a) their perceived knowledge of learning styles, (b) the value of learning styles, and (c) the support given to the professional development subject of learning styles. The results of this study added to the research on the importance of learning styles to students' academic achievement. The results may be valuable to researchers interested in principals' knowledge and attitudes as they pertain to learning style theory, and their attitudes related to their roles in professional development for their teachers.

Methodology

Population and Data Collection

The population of this study consisted of 120 administrators from therapeutic schools throughout the United States that belong to the National Association of Therapeutic Schools and Programs. The survey instrument (see Appendix A) and a cover letter (see Appendix C), explaining the purpose of the study were mailed to the 120 identified administrators on March 7, 2006. The letter requested that the administrators

complete and return the survey in the pre-addressed and stamped envelope that was included with each survey instrument and letter. Returned responses were considered unusable if respondents failed to complete 50% or more of the survey items. The initial and follow-up mailing for the study resulted in a total of 68 usable survey instruments for a 56.6% rate of return.

Instrumentation

Data were collected using the survey instrument, Principal's Attitudes Toward the Knowledge, Value, and Application of Learning Styles with Students in Therapeutic Settings, designed by the researcher to measure respondents' perceived general knowledge of learning style theories and their value and application in their respective settings.

A panel of five doctoral level educational leadership students and practicing principals provided feedback on the instrument. A sample (57) of doctoral students who were also practicing school administrators provided additional feedback and participated in a pilot study of the instrument. The final survey instrument consisted of three sections addressing the knowledge, perceived value, and application of learning style theories by the administrators. Data were also gathered from the respondents to eight items requesting personal and professional information that were used as variables in the data analysis.

Data Analysis

The researcher completed all analyses of the collected data. All statistical computations were performed using the statistical software *SPSS Graduate Pack 10.0 for Windows*.

Participants' responses for 23 survey items were translated into numerical scores for each item scored with a four-point Likert-type scale: 4=Great extent; 3=Some extent; 2= Small extent; and 1= Not at all. Respondents' scores were totaled for each survey item and for the overall survey resulting in individual respondent scores for each item and for the overall survey. Descriptive statistics were used to analyze the nine multi-answer survey items not scored with a Likert-type scale. Frequencies and percentages were obtained for each of these survey items.

Summary and Discussion of the Findings

The summary and a discussion of the findings for the collected data are presented in response to the three research questions:

Research Question 1

To what extent do principals in therapeutic settings self-report general knowledge of learning style theory application?

Survey data from the knowledge section of the survey were analyzed to determine the extent of general knowledge about learning styles that the administrators reported. The greatest number and percentage of administrators, 32 (47.1%), ranked some as the extent of their knowledge of both learning style theories and three basic learning styles. A

total of 30 (44.1%) reported some knowledge about matching teaching strategies with learning styles. All 68 (100%) respondents indicated having knowledge to a small, some or great extent in regard to learning style theories, basic learning styles and matching teaching strategies with learning styles. In contrast, close to one-fifth of the respondents indicated they were not at all knowledgeable about learning style theorists, inventories, empirical studies, descriptive studies or curriculum having to do with learning styles theorists.

Administrators were asked to cite multiple sources, if needed, in order to further explain how they had acquired their knowledge of learning styles. Staff development was the top response with 28 (41.2%) of the 68 administrators reporting this as one means of acquiring knowledge. A total of 25 (37.8%) indicated they read journal articles about learning styles. The percentage of principals who acquired their knowledge by either on-the-job training, an additional degree, continuing coursework, conference presentations, colleagues or professional reading remained fairly constant from 19%-22% (1-3% point variance).

The results showed that although all principals reported general knowledge of basic learning styles, most did not report knowledge of the details associated with learning styles. The acquisition of this knowledge came primarily from staff development and journal articles, not from work, pursuing specific college courses, nor attending learning style conferences. These results would indicate that the ability to identify or recall general learning style knowledge was of some importance, but not emphasized specifically in educational goals or curriculum.

Research Question 2

To what extent do principals in therapeutic settings exhibit positive attitudes toward the use of learning style theory-supported instructional methods and materials?

Survey data from the value section of the survey were analyzed to determine the extent of the respondents' beliefs in regard to learning style instruction. In responding to the seven statements, administrators indicated a strong overall belief in the value of learning style instruction. For three of the belief statements, all 68 (100%) respondents ranked their belief or value as great or some extent. Administrators believed that students exhibit different learning styles; that learning styles have a place in education; and that teachers should receive learning style training. The belief that learning style instruction impacts student learning received almost the same support with 66 (97.1%) indicating they held this value to great or some extent. For the three remaining belief statements relating to the importance of matching teaching strategies with learning styles, the necessity of using a learning style inventory, and the importance to student success of matching mental health disorders with learning styles, support remained high. The combined great and some extent percentages, which ranged between 91.1% and 94.1% were fairly constant with few respondents indicating their belief only as a small extent. Administrators cited the extent of their belief and the value they placed on learning style instruction as being at least small and most frequently great or some.

Administrators were also asked about the extent of their documented evidence of change in academic achievement due to the implementation of learning style instruction. Relatively small and equal numbers, 13 (19.1%), of administrators ranked great and some extent in this regard. Almost one-half, 28 (41.2%), reported having documented evidence

to a small extent. The remaining 14 (20.6%) indicated having no evidence of documented change in academic achievement. Test scores and grades were most frequently cited, 26 (38.2%) for each by administrators as being sources of documented evidence. Reading and mathematics levels were reported as sources of evidence by less than one-third of respondents.

The respondents were also queried as to the extent they would like to learn more about learning styles. A total of 50 (73.5%) administrators responded that to either a great extent or some extent, they wanted to learn more about learning styles. None of the administrators indicated having no interest in furthering their knowledge in regard to learning styles.

While all administrators reported belief in the value of learning styles, few administrators reported having documented evidence of change due to learning style instruction. These findings indicated that their belief in learning styles was not based on data generated by the use of learning style instruction. While their belief system in learning styles was strong, the documented evidence supporting this belief was weak. Administrators have indicated they would like to learn more about learning styles which may be a reaction to having indicated that documentation was lacking in this regard. In any case, the desire to learn more specifics is indicated.

Research Question 3

To what extent do principals in therapeutic settings support the application of learning style theory?

Research Question 3 was designed to investigate the extent to which learning style theory was being applied by the responding administrators in their school settings. Administrators were also requested to cite specific sources of evidence of this application.

A total of 60 (88.2%) administrators provided learning style training for their teachers either to a great, some, or small extent. Over one-third (36.8%) of this training was provided on-site. The use of videos for training purposes was the least frequently cited 10 (14.7%) as a source of learning style training.

Of 68 respondents, 65 (95.6%) of them reported improvement in academic achievement due to learning style instruction as being to great extent, some extent or small extent. The highest ranking reported was some extent with 30 (44.1%) of the respondents attributing their improvement to learning style instruction.

Cooperative learning and flexible scheduling were the teaching strategies most frequently observed with 31 (45.6%) administrators citing each of them as evidence. Visual aids and individual exercises followed, each with 30 (44.1%) of the administrators noting these strategies as being based on learning style instruction. The remaining strategies were selected by close to one-third of the administrators. The least selected indicators of evidence using learning style instruction were the strategies of adapted temperature and adapted lighting, having been selected by four and two administrators, respectively.

In further exploring the application of learning style instruction, the roles of administrators in providing continual learning about learning styles were also

investigated. The five roles addressed were role modeling, setting high expectations, motivating and supporting teachers, providing resources, and coordinating training. All administrators were asked to what extent they saw themselves in each role and how this was evidenced.

The greatest number and percentage of administrators, 29 (42.6%), ranked themselves as role models to some extent. A total of 35 (51.5%) ranked themselves as role models to either a great extent 17 (25.0%) or to a small extent 18 (26.5%). All but 4 (5.9%) felt they were role models to some degree in regard to continual learning about learning styles. A total of 27 (39.7%) indicated that they modeled by attending conferences on learning styles, and 20 (29.4%) reported they had read books on learning styles.

Almost all, 64 (94.1%), of responding administrators reporting setting high expectations for learning styles to at least a small extent. Equal numbers (approximately 30%) indicated their expectations being high to a great extent, some extent, or small extent. The encouragement of professional development plans was the most frequently selected indicator of evidence with 23 (33.8%) administrators selecting it. The lowest number of respondents, with 10 (14.7%) in each category, chose integrating technology or using data to set professional opportunities as evidence of their high expectations.

While only 16 (23.5%) administrators reported the extent of their motivation and support for teachers regarding learning styles as great, almost double that amount (30, 44.1%) reported providing support to some extent. The remaining 22 (32.4%) respondents indicated this activity to at least a small extent. The sharing of information

and support for teachers' initiatives were the evidence of this motivation and support with 24 (35.3%) and 23 (33.8%) respondents choosing these respective sources of evidence.

Over one-half, 39 (57.4%), of the respondents reported they provided resources, time and funding for learning style training to some extent. Only 8 (11.8%) reported providing resources to a great extent, and the same number indicated they did not provide resources. Over one-third of respondents cited as sources of evidence the provision of time for staff development, 26(38.2%); purchasing curriculum and materials, 24(35.3%); and allocating funds for training, 24 (35.3%).

Almost one-half, 30 (44.1%), of the administrators indicated they coordinated learning style training to some extent. Only 6 (8.8%) reported coordinating learning styles training to a great extent. Similar numbers (12-15) and percentages (17.6%-22.0%) for arranging for consultants, handling logistics, arranging site visits, and preparing agendas were indicated as evidence for coordinating learning style training.

These results indicated that most administrators provided learning style training for their teachers and were reflective of some level of administrators' knowledge and belief in learning styles. Most administrators reported observing non-specific academic improvement due to learning style instruction with little documented evidence. Though a wide variety of teaching strategies were observed, those more strictly associated with specific learning styles were much less used. This provided further support for the general knowledge reported as opposed to specific learning style details.

More evidence was cited for non-specific administrative roles of role-modeling, setting high expectations, and motivating and supporting teachers with regard to learning

styles. Providing tangible resources and coordination for learning style training was indicated to a much lesser extent. This type of evidence was indicative of administrators' awareness of general, non-specific knowledge of learning styles and more commonly observed teaching strategies along with their belief in and desire to learn more about learning styles.

Conclusions

This study sought to: develop a profile of administrators from schools belonging to the National Association of Therapeutic Schools and Programs; determine the extent of their knowledge of learning styles; determine their attitudes about the use of learning styles; and determine the extent of their support of the application of learning style instruction. Based on a review of the literature and the research findings, the following conclusions were drawn:

1. All administrators surveyed using the instrument, Principals' Attitudes Toward the Knowledge, Value, and Application of Learning Styles with Students in Therapeutic Settings, had a general knowledge of learning style theories, three basic learning styles, and matching teaching strategies with learning styles. This knowledge was primarily acquired through the utilization of staff development.
2. All administrators to a great or at least to some extent believed students do exhibit different learning styles, learning styles have a place in education, and teachers should obtain learning styles training.

3. All administrators to some or at least a small extent believed that learning style instruction impacts student learning, matching teaching strategies to learning styles is important, using a learning style inventory is necessary, and matching mental health disorders to learning style is also important for student achievement.
4. Although the greatest number of administrators only indicated a small extent of documented evidence of change in academic achievement due to learning style instruction, the most change was reported in test scores and the changes in grades earned by the students.
5. All administrators indicated the desire to learn more about learning styles, with the majority indicating this to a great or some extent.
6. A Learning style training was being provided by the majority of administrators.
7. Almost all of the surveyed administrators observed improvement in academic achievement which they attributed to learning style-based instruction. This instruction was provided by a wide range of teaching strategies that they observed in their schools.
8. Almost all (64 of 68) surveyed administrators believed they acted as role models and set high expectations with regard to continual learning about learning styles. All administrators felt as if they motivated and supported their teachers regarding learning styles at least to a small extent.

Implications and Recommendations

The NASSP (1996) contended that principals need to encourage flexibility in instructional strategies within the teaching environment. All students benefit from methods and approaches that address a wide range of learning styles. Using a variety of approaches ensures that critical thinking and problem-solving skills can be achieved to some degree by all students including those with special needs (Belgane, 2001).

The principal plays a critical role in ensuring that teachers are prepared through professional development to bring about improved student learning for all students. Learning styles is one way to individualize instruction and meet the needs of all students (Dunn, 1996). Principals who exhibit knowledge and support of learning style instruction need to immerse themselves in the research and literature, and acquire as much formal training as possible. A principal who exhibits a positive attitude toward learning styles and believes in academic achievement due to learning style instruction can serve as a model for faculty in continual learning about learning styles (Callan, 1996).

The present study was developed to determine the knowledge level and belief system principals exhibit about learning styles and the extent that these administrators play a role in facilitating continual learning about learning styles with their faculty. The conclusions of this study support several implications and recommendations for practice.

Administrators reported having knowledge of three different learning style theories and of matching teaching strategies with these styles. They also conveyed a strong belief that learning styles have a place in education, that students have different

styles, and that teachers should obtain learning style training in order to subsequently match teaching strategies with the students' styles.

Staff development was the primary method in which these principals acquired their knowledge of learning styles; on-site training was the primary type of training for faculty; and making time for staff development was the most frequent method of providing resources for teachers.

Based on the review of the literature and the conclusions reached in this study, it is recommended that allowing time for on-site staff development for learning styles become a high priority and be utilized to teach the different learning styles and the teaching strategies that will correspond with these styles in order to improve academic achievement.

Findings revealed little substantive evidence documenting change in academic achievement when learning style instruction was implemented. Few administrators were knowledgeable of empirical studies and data were not often used in arriving at professional growth opportunities. It is recommended that more empirical studies be conducted that could generate data that would quantitatively support learning style-based instruction and, therefore, enhance the documentation of change in academic improvement. It is recommended that principals have staff development on knowing and using data related to learning style-based instruction to improve academic achievement.

A wide variety of teaching strategies were indicated as being practiced and observed in the administrators' schools. It is recommended that learning style training be used to introduce some of the less commonly known and used strategies while

reinforcing those already utilized. Mentoring programs and encouraging teachers to share best practices could assist with this recommendation. It would assist administrators in setting high expectations and motivate and support their teachers. Teacher support is essential for the success of any endeavor in the school, and teachers often need additional knowledge and skills to implement desired changes. Fallon (1999) has suggested that principals must not only act as role models, expectation setters, motivators, supporters, and coordinators for professional development by seeking continual learning themselves. They must effectively encourage and support the continuing professional development of their teachers.

Recommendations for Future Research

Future research needs were identified using the data analyses from the present study.

1. This study could be repeated using a larger population of principals of special needs students.
2. This study could be repeated using a population of principals in regular education schools.
3. This study could be conducted to include the perceptions of teachers and/or assistant principals regarding their principals' knowledge, attitude, and application of learning style instruction.
4. This study could be conducted as a qualitative study to include interviews with the principals and their teachers.

5. This study could be repeated in three years with the same population to determine if similar results are obtained.
6. This study could be repeated using empirical data on student achievement gains.

APPENDIX A
SURVEY INSTRUMENT

**PRINCIPALS' ATTITUDES TOWARD THE KNOWLEDGE, VALUE, AND APPLICATION OF
LEARNING STYLES WITH STUDENTS IN THERAPEUTIC SETTINGS**

This questionnaire was developed by Renee Pancoast, Director of Education at La Amistad. The survey was developed for the purpose of assessing principals' attitudes toward the knowledge, value, and application of learning styles in therapeutic settings. It is a strictly confidential survey and will be used to determine the need for learning style training in therapeutic educational settings.

Please read each question and respond by marking the appropriate box with an X.

KNOWLEDGE – To define, describe, identify, recall

1.	To what extent are you knowledgeable of:	Great extent 4	Some extent 3	Small extent 2	Not at all 1
a.	Learning style theories?				
b.	Learning style theorists?				
c.	Learning style inventories?				
d.	Empirical studies using learning style instruction?				
e.	Descriptive studies using learning style instruction?				
f.	Three basic learning styles?				
g.	Specific learning style curriculum?				
h.	Matching teaching strategies with learning styles?				

2. How did you acquire learning style knowledge? Check all that apply:	
a. Staff development	g. Professional reading
b. Journal article	h. Distance learning
c. Additional degree	i. On the job training
d. Continuing education coursework	k. Other (please specify)
e. Colleague	
f. Conference presentations	

3. Briefly describe the knowledge / skills acquired. _____

VALUE – To believe, appraise, support, judge

4.	To what extent do you believe that:	Great extent 4	Some extent 3	Small extent 2	Not at all 1
a.	Students do exhibit different learning styles?				
b.	Learning style theories have a place in educational practices?				
c.	Learning style instruction impacts student learning?				
d.	Teachers should obtain learning style training?				
e.	Matching teaching strategies to learning styles is important for academic success?				
f.	Using a learning style inventory is necessary to determine a particular style?				
g.	Matching mental health disorders to learning styles is important for student achievement?				

5.	To what extent do you have documented evidence of a change in academic achievement when learning style instruction is implemented?				
----	--	--	--	--	--

6.	How is this exhibited? Check all that apply:				
a.	Test scores		d.	Math levels	
b.	Grades		e.	Other (please specify)	
c.	Reading levels				

7. Briefly describe what you have observed about the relationship between learning style instruction and academic achievement. _____

8.	To what extent would you like to learn more about learning styles?	Great extent 4	Some extent 3	Small extent 2	Not at all 1

APPLICATION – To select, demonstrate, show, use

9.	To what extent have you provided learning style training for your teachers?	Great extent	Some extent	Small extent	Not at all
		4	3	2	1

10. How is this exhibited? Check all that apply:	
a. On-site training	e. Videos
b. Off-site training	f. Use of inventories
c. Books	g. Expert speakers
d. Journal articles	h. Other (please specify)

11.	To what extent have you observed that when students are instructed according to learning styles there is an improvement in academic achievement?	Great extent	Some extent	Small extent	Not at all
		4	3	2	1

12. What teaching strategies based on learning style theory have you observed in your school? Check all that apply:	
a. Flexible classroom design	h. Auditory devices
b. Flexible scheduling	i. Cooperative learning
c. Visual aids	j. Individual exercises
d. Mobility	k. Graphic organizers
e. Adapted lighting	l. Copies of notes provided
f. Adapted temperature	m. Computer assisted instruction
g. Manipulatives	n. Other (please specify)

13.	To what extent do you act as a role model for continual learning about learning styles?	Great extent	Some extent	Small extent	Not at all
		4	3	2	1

14. How is this exhibited? Check all that apply:	
a. Reading books	d. Attending professional meetings
b. Reading professional journals	e. Disseminate and discuss current research and literature
c. Attending conferences	f. Other (please specify)

15.	To what extent do you set high expectations for continual learning about learning styles?	Great extent	Some extent	Small extent	Not at all
		4	3	2	1

16. How is this exhibited? Check all that apply:	
a. Mentoring programs	d. Encouraging professional development plans
b. Integrating technology	e. Using data to set professional growth opportunities
c. Assisting faculty in setting personal learning goals	f. Other (please specify)

17.	To what extent do you motivate and support teachers regarding learning styles?	Great extent	Some extent	Small extent	Not at all
		4	3	2	1

18. How is this exhibited? Check all that apply:	
a. Sharing articles, websites, tapes, books, and information	d. Supporting teacher's new initiatives
b. Encouraging teachers to make presentations at conferences	e. Other (please specify)
c. Encouraging teachers to share best practices with other colleagues	

19.	To what extent do you provide resources, time, and funding for learning style training?	Great extent	Some extent	Small extent	Not at all
		4	3	2	1

20. How is this exhibited? Check all that apply:	
a. Providing time for staff development opportunities	e. Purchase learning style inventory
b. Allocating funds for training	g. Purchase necessary curriculum, materials, teaching tools
c. Flexible scheduling for training opportunities	h. Other (please specify)
d. Team planning time	

21.	To what extent do you coordinate learning style training opportunities for your faculty?	Great extent	Some extent	Small extent	Not at all
		4	3	2	1

22. How is this exhibited? Check all that apply:	
a. Arranging for outside consultants	e. Handling logistics for workshops
b. Arranging site visits	g. Preparing agendas for workshops
c. Presentations by national speakers	h. Other (please specify)
d. Arranging substitutes if necessary	

23. Describe your school's application of learning style information. _____

Please complete the following information:

Your position/title: _____

Number of years in this position in therapeutic educational setting _____

School enrollment: _____

Grades included: K-5 _____ 6-8 _____ 9-12 _____ Other _____

Genders included: Male _____ Female _____

Check type of program: Emotional Growth School _____
 Therapeutic Boarding School _____
 Residential Treatment Center _____
 Wilderness Program _____
 Outdoor Therapeutic Program _____
 Home-Based Residential Program _____
 Other _____

Highest degree earned: Masters _____ Specialist _____ Doctorate _____

State your major: _____

Thank you for taking the time to answer this survey!
Please return to: Renee Pancoast
1650 Park Avenue North
Maitland, Florida
32751

There is a self addressed stamped envelope provided.

APPENDIX B

PRE-LETTER OF INFORMATION TO ADMINISTRATORS

February 2006

Dear Principal:

One week from now you will receive in the mail a request to fill out a brief questionnaire for an important research project being conducted to determine the importance of learning styles to school principals in therapeutic schools.

The questionnaire concerns the knowledge that principals have about learning styles, the significance for teaching strategies, the implication for improving student learning, and the professional development component.

I am writing in advance because we have found many people like to know ahead of time that they will be contacted. The study is an important one that will determine the importance of students' learning styles to principals in a therapeutic setting.

Thank you for your time and consideration. It's only with the generous help of people like you that our research can be successful.

Sincerely,

Renee Pancoast
Director of Education
La Amistad Learning Center

APPENDIX C

COVER LETTER ACCOMPANYING SURVEY

March 2006

Dear Principal:

I am writing to ask for your help in a study of the importance of knowing student's learning styles. This study is part of an effort to determine if the teaching and implementation of learning/teaching styles strategies improves student learning.

It is my understanding that as a principal you decide on the professional development for your faculty. You also are always striving to find ways to improve student learning. I am contacting school principals in therapeutic schools to ask about their knowledge of learning styles and if they feel this knowledge is important to their faculties and students.

Results from this survey will be used to help school administrators plan in-service workshops about learning styles and implement a program that matches learning styles with appropriate teaching strategies. By understanding the importance of student's learning styles, administrators can make effective decisions that will impact student learning.

Your answers are completely confidential and will be released only as summaries in which no individual's answers can be identified. When you return your completed questionnaire, your name will be deleted from the mailing list and never connected to your answers in any way. This survey is voluntary. However, you can help me very much by taking a few minutes to share your opinions about learning styles. If for some reason you prefer not to respond, please let me know by returning the blank questionnaire in the enclosed stamped envelope.

If you have any questions about this study I would be happy to talk with you. My toll-free number is 1-800-433-1122, or you can write to me at the address on the letterhead.

Thank you very much for helping with this important study.

Sincerely,

Renee Pancoast
Director of Education
La Amistad Learning Center

P. S. Your input and time is greatly appreciated. Thank you again.

APPENDIX D
FOLLOW-UP LETTERS

March 2006

Last week a questionnaire seeking your opinion about learning styles was mailed to you. Your name was chosen as a school administrator from a therapeutic school.

If you have already completed and returned the questionnaire to me, please accept my sincere thanks. If not, please do so today. I am especially grateful for your help because it is only by asking people like you to share your experiences that we can understand the best way to teach our students.

If you did not receive a questionnaire, or if it was misplaced, please call me toll-free at 1-800-433-1122 and I will get another one in the mail to you today.

Renee Pancoast
Director of Education
La Amistad Learning Center

March 2005

Dear Principal:

About three weeks ago I sent a questionnaire to you that asked your opinion about learning styles. To the best of my knowledge, it's not yet been returned.

The comments of people who have already responded include a variety of experiences regarding learning styles. Many have expressed their opinions, both positive and negative related to learning styles. I think the results will be useful to other administrators and their faculties.

I am writing again because of the importance that your questionnaire has for helping to get accurate results. Although I sent questionnaires to administrators in therapeutic schools, it's only by hearing from nearly everyone in the sample that I can be sure that the results are truly representative.

A questionnaire identification number is printed on the back cover of the questionnaire so that I can check your name off the mailing list when it is returned. The list of names is then destroyed so that individual names can never be connected to the results in any way. Protecting the confidentiality of people's answers is very important to me.

I hope that you will fill out the questionnaire soon, but if for any reason you prefer not to answer it, please let me know by returning a note or blank questionnaire in the enclosed stamped envelope.

Sincerely,

Renee Pancoast
Director of Education
La Amistad Learning Center

P.S. If you have any questions, please feel free to contact me. The toll-free number where I can be reached is 1-800-433-1122. Thank you again.

APPENDIX E
INSTITUTIONAL REVIEW BOARD APPROVAL



THE UNIVERSITY OF CENTRAL FLORIDA
INSTITUTIONAL REVIEW BOARD (IRB)

IRB Committee Approval Form

PRINCIPAL INVESTIGATOR(S): **Renee Pancoast** IRB #: 05-3104
Supervisor: **Rosemarye Taylor, Ph.D.**

PROJECT TITLE: **An Investigation of Principals' Attitudes Toward the Knowledge and Use of Learning Styles with Students in Therapeutic Settings**

- New project submission Resubmission of lapsed project #
- Continuing review of lapsed project # _____ Continuing review of #
- Study expires: _____ Initial submission was approved by expedited review
- Initial submission was approved by full board review but continuing review can be expedited
- Suspension of enrollment email sent to PI, entered on spreadsheet, administration notified _____

Chair

Expedited Approval
Dated: 1/9/2006
Cite how qualifies for expedited review: minimal risk and #7

Exempt
Dated: _____
Cite how qualifies for exempt status: minimal risk and _____

Expiration
Date: 1/8/2007

IRB Reviewers:

Signed: [Signature]
Dr. Sophia Dziegielewska, Vice-Chair

Signed: _____
Dr. Jacqueline Byers, Chair

Signed: _____
Dr. Tracy Dietz, Designated Reviewer

Complete reverse side of expedited or exempt form

- Waiver of documentation of consent approved
- Waiver of consent approved
- Waiver of HIPAA Authorization approved

NOTES FROM IRB CHAIR (IF APPLICABLE): FIRST REVIEW 12/14/2005

Classifications requested - 2nd page

LIST OF REFERENCES

- Allred, S.G. & Holliday, T.K. (1995) Learning styles and the high school: Pipe dreams or reality? *NASSP Bulletin*, 79(568), 82-89.
- Barbe, W.B. (1985). *Growing up learning*. Washington, D.C.: Acropolis Books.
- Barbe, W.B. & Swassing, R.H. (1979). *Teaching through modeling strengths; Concepts and practices*. Columbus, OH: Zaner-Bloser.
- Beck, L.G. & Murphy, J. (1992). Searching for a robust understanding of the principalship. *Educational Administration Quarterly* 28(3), 387-396.
- Beglane, E. (2001). Principals who faced obstacles to learning style instruction. *NASSP Bulletin*, 85(627), 79-85.
- Bostic, J., Rusticcia, C., & Schlozman, S. (2001). The suicidal student. *Educational Leadership*, 59(2), 81-82.
- Briggs, K.C., & Myers, I.B. (1977). *Myers-Briggs Type Indicator*. Palo Alto, CA.: Consulting Psychologists Press.
- Brunner, C.E. & Majewski, W.S. (1990). Mildly handicapped students can succeed with learning styles. *Educational Leadership*, 48(2): 21-23.
- Burland, J. (2001). *Parents and teachers as allies*. Virginia: National Alliance for the Mentally Ill.
- Butler, K. (1984). *Learning and teaching style in theory and practice*. Columbia, CT: The Learner's Dimension.
- Cain, R.A. & Norwood, M.C. (2000). Style preferences make a difference. *The School Administrator*. 57(1) 36.
- Callan, R.J. (1996). Learning styles in high school: A novel approach. *NASSP Bulletin* 80(577), 66-71.
- Carbo, M. & Hodges, H. (1989). Learning style strategies can help students at risk. *Teaching Exceptional Children*, 20(4), 55-58.
- Center for Mental Health Services. (1996). *Fact sheet: Major depression in children and adolescents* [Brochure]. Rockville, MD.

- Dowdy, C., Patton, J., Smith, T., & Polloway, E. (1998). *Attention-deficit/hyperactivity in the classroom*. Austin, TX: Pro-Ed.
- Dunn, R., & Dunn, K. (1978). *Teaching students through their individual learning styles: A practical approach*. Reston, VA: Reston Publishing.
- Dunn, R. (1990). Rita Dunn answers questions on learning styles. *Educational Leadership*, 48(2), 15-19.
- Dunn, R. & Dunn, K. (1992). *Teaching elementary students through their individual learning styles: Practical approaches for grades 3-6*. Boston: Allyn & Bacon.
- Dunn, R., & Dunn, K. (1993). *Teaching secondary students through their individual learning styles: Practical approaches for grades 7-12*. Boston: Allyn & Bacon.
- Dunn, R., & Griggs, S.A. (1988). *Learning styles: Quiet revolution in American secondary schools*. Reston, VA: National Association of Secondary School Principals.
- Dunn, R. (1996). *How to implement and supervise a learning style program*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Dunn, R., & DeBello, T.C. (1999). *Improved test scores, attitudes, and behaviors in America's schools: Supervisors' success stories*. Westport, CT: Bergin & Garvey.
- Fiore, T.A. (1993). Educational interventions for students with attention deficit disorder. *Exceptional Children*, 60, 163-174.
- Fullan, M. (1994). *Change forces: Probing the depth of educational reform*. London: Falmer Press
- Gardner, Howard (1983). *Frame of mind: The theory of multiple intelligences*. New York: Basic Books.
- Greenburg, G.S. (1991). *Attention deficit hyperactivity disorder: Questions and answers for parents*. Champaign, IL: Research Press
- Gregorc, A.F., & Ward, H.B. (1977). Implications for teaching and learning: A new definition for individuals. *NASSP Bulletin*, 61, 20-26.
- Gregorc, A.F. (1985). *Inside styles: Beyond the basics*. Columbia, CT: Gregorc Associates.

- Gregorc, A.F., & Butler, K.A. (1984). Learning is a matter of style. *Vocational Education Journal*, 59(3), 27-29.
- Holoviak, S.J., (1990). Training entrepreneurs. *Performance and instruction*, 20(10), 27-37.
- Hoover, J.J. (1993). *Classroom application of cognitive learning styles*. Boulder, CO: Hamilton Publications.
- Hoover, J.J. & Patton, J.R. (1997). *Curriculum adaptations*. Austin, TX: Pro-Ed.
- Irvine, J.J. & York, D.E. (1995). Learning styles and culturally diverse students: A literature review. In J.A. Banks *Handbook of research on multicultural education* (pp.484-97) New York: Simon & Schuster Macmillan.
- Jensen, E. (1998). *Teaching with the brain in mind*. Alexandria, VA: ASCD.
- Jung, C. (1927). *The theory of psychological type*. Princeton, N.J.: Princeton University Press.
- Keefe, J.W., & Monk, J.S. (1986) *Learning style profile examiners manual*. Reston, VA: National Association of Secondary School Principals.
- Klavas, A. (1994). In Greensboro, North Carolina: Learning style program boosts achievement and test scores. *Clearing House* 67 (3): 149-151
- Kolb, D.A. & Fry, R. (1975). Toward an applied theory of experiential learning. In C. Cooper (Ed.) *Theories of group process*, London: John Wiley.
- Kolb, D.A. (1981). Experiential learning theory and the learning styles inventory: A reply to Friedman and Stumpf. *Academy of Management Review*, 6(2), 289-296.
- Kolb, D.A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.
- Lambie, R.A. (1980). A systematic approach for changing materials, instruction, and assignments to meet individual needs. *Focus on Exceptional Children*, 12(1), 1-17.
- Lemmon, P. (1985). A school where learning styles make a difference. *Principal* 64 (4): 26.

- Maker, C.J., & Nielson, A. B. (1996). *Curriculum development and teaching strategies for gifted learners*. Austin, TX: Pro-Ed.
- Mamchur, C. (1996). *A teacher's guide to cognitive type theory and learning style*. Alexandria, VA: Association for Supervision and Curriculum Development
- McCarthy, B. (1996). *About learning*. Barrington, IL: Excel Publishing.
- McCarthy, B. (1982). *The 4mat System*. Arlington Heights, IL: Excel Publishing.
- Messick, S., (1976). *Individuality in learning*. San Francisco: Jossey-Bass.
- National Association of Secondary School Principals (NASSP). (1996). *Breaking Ranks: Changing an American institution*. Reston, Va.: NASSP
- National Institute for Mental Health (2000). *Bipolar disorders in children and adolescents* [Brochure]. Bethesda, MD.
- O'Neil, J. (1990). Making sense of style. *Educational Leadership*, 48(2), 4-9.
- Payne, D. & Wolfson, T. (2000). Teacher professional development--The principal's critical role. *NASSP Bulletin*, 84,13-21.
- Rooney, K., (1989). *Independent strategies for efficient study*. Richmond, VA: J. R. Enterprises.
- Sarason, S. (1993). *The case for change: Rethinking the preparation of educators*. San Francisco: Jossey-Bass.
- Schlozman, S. (2001). Too sad to learn. *Educational Leadership*, 59(1), 80-81.
- Silver, H.F. & Hanson, J.R. (1995). *Learning styles and strategies*. Woodbridge, N.J.: The Thoughtful Education Press.
- Silver, H.F., Hanson, J.R., Strong, R.W. & Schwartz, P.B. (1996). *Teaching styles and strategies*. Woodbridge, NJ: The Thoughtful Education Press.
- Silver, H., Strong, R., & Perini, M. (1997). Integrating learning styles and multiple intelligences. *Educational Leadership*, 55(1), 22-27.
- Sizer, T. (1992). *Horace's school*, Boston: Houghton Mifflin.

- Snider, V.E. (1990). What we know about learning styles from research in special education. *Educational Leadership*, 48(2), 53.
- Stone, P. (1992). How we turned around a problem school. *Principal* 71(2): 34-36.
- Sulner, I. (2001). *Multiply and profoundly disabled students improve significantly with learning styles' instruction*. Retrieved January 11,2004, from <http://www.learningstyles.net/tc/research>
- Tobias, Cynthia (1994). *The way they learn*. Colorado: Focus on the Family Publishing.
- Tobias, Cynthia (1996). *Every child can succeed*. Colorado: Focus on the Family Publishing.
- Tomlinson, C. (1995). *How to differentiate instruction in mixed ability classrooms*. Alexandria, VA: Association of Supervision and Curriculum Development.
- Tomlinson, C. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Witkin, H. (1997). Cognitive styles in the educational setting. *New York University Education Quarterly*, 14-20.
- Witkin, H.A. & Goodenough, D. (1981). *Cognitive styles: Essence and origins*. New York: International Press.