A Study Of Elementary School Teachers' Perceptions Regarding The Match Between Teachers' Teaching Styles And Students' Learning Styles

Sandra Eileen Sutton

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A Study of Elementary School Teachers’
Perceptions Regarding the Match
Between Teachers’ Teaching
Styles and Students’
Learning Styles

BY
Sandra Eileen Sutton

Dissertation Committee
Anthony J. Colella, Ph.D., Mentor
John W. Collins, Jr., Ed.D.,
Olga Hrycak, Ed.D.

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requirements for the Degree of Doctor of Education
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ABSTRACT

A Study of Elementary School Teachers' Perceptions Regarding the Match Between Teachers' Teaching Styles and Students' Learning Styles

The focus of this research study was to explore elementary school teachers' perceptions regarding the match between teachers' teaching styles and students' learning styles. The design of the study was qualitative, exploratory, and descriptive whereby the researcher was able to examine, analyze, and report common patterns, themes, and frequencies from profiled teachers to gain insight into the knowledge and influence of learning styles regarding the teaching practices of elementary school teachers.

The perceptions of the participant teachers were assessed through individual in-depth interviews. The interview contained five open-ended research questions and nine subsidiary questions. The questions encompassed teachers' knowledge of their students learning styles, teachers' selections of their teaching styles, teachers' techniques for matching teaching strategies to learning styles, teachers' perceptions toward learning styles, and teachers' incorporation of a learning style approach that is useful within their classroom.

The results from this research study indicated a variation of findings. This research study suggested that observation was the primary critical method for determining
students' learning styles, which is not congruent with all prior research. This research study suggested that teachers do not teach according to the way they were taught in school, which is not congruent with all prior research. This research suggested that flexibility was a means to match teaching style to learning style which is basically congruent to prior research. This research suggested that to experience higher levels of motivation, cooperation, and academic achievement or success effective teachers incorporate a learning style approach that is useful within their classroom regarding most or all of these areas: learning strategies, resources, student ability, student interest, student grouping or planning. Prior research is congruent with this belief, also.

The focus implication from this research indicates that school districts and administration set aside funds and advocate diverse learning experiences concerning the training of staff about theory, methodology, and application regarding the match between teachers' teaching styles and students' learning styles. Professional development hours should be earned when participants engage in educational learning experiences for the nationwide goal of raising the quality of education and student performance by redesigning the conventional school classroom.
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and time my research for the purpose of exploring, gaining insight, and addressing disparity between teaching style and learning style would be fruitless. I am most grateful for your participation and dedication for a noteworthy and critical cause in education.
DEDICATION

To my parents for your endless patience, love, support, guidance, inspirational determination, and for enabling me to reach my goal throughout my entire educational journey. The completion of my research is truly a precious gift from yourself-giving character. My sincere appreciation is given to both of you.

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CHAPTER I

Introduction

There is little research into the relationship between learning style preference and the way in which teachers organize their classrooms. Most of the research has concentrated on educators' and students' learning preferences. The connection between learning style preference and what happens in school is beginning to become clearer (Lawrence, 1997, p. 9).

A review of related literature indicates that not only are there few studies investigating the learning style preferences of elementary school students, but there are fewer studies employing the use of learning styles in the elementary school classroom, despite the fact this is a potentially rich area for exploration. The existing literature on the implementation of learning styles consists primarily of single case studies. In addition, there are theoretical articles advocating the use of a learning styles framework with guidelines for how to do so, but there appears to be a notable absence of studies that explore the ways in which expert teachers structure their classrooms in accordance with learning styles.

Due to the generalist nature of the elementary school classroom, most MI classrooms are in grades K-5. One of the large first studies on learning styles was Dunn and Gemake's (1990) cross-cultural study of the learning styles of elementary school children from four ethnic backgrounds. Ironically, since this auspicious beginning, elementary education has been given the least attention in learning styles research. Most research on learning styles has been
conducted in postsecondary education and by human resource professionals in business and industry (Lawrence, 1997). Although the LSI was developed for children in grades 3-12, the majority of studies focus on students at the middle school and high school levels. Research on the learning styles of adults is most often conducted from the perspective of adults as learners in undergraduate, graduate, or continuing education rather than for understanding the learning styles of adults who teach children and how they correspond to their teaching practices. Those studies that have focused on this important topic have systematically disclosed notable differences in the preferences of teachers and the majority of young learners. Few studies have addressed the ways in which effective teachers bridge the potential gap between their learning styles and their students' learning styles.

Until the mid-20th century, the primary focus of learning styles research was on the relationship between oral and visual teaching strategies and memory. The objective of such research was to determine which mode of perception would yield superior results in prompting retention and learning (Kaplan & Kies, 1995). The first departure came in the 1940s and 1950s when Thurstone, followed by Guilford, identified perceptual speed and flexibility as variables that potentially influence learning. However, it was not until 1963, with the
publication of John B. Carroll’s article, *A Model of School Learning*, that educators formally acknowledged that teachers could impact student achievement by varying the ways in which they presented students with information (Henson & Borthwick, 2001).

In studying the work of Edward Lee Thorndyke, a staunch advocate of aptitude tests who firmly believed that innate ability predicted academic success, Carroll observed that in all the tests conducted by Thorndyke and his peers, all students received the same instruction with the same time constraints (Henson & Borthwick, 2001). In Carroll’s experiments students were taught through a variety of techniques and were provided with the time they needed to learn. With these adjustments Carroll found that the correlation between student aptitude and achievement was reduced nearly to zero.

Since the 1960s, the body of research on learning styles has expanded tremendously and it is generally recognized that a broad range of factors can influence learning style preferences. These include selection strategies (scanning and focusing), open/closed mindedness, memory or retention styles, risk-taking versus caution, and sensory preferences (auditory, visual, tactile, and kinesthetic) (Kaplan & Kies, 1995). For students in primary and secondary school the predominant framework for examining learning styles is the Learning Styles Inventory (LSI) of
Dunn and Price, a multi-dimensional model that assesses learning style preferences in five basic areas: immediate environment, emotionality, sociological, physiological, and preferences toward global or analytic processing (Shaughnessy, 1998). The Productivity Environmental Survey is the analogous instrument to the LSI designed to assess the learning style preferences of college students and adults.

An alternate model of learning styles is Gregorc’s framework, which is based on "the manner in which the learner mentally orders the concrete and abstract perceptions of his or her environment" (Wakefield, 1993, p. 403). In Gregorc’s model, a tendency toward concrete or abstract perceptions is combined with a preference toward random or sequential patterning. Since Gregorc’s model is contingent on the learner being capable of abstract reasoning, it is intended for college students and adults. Similarly, the Jungian Myers-Briggs Type Indicator (MBTI), which is frequently used in conjunction with learning styles, is designed to assess the perceptual preferences of college students and adults (Horton & Oakland, 1997). For children, the study of learning style preferences is often combined with Gardner’s theory of multiple intelligences (MI), although Gardner (1995) insists that MI can not only be observed through authentic tasks and not via a psychometric instrument.
Despite extensive research on learning styles in the later part of the 20th century, a large proportion of teachers reported teaching according to their own learning style preferences or the way they were taught (Marshall, 1991; Wallace, 1995). In fact, when questioned about their teaching practices, "It's the way I was taught," and "It's the way I learn," emerge as consistent responses. Teachers appear to believe that traditional methods of teaching are the most efficient despite the accumulation of a growing body of evidence indicating a marked discrepancy between the learning preferences of teachers and students. Whereas the majority of teachers are auditory learners who feel at ease with the traditional lecture format, students are more likely to have a preference for visual or kinesthetic/tactile learning strategies. In particular, few teachers appear to favor tactile learning, although hands-on learning techniques are most likely to appeal to a wide variety of learners, ranging from gifted students to those who are most at risk in the conventional classroom. Advocates of learning styles, brain-based learning, and MI unanimously support the use of a variety of techniques that engage all students as active participants in the learning process (Green, 1999; Guild, 1997).

Kaplan and Kies (1995) emphasize that teaching and learning cannot be directly correlated. Teaching and learning are complementary constructs that interact. They
define teaching style as "a teacher's personal behaviors and the media used to transmit data or receive it from the learner" (p. 30). The underlying assumption is that matching teaching style to learning style should facilitate learning and enhance student performance. The most effective teachers are aware of the learning styles of their students, can help students learn through their preferred style, and can develop a teaching style that is responsive to the variety of learning styles that are found in a single class. Indeed, a hallmark of effective teachers is their flexibility in individualizing learning by employing a variety of strategies to guide students through a challenging, enriching curriculum (Darling-Hammond, 1998).

According to Rita Dunn, teachers do two important things. Deploying the resources and methods that best match the students, they first teach students to recognize and rely on their unique learning style strengths, and second, they teach themselves and each other by utilizing those strengths (Shaughnessy, 1998). In a classroom that is rooted in the Dunn and Dunn model of learning styles, students work in those areas of the classroom that correspond to their environmental and physiological styles. Teachers who synthesize learning styles with MI, brain-based education, differentiated instruction, constructivism, or other non-conventional teaching methods may have their classrooms organized differently (Gardner, 1995; Green,
1999; Guild, 1997; Tomlinson, 2000). However, all these strategies are unanimous in recognizing the teacher's role in acting as an informed decision maker who continually seeks to upgrade the quality of teaching and learning, respects the unique strengths and preferences of each child, and works to involve all students as active partners in learning.

A related approach is Tomlinson (2000) differentiated instruction. Tomlinson's approach differs from MI, learning styles, and brain research in that the focus is on the teacher's philosophy of teaching and learning. However, analogous to the other approaches, Tomlinson stresses that differentiation is "not a recipe for teaching" or an instructional strategy, but a philosophy of teaching based on the belief that maximizing the potential of each child entails recognizing the uniqueness of the individual learning.

The classrooms of the 21st century are becoming increasingly multicultural and diverse. A good deal of research on learning styles has been conducted on examining the learning styles of specific student groups. Much research has focused on the learning style preferences of gifted and low-achieving students and on students from a variety of ethnic and sociocultural groups. Within this context are studies that concentrate on overlapping categories, such as gifted minority students. Certain
inconsistencies highlight the importance of not overgeneralizing; for example, some studies have found gifted students to be more responsible or to prefer an informal setting while others have found the reverse. In fact, the learning style preferences within groups of students are at least as great as those between groups (Burns, Johnson, & Gable, 1998), and the most effective teachers are those who understand the individual characteristics of their students and avoid generalizations or stereotypes.

At the same time, there are three consistent, significant findings in learning styles' research. The first is that while gifted or high-achieving students can typically adapt their learning style to the teacher's methods, low-achieving students often have only one perceptual strength—or none (Shaughnessy, 1998). Unfortunately, many teachers assume that if students cannot understand or retain material covered in class the students "have a problem" (Marshall, 1991). The underlying problem may be a poor match between the teacher's style of teaching and the students' learning style. Lower achieving students require a teacher who is aware of and is able to teach to their perceptual strength. A poor match between teaching strategies and learning styles may also be responsible for the differences in motivation consistently reported between high-achieving and low-achieving students. Rita Dunn notes that motivation is one of the elements of learning styles
that is not genetically determined, but "Rather it develops as a reaction to each learner's experiences, interest in the content that is being learned, and the ease with which it can be mastered" (Shaughnessy, 1998, p. 143).

A second consistent finding is that virtually all students regardless of learning style preference, achievement orientation, or sociodemographic characteristics are engaged through hands-on learning strategies. Kolb's experiential learning cycle is based on applying knowledge to practice (Lawrence, 1997). In fact, the practical application of knowledge to authentic tasks is a keynote of John Dewey's Progressive Classroom. Yet despite its roots in Deweyan philosophy, experiential learning has historically been neglected in the American classroom.

A third consistent finding, which is the focus of the present study, is that there appears to be a marked discrepancy between the learning style preferences of teachers and students. Surveys of teachers generally find a preponderance of auditory learners (Marshall, 1991; Wallace, 1995). Only a small proportion of students prefer the auditory mode; most prefer visual or tactile/kinesthetic learning. Students of cultural and linguistic minorities may be especially disadvantaged by a teacher's preference for auditory learning. Southeast Asian students, who represent a new and growing immigrant group in U.S. schools, tend to prefer visual and kinesthetic learning (Park, 2000).
Although Cambodian, Hmong, and Vietnamese students display a preference for auditory learning, students for whom English is a second language are likely to have problems if material presented verbally is not supplemented with diagrams, illustrations, and opportunities for hands-on learning. Mexican American students, including gifted students, tend to have a low preference for auditory and visual learning, preferring tactile and kinesthetic learning (Dunn & Griggs, 1993; Ewing & Yong, 1992).

An interesting finding is that even when teachers’ and students’ preferences are similar, teachers may be unaware of their students’ needs. In a focus group for teachers conducted by Marshall (1991), nearly half the teachers displayed strong mobility needs and a comparable proportion preferred an informal learning environment. However, it did not occur to them that the conventional classroom is organized to provide teachers with a freedom of movement not shared by their students. Some researchers caution that unless prospective teachers are taught how to adapt their teaching strategies to different learning styles, a sizable majority (estimated at 70%) of students in grades K-12 will not have their learning needs met (Matthews & Jones, 1994).

In reality, elementary school teachers, who cover a variety of subjects, are in the most advantageous position to accommodate students’ learning styles. Many teachers have observed superior results upon integrating music and
arts with literacy learning (Short, Kauffman, & Kahn, 2000; Towell, 1999/2000), and integrating mathematics as well as arts with reading (Berghoff, Cousin, & Martens, 1998). In early elementary grades, music and movement are typically integrated into learning activities and games are often to promote learning; more sophisticated activities allowing students to express themselves through artistic and kinesthetic activities and competitive and cooperative games as they learn course content have successfully engaged students at all grade levels.

Purpose of Study

The purpose of this research study is to explore teachers' perceptions regarding the match between teachers' teaching styles and students' learning styles.

Research Questions

This study will address the following research questions:

1. How do teachers determine students' learning styles?
2. How do teachers select their teaching styles?
3. How do teachers match their teaching styles to the learning styles of their students?
4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students' learning styles?
5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding
learning strategies, resources, student ability, student interest, student grouping, assessment, planning and other related areas?

*Definition of Terms*

For the purpose of this study the following terms are defined as follows:

1. Learning style: according to Rita Dunn, the way an individual "concentrates on, processes, internalizes, and remembers difficult academic information or skills" (Shaughnessy, 1998, p. 141).

2. LSI: Learning Style Inventory of Dunn and Price; a multi-dimensional instrument designed to identify the learning styles of students in grades 3-12 according to five key areas: immediate environment, emotionality, sociological, physiological, and inclinations toward global or analytic processing (Shaughnessy, 1998).

3. Productivity Environmental Survey: analogous instrument to the LSI designed for college students and adults (Shaughnessy, 1998).

4. Gregorc’s learning styles model: learning styles framework based on Gregorc’s theory that learners have a preference toward concrete or abstract perception and interpret the environment either through random or sequential patterning (Wakefield, 1993).

5. Kolb’s Learning Cycle: four-stage model of experiential learning (Lawrence, 1997).
6. LSQ: Learning Styles Questionnaire; based on Kolb’s model, the four styles are Activist, Reflector, Theorist, and Pragmatist (Lawrence, 1997).

7. MI: Howard Gardner’s theory of multiple intelligences; the seven basic intelligences are linguistic, logical-mathematical, musical, bodily-kinesthetic, visual/spatial, interpersonal, and intrapersonal (Gardner, 1995).

8. Brain-based learning: holistic system of learning in which teachers view students as active participants in learning and engage them through a range of teaching strategies that connect facts to concepts and embed knowledge in real world experience (Green, 1999).

9. Differentiated instruction: Carol Ann Tomlinson’s model for individualizing instruction according to readiness for learning rather than chronological age and within the context of a supportive learning community (Tomlinson, 2000).

10. MBTI: Myers-Briggs Type Indicator; Jungian-based personality typology in which individuals are classified according to preferences on each of four continua: extroversion (E) or introversion (I), sensing (S) or intuition (N), thinking (T) or feeling (F), and judging (J) or perceiving (P) (Hanson & Silver, 1991).

**Significance of the Study**

In spite of the massive reform efforts that have been underway since the period of *A Nation at Risk* in 1983, it is
clear that there are many students whose learning needs are still not being met. Understanding the diverse ways in which learners process information offers a valuable framework for restructuring the elementary school classroom to meet the learning needs of an increasingly diverse student body. Learning styles is often discussed in conjunction with MI and brain research (Green, 1999; Guild, 1997). Although all three approaches are concerned with developing the unique qualities of each student and all three favor a variety of teaching strategies and an unconventional classroom organization, learning styles has been given the least attention in the elementary grades. This study seeks to fill this critical gap in research by examining the ways in which effective teachers in grades 1-8 accommodate diverse learning styles.

Research on learning styles systematically identifies significant discrepancies between the learning style preferences of teachers and students. The most effective teachers are able to employ a variety of teaching strategies in the classroom within the context of a challenging, high quality curriculum. In fact, effective teaching has emerged as the most consistent predictor of student success (Darling-Hammond, 1998). The overarching question asked by this research project is the extent to which teachers match their teaching styles to the learning styles of their students and the impact this has on student performance.
Also, of key importance and concern to this research study and based on prior research studies is the fact that administrators should be totally aware and understand how their leadership and management affects the teaching styles of teachers. Often teachers emulate their teaching style in accordance to administrator’s opinions, suggestions, and evaluations. Therefore, it is imperative that administrators consider the effects of their role when initiating change regarding the match of teachers’ teaching styles and students’ learning styles. It is most necessary that administrators have a background in the teaching and learning style match because they are the educational leaders.

Limitations of the Study

The population was limited to only 10 elementary school teachers. Participant teachers included 5 teachers from an elementary K-8 private school in an above average socioeconomic, residential, and suburban community district in Northern New Jersey. Participants included 5 teachers from an elementary pre-K-8 parochial school in an average socioeconomic, residential, suburban community diocesan school in Northern New Jersey.

The method of obtaining data for the study was limited to in-depth interview sessions. The participants had prior training on learning and teaching style match prior to the interviews.
This research addressed several disciplines of learning styles, brain-based, multiple intelligence, differentiated learning, constructivism, experiential, multidimensional, and other non-conventional teaching models. The participants did not always indicate which discipline was addressed or perceived in this study in reference to their responses. Also, teachers' perceptions may have had different connotations relative to individual participant teachers' teaching styles.

Research has identified some differences between primary and secondary school teachers (Hanson & Silver, 1991; Sears & Kennedy, 1997). Consequently, the findings of this study may apply primarily to elementary school teachers.

Organization of the Study

This research project will be organized into five chapters. Chapter I provides an Introduction, Purpose of the Study, Research Questions, Definition of Terms, Significance of the Study, Limitations of the Study, and Organization of the Study.

Chapter II will present a review of literature that is pertinent to the study of learning styles. This encompasses the theoretical background of learning styles research, an exploration of the predominant learning styles models for children and adults, multiple intelligences, differentiated instruction, and related personality typologies. This
Chapter will examine the parallels between learning styles and teaching styles and discuss the ways in which the various models overlap and diverge. This chapter will also discuss the ways in which the existing disparities between teaching styles and learning styles can be addressed to the advantage of all students.

Chapter III will describe the design of the study, the population and sample, the instrument used, the method of data collection, and the method of data analysis.

Chapter IV will present the research findings concerning Participant Profiles and Interview Sessions.

Chapter Summaries, conclusions, and recommendations will be presented in Chapter V.
CHAPTER II

Review of Literature

Introduction

On a 1993 visit to the Philippines, during which he taught workshops and observed classroom learning, American educator James Wallace (1995) conducted a study of the learning styles of 450 sixth and seventh grade students and 128 teachers in three schools. The students were given the Learning Styles Inventory (LSI) of Dunn and Price, and the teachers were given the Productivity Environmental Survey, designed for college students and adults. These related instruments are the most frequently used of the learning style instruments (Shaughnessy, 1998). Wallace (1995) found a remarkable dichotomy between the preferred styles of teachers and students. The largest proportion of teachers preferred the auditory mode—the least preferred among students. Only 8% of the students were auditory learners as compared to 40% of teachers. Conversely, 42% of the students were visual learners, the style preferred by only 11% of the teachers.

Wallace (1995) conducted a comparison study in the United States. Although the discrepancy between teachers and students was not as striking as the Filipino sample, Wallace noted that research in the U.S. has consistently reported disparities in the same direction. According to Dunn (1990), the proportion of U.S. students who prefer the
visual mode is 40%, while 30% prefer auditory learning. The remainder prefer tactile or kinesthetic learning or a combination of both.

In the U.S., as in the Philippines and elsewhere, the predominant style of teaching is still the teacher-centered method that critics call "chalk and talk." Upon asking the Filipino teachers why they rely on the lecture format, Wallace (1995) observed a "pattern." Teachers responded: (a) It's the way all teachers teach, (b) It's the way I was taught, and (c) It's the way students learn most easily. According to Wallace, "The assumption appeared to be that if the teacher lectured and the students didn't learn, the students were not paying attention" (p. 100).

Compare the above responses to those of the American teachers asked by Marshall (1991), "Why do you teach the way you do?": (a) It's the way I was taught, (b) It's the way I learn, and (c) It's the easiest (most expedient) way to cover the material.

Without variation, the same pattern emerged. In fact, Marshall (1991) observed that not only were these responses consistent among teachers, they often appeared "many times in the same sequence" (p. 226). Like their Filipino counterparts, the American teachers assumed that poorly achieving students "had a problem" if they were incapable of absorbing material presented according to "the formula."

Of equal significance, parents often have similar
assumptions about the "right" way to learn. According to Martin and Potter (1998), parents' close observations of their children over time afford them a good idea of their learning preferences. However, problems occur when the child's preferred style differs from their learning style. Most parents emerged from the same educational system as their children's teachers. In a parallel fashion, "Parents tend to think that their child should study in the same way they did growing up. It worked for them while they were in school, so they try to impose their style on the child" (p. 549). Teachers are in a position to make parents aware of their children's unique learning preferences; however, they cannot do so unless they have the requisite knowledge themselves.

Rita Dunn emphasizes that teachers cannot identify students' learning styles without using a multidimensional instrument (Shaughnessy, 1998). Without evaluation, even experienced educators may misinterpret student behaviors such as hyperactivity or inattention, when they may be indicators that the students' learning needs are poorly matched with the traditional classroom structure. At the same time, elementary education, the focal point of the present study, has been given the least attention in learning styles research. The bulk of research has been conducted on students in postsecondary education and in business and industrial settings (Lawrence, 1997). The
commercial focus has neglected teachers as well as students in grades K-12, and in particular, the primary grades.

Although Rita Dunn (1990) is understandably partial to the Dunn and Dunn model of learning styles, other models exist, differing somewhat in their conceptualization of learning styles. In the literature on adults, learning styles are often discussed in conjunction with the Jungian Myers-Briggs Type Indicator (MBTI). In educational literature, learning styles are sometimes grouped with Howard Gardner's theory of multiple intelligences (MI). The differences and similarities between these models, which all provide insight into how people learn and have implications for the present study, will be discussed in the following segment.

Theoretical Background

For the first three decades of the 20th century, most research on learning styles focused on the relationship between oral or visual teaching strategies and memory, with the goal of determining which perceptual mode was superior for promoting retention and learning (Kaplan & Kies, 1995). The first departure came in the 1940s and 1950s when some researchers identified perceptual speed and flexibility as variables that might impact learning. Since the 1960s, the range of potential factors has broadened considerably, to include selection strategies (scanning and focusing), open/closed mindedness, memory or retention style, risk-
taking versus cautiousness, and sensory preferences (auditory, visual, tactile, and kinesthetic).

According to Kaplan and Kies (1995), the current trend in learning styles research reflects the two distinctive lines of Rita and Kenneth Dunn and Anthony Gregorc. As Rita Dunn emphasized, the Dunn and Dunn model is concerned with the multidimensional nature of learning. Gregorc’s model focuses on mental qualities and the channels that mediate how individuals perceive and experience the world.

Rita Dunn defines an individual’s learning style as "the way that he or she concentrates on, processes, internalizes, and remembers new and difficult academic information or skills" (Shaughnessy, 1998, p. 141). The LSI was developed for identifying the learning styles of students in grades 3-12. The LSI assesses individual learning preferences in five basic areas:

1. Immediate environment: sound, light, temperature, and seating arrangement.

2. Emotionality: motivation, persistence, responsibility (conformity), and need for internal or external structure.

3. Sociological: learning alone, in a dyad, as part of a small group or team with peers, or with a collegial or authoritative adult; additionally, in a variety of ways or in a consistent pattern.

4. Physiological: auditory, visual, tactual, and/or kinesthetic perceptual preferences; need for food or liquid
intake; energy levels at different times of the day; mobility.

5. Inclinations toward global or analytic processing: through correlation with sound, light, design, persistence, peer orientation, and intake scores.

According to Dunn, "Styles often vary with age, achievement, culture, global versus analytic processing preference, and gender" (Shaughnessy, 1998, p. 141). The word "often" should be interpreted as a caution not to over-generalize. As the research reviewed in this chapter demonstrates, findings on learning styles according to group classification often yield inconsistent results.

In contrast to the Dunn and Dunn model, Gregorc's framework is based on "the manner in which the learner mentally orders the concrete and abstract perceptions of his or her environment" (Wakefield, 1993, p. 403). After conducting extensive research, Gregorc concluded that learners interpret the environment either through random or sequential patterning. Combined with a preference toward concrete or abstract perception, the Gregorc model has four distinct learning styles:


Keyword: People-person.


Wakefield (1993) used Gregorc's model, which is designed for adults, to evaluate the learning styles of public school teachers and education majors. Although one style preference tends to predominate (Gregorc found a style preference in up to 95% of his subjects) Wakefield stresses that all persons interpret both concrete and abstract perceptions, and most people choose a random or sequential approach in accordance with how they perceive the demands of a specific situation.

The foundation for current learning styles research is generally attributed to Kolb, who developed the concept of experiential learning. Kolb delineated four stages of the learning cycle, proposing that the most effective learners are competent in each stage (Lawrence, 1997). Kolb's learning cycle begins with having an experience, then reflecting on the experience prior to furthering understanding by placing it within a theoretical framework. In the final stage, the learner tests the experience in a practical setting. The learning experience is not complete without the practical application of knowledge; thus, Kolb's
model is often evoked by proponents of experiential or hands-on learning (Lawrence, 1997).

Honey and Mumford designed the Learning Styles Questionnaire (LSQ) according to Kolb's learning cycle. The four preferred learning styles identified by the LSQ are the Activist, Reflector, Theorist, and Pragmatist, which correspond to the four stages of the learning cycle (Lawrence, 1997).

Kaplan and Kies (1995) emphasize that teaching and learning cannot be directly correlated. Teaching styles and learning styles are complementary constructs that interact. They define teaching style as "a teacher's personal behaviors and the media used to transmit data or receive it from the learner" (p. 30). In their proposal for teachers, the keynote is matching teaching style to learning style. The most effective teachers are aware of the learning styles of their students, can help students learn through their preferred style, and can develop a teaching style that is responsive to the diverse array of students in their classes.

Learning styles is one of several popular frameworks for adapting teaching methods to the needs and preferences of diverse learners. Learning styles, MI, and brain-based education are often discussed in conjunction by advocates of individualized learning (Green, 1999). Although each one has a unique theoretical framework and research base, there
are similarities that overlap substantially in actual classroom application (Guild, 1997). In each theory, the learner is paramount and the learning process is the central focus. In order to successfully implement the learning strategies of each one, the teacher is an informed decision-maker who understands the theoretical rationale, continually expands upon her or his knowledge, and makes choices that are appropriate to the learner and learning context. The student is also reflective and actively engaged in the learning process. The learning process encompasses, the physical, cultural, social, and emotional life of the learner as well as the cognitive processes formally recognized as indigenous to academic success. In another important similarity, all three approaches integrate a variety of promising practices into their classroom application.

Not surprisingly, the theorists are quick to point out the distinctions between approaches. Rita Dunn notes that learning styles differs from conventional classrooms, where all students are taught the same way, as well as from brain-based classrooms where each student is taught non-traditionally (Shaughnessy, 1998). Teachers who employ learning styles teach different children through different strategies. In the learning styles classroom, students work in those areas of the classroom that correspond to their environmental and physiological styles. A variety of
resources are available, and children are allowed to select different materials; however, they are encouraged to begin learning through their strongest modalities, especially when introduced to complex or difficult academic content.

Gardner (1995) specifically distinguishes the concept of "styles" from "intelligences," also noting that "style" does not necessarily have the same meaning when conceived by Jung, Gregorc, or other theorists. As defined by Gardner,

The concept of style designates an approach that an individual can apply equally to every conceivable content. In contrast, an intelligence is a capacity, with its component processes, that is geared to a specific content in the world (such as musical sounds or spatial patterns) (p. 202).

Although Gardner (1995) acknowledges that from this perspective, a person may be thought to be "intuitive" or "reflective" in response to "all manner of content," this assumption must be tested empirically. He believes it more likely that style will vary with content; for example, a person may be intuitive in the social domain but not in the musical or mathematical domain, or vice versa. MI differs significantly from learning styles in that Gardner decries the use of psychometric tests, stating that children's strengths in using different intelligences can only be assessed through authentic tasks.

Another approach to addressing the needs of diverse learners is found in Carol Ann Tomlinson's (2000) model of differentiated instruction. Tomlinson's approach differs
from MI, learning styles, and brain research in that the focus is on the teacher’s philosophy of teaching and learning. However, analogous to the other approaches, Tomlinson (2000) stresses that differentiation is "not a recipe for teaching" or an instructional strategy. The beliefs underlying the philosophy are that: Students of the same age differ in their readiness to learn, their interests, learning styles, experiences, and life circumstances.

These differences have a significant impact on what students need to learn, the pace needed to learn it, and the type of support they require from teachers.

1. Students will learn best when supportive adults challenge them by pushing them slightly beyond the level they can work without assistance.

2. Students learn best when they can connect curriculum content to their interests and life experiences.

3. Students learn best when learning opportunities are natural.

4. Students learn more effectively in schools and classrooms designed to evoke a sense of community, importance, and respect.

5. The central function of schools is to maximize the capacity of each student.

Tomlinson (2000) emphasizes that differentiation is a "refinement of, not a substitute for, high quality
curriculum and instruction." Indeed, education reformer Linda Darling-Hammond (1997, 1998) consistently states that effective teaching and high quality, challenging curriculum are inextricably intertwined. In fact, Darling-Hammond targets effective teaching as the most consistent predictor of student success.

Until the mid-20th century, it was unthinkable that the teacher and not the student could be the central actor in academic success. Edward Lee Thorndyke was a staunch advocate of aptitude tests, which appeared to confirm the conventional wisdom that aptitude predicts academic success (Henson & Borthwick, 2001). It was not until 1963, when John B. Carroll wrote an article entitled A Model of School Learning that the teacher’s role in student achievement was formally recognized. Observing that in all the studies conducted by Thorndyke and his contemporaries, all students were given the same instruction and the same time constraints, Carroll conducted experiments in which students were taught through a variety of techniques and given all the time they required to learn. In these studies, Carroll found that the correlation between student aptitude and achievement was reduced nearly to zero.

Since Carroll’s original study, research in this area has become more sophisticated. Studies from Tennessee, Alabama, and New York City have determined that teacher expertise is the critical factor in student performance,
transcending factors of, socioeconomic status (SES), race, and parent education. As stated by Darling-Hammond (1998):

Studies of underprepared teachers consistently find that they are less effective with students and that they have difficulty with curriculum development, classroom management, student motivation, and teaching strategies. With little knowledge about how children grow, learn, and develop, or about what to do to support learning, these teachers are less likely to understand students' learning styles and differences, to anticipate students' knowledge and potential difficulties, or to plan and redirect instruction to meet students' needs. (p. 30)

Under-qualified teachers are most likely to be assigned to low-income school districts where large class size and inadequate resources exacerbate problems of individualizing instruction (Darling-Hammond, 1998). At the same time, the higher proportion of low-performing students necessitates having teachers who can respond to individual styles. In a study of students in nine different cultures co-authored by Dunn, the researchers found that although gifted students tend to prefer kinesthetic (experiential/active) and hands-on learning, many are capable of learning through visual and auditory modalities as well (Shaughnessy, 1998). In contrast, low-achieving students who prefer kinesthetic or tactual learning are unable to master curriculum through other modalities; they often have only one perceptual strength, or none. In effect, while gifted students can adapt learning style to teaching style, low-achievers require a teacher who is aware of, and able to teach to,
their perceptual strength.

Darling-Hammond (1997) and Holloway (2000) argue that teacher education programs must be redesigned so that teachers will be prepared to provide diverse learners with a challenging curriculum and a variety of strategies that will enable all students to master complex material. While Holloway is an advocate of Tomlinson's (2000) differentiated instruction, Darling-Hammond is concerned with reform of the whole school system. In addition to criticizing the "Cookbook formulas for transmitting information and maintaining control" that have been taught by many teacher education programs, Darling-Hammond (1997) asserts that historically, school boards often hired less well-prepared teachers, deeming them "more compliant and much less likely to have their own ideas" (p. 154). From a somewhat different (although not unrelated) perspective, researchers using learning style instruments suggest that teachers may be selected, or may adapt their behavior, to the style preferences of administrators, which in turn, impacts their interactions with students of different styles.

Teacher Characteristics and Learning Styles

Using the Gregorc Style Delineator, Wakefield (1993) compared the learning style preferences of 196 undergraduate and graduate teaching majors with 104 employed teachers. Although nearly three-quarters of both samples displayed preferences for the same two of the four styles,
an intriguing disparity emerged. While the preferred style of the graduate students was Abstract Random, the preferred style of the teachers was Concrete Sequential, a "polar opposite to the AR style of the graduate students" (p. 404).

On the assumption that the participants of the study are representative, Wakefield (1993) suggests that teacher evaluation may play a key role in the unexpected results. Considering that empathy, imagination, and compassion are components of the AR style, these qualities should be ideally suited for teaching. However, they may not be the qualities desired by administrators who evaluate teachers. Alternately, these "soft" qualities are difficult to quantify. Instead, the qualities associated with the CS style such as precision, task completion, and order, are easy to quantify and consistent with the teacher's traditional role. Wakefield recommends that principals who evaluate teachers need to examine what dispositions they expect from teachers and how, rather than attempting to weed out or alter the natural bent of AR-oriented teachers, they might help them to cultivate the qualities of empathy, imagination, and innovation so the teachers will value and model them for their students.

Hanson and Silver (1991) suggest that the style preferences of school administrators may be a factor in the perpetuation of traditional teaching methods. The authors use the Jungian system of classification. Operationalized
in the MBTI, the model is based on preferences on each of four continua. Extroversion (E) or introversion (I), sensing (S) or intuition (N), thinking (T) or feeling (F), and judging (J) or perceiving (P) represent the preference continua. Organizational research has consistently found the sensing-thinking (ST) style to predominate among leaders of business and government. Hanson and Silver contend that while traditional teaching methods meet the needs of the ST and NT types, they tend to neglect the needs of the two feeling types, SF and NF, who often do well in the arts and have good interpersonal skills, but may be at risk academically.

According to one study cited by Hanson and Silver (1991), at-risk students are most likely to be extroverted, sensing-feeling types. In fact, virtually all (99.6%) of students who dropped out of school as soon as they reached legal age were sensors. Other research has reported that high achievers are generally intuitors and most are NT. The authors contend that SF students do well in school in the first four grades, where learning takes place in small groups, the learning environment is caring and communal, and teaching strategies integrate art, music, and dance. However, once students reach the upper elementary grades the focus shifts from collaboration to competition and independent seatwork; in effect, "a shift from feeling to thinking" (p. 32). This shift places the SF student in an
environment where his or her learning needs are ignored.

In contrast to the SF learner, the problems faced by the NF learner may be less visible. In general, intuitive learners tend to be high achievers. NF learners may feel alienated in the classroom and may simply do the minimum required to pass because the curriculum does not satisfy their need to explore "different and more elegant ways of doing things" (Hanson & Silver, 1991).

The recommendation of Hanson and Silver (1991) that teachers be aware of their students' learning styles and use strategies that engage all learning styles (with a focus on incorporating arts and music into the curriculum) is consistent with MI (Gardner, 1995) and brain research (Green, 1999), as well as with advocates of learning styles. However, there is some question of generalizing style characteristics among teachers. Hanson and Silver assert that teachers, in particular those in academic subjects, tend to be either ST or NT types. It is possible that these types predominate in secondary education. At the elementary level, Sears and Kennedy (1997) found that teaching candidates with the SFJ profile predominate, and they are most likely to persist in teaching for at least five years following graduation.

According to the findings of Sears and Kennedy (1997), students who are SF should have their learning style matched through the upper elementary grades. However, as Wakefield
(1993) cautions, teachers may adapt their natural preferences to the expectations of principals. Thus, while the characteristics of the feeling type may help them relate to students and maintain classroom harmony, their teaching methods may reflect the thinking style expected in the upper elementary grades and beyond. In addition, the judging dimension of the SFJ profile indicates that they are responsible and dependable and likely to conform to traditional practices. At the extreme end, individuals who are high in judgment can be dogmatic and authoritarian.

Sears and Kennedy (1997) note that while SFJ types are unlikely to be in the forefront of educational reform they bring many valuable qualities to the elementary classroom. Their need for order makes them good at prioritizing the many demands of teaching. Of special significance, the authors suggest that their inherent empathy and interest in meeting the needs of others should allow them to accept the diverse characteristics of today’s young learners.

Hanson and Silver (1991) may be correct in assuming that a stylistic mismatch predisposes SJ students to drop out. A significant number of the secondary school teachers surveyed by Sears and Kennedy (1997) fit the NTJ profile. Although Sears and Kennedy view NTJ teachers as the best candidates for leading educational reform efforts, it is possible that without awareness of learning styles, these same qualities will lead them to neglect the needs of some
learners in the classroom.

In contrast to the predominance of judges among teachers overall, those graduating with K-12 certification in disciplines such as music, art, and physical education are often STP types. Individuals of this type tend to be tolerant, open-minded, and adaptable (Sears & Kennedy, 1997). Indeed, these are among the qualities that Hanson and Silver (1991) attribute to music and art educators, who they believe are more adept at working with SF and NF students. According to Sears and Kennedy (1997), while STP teachers are unlikely leaders of school reform, they can be expected to analyze proposed reforms carefully, and if they accept them, they should be successful implementers.

In a unique study investigating the impact of MBTI style on student learning, Horton and Oakland (1997) gave the MBTI to four teachers, along with in-depth training on temperament and temperament-based learning styles. After completing the training, each subject was asked to write a history lesson plan corresponding to one of the four types (SJ, SP, NT, and NF), drawing on instructional strategies associated by theorists with each type. The NF teaching plan proved the most effective strategy for students of all MBTI types. The NF lesson plan was designed to personalize learning by encouraging cooperation, personal application, and identification with historical characters. Teachers reinforced imagination, innovation, personal growth, and
expression of personal experiences.

The superior results of the NF teaching strategy should not be surprising; personalizing lessons facilitates involvement and immersion, and allows students to derive personal meaning from the material (Horton & Oakland, 1997). In particular, the strategy should engage NF students, who Hanson and Silver (1991) perceive as short-changed by the conventional learning environment. However, there appear to be few NF types among teachers and minimal support for teaching through this approach. The NF type overlaps with the AR style Wakefield (1993) found to be prevalent among graduate students in teaching although not among practicing teachers. The findings from the two studies seem to imply that what might be the most promising teaching style for all students is not encouraged; indeed, it may be discouraged by principals who give more favorable evaluations to orderly and conventional SJ lessons.

Matthews and Jones (1994) investigated the learning styles of 334 juniors and seniors in undergraduate teacher education programs using the LSI of Albert Canfield, which addresses the self-reported preferences of subjects. In this sample, participants ranked conceptual, social, or combinations of the two as their preferred learning styles. Conceptual learners prefer to work with highly organized language-oriented materials, while Social/Conceptual learners prefer to use these materials to interact with
others. They prefer a balance of lecture and discussion for learning. Interestingly, African American teacher candidates lean more toward the Conceptual than their white peers and prefer to learn more independently. This finding contrasts sharply with Afrocentric psychology literature, which describes African American learning styles as social, harmonious (interdependent), expressive, and nonverbal (Durodoye & Hildreth, 1995).

Consistent with previous research on teachers' learning styles, no gender differences were found, and the differences in preferences by race ran counter to common assumptions. These findings imply that simply recruiting more males and teachers of color will have minimal impact on teaching practices (Matthews & Jones, 1994). Although the sample may not be representative (all participants were enrolled in institutions in a single Southern state), findings from this study support the contention of Wallace (1995) that teachers use lectures and verbal materials because they reflect their own learning preferences. Based on their findings, Matthews and Jones warn that a majority of students (an estimated 70%) in grades K-12 will not have their learning needs met unless teacher education programs are designed to educate teaching candidates in adapting their classroom practice to a variety of learning styles.

Lawrence (1997) used Honey and Mumford's LSQ to examine the learning styles preferences of 353 secondary school
teachers and lecturers in higher education and 47 school
senior managers. Although Lawrence questions the assumption
that matching teacher and student learning styles enhances
learning, she believes that continual mismatching of
learning styles undermines students' motivation and
attitudes toward learning. The problem is exacerbated if
teachers have similar learning style preferences, which
differ from those of their students. Indeed, research
suggests this is the case (Hanson & Silver, 1991;

The majority of teachers surveyed by Lawrence (1997)
displayed a preference for the Reflector learning style,
with Theorist second. In other words, the teachers prefer
watching and thinking, while many students prefer tactual
and/or kinesthetic learning. Although each study used a
different conceptualization of learning styles, the findings
of this study correspond to those of Wallace (1995) and
Matthews and Jones (1994). The preferences reported in all
three studies indicate that teachers prefer to impart
information to students, expecting them to learn by
listening and watching. The only significant departure from
this preference was found among art, music, and physical
education teachers, whose dominant style was Activist
followed by Pragmatist (Lawrence, 1997). This finding
concurs with Hanson and Silver (1991) and Sears and Kennedy
(1997), who depict teachers in these disciplines as having
distinctive styles from their academic counterparts.

As part of the project described by Lawrence (1997), the teachers applied the knowledge of learning styles to re-examining their teaching methods. For example, a chemistry teacher taught two parallel groups, one using the standard lecture format and a second group using a variety of teaching methods to reflect the Kolb learning cycle. The experimental group, which engaged in experiential learning tasks, outperformed the traditionally taught group on the final exam. Lawrence notes that in arts and physical disciplines, students are expected to experiment, immerse themselves in the activity, and use hands-on techniques. Active involvement and completion of authentic tasks are an integral part of learning in these domains.

At the elementary school level, teachers have observed superior results upon integrating music and arts with literacy learning (Short, Kauffman, & Kahn, 2000; Towell, 1999/2000), and integrating mathematics as well as arts with reading (Berghoff, Cousin, & Martens, 1998). In fact, designing lessons to engage learners of different learning styles and intelligences is theoretically easier in the elementary grades, where teachers are generalists rather than specialists. Although distinctive style preferences have been reported for elementary and secondary school teachers (Sears & Kennedy, 1997), it is noteworthy that Lawrence (1997) found few Pragmatists among teachers of
academics. This corresponds to the low preference for tactual or kinesthetic learning. Teachers who do not have a Pragmatist bent are unlikely to provide students with opportunities to engage in practical problem-solving or apply knowledge to authentic tasks unless they are made aware of the gap in learning styles and encouraged in this direction.

In a survey of teachers using the CITE LSI, Marshall (1991) found an interesting departure from the assumption that teachers favor auditory over visual learning, although consistent with other studies, few participants favored tactile or kinesthetic learning. Of the teachers attending Marshall's workshop, an overwhelming 85% to 90% were visual learners; auditory learning consistently emerged as the secondary preference. More than 90% preferred to have students demonstrate knowledge through writing rather than discourse or less traditional methods, and the preference for a quiet learning environment was almost unanimous.

The teachers also showed high preference for learning alone (≥90%), especially when learning new and difficult material; thus they were reluctant to use peer tutoring or cooperative learning in the classroom. Although Marshall (1991) states that there is "overwhelming evidence" in favor of collaborative learning strategies, many students, in particular high achievers, show a preference for learning alone (Collinson, 2000; Shaughnessy, 1998). The success of
collaborative learning techniques may lie in the teacher’s expertise in designing cooperative groups or pairs (Thomas, 1992). Jeffrey (1994) recommends using students’ learning styles as a guide for grouping students and developing leadership skills.

One interesting finding underscores the need to make teachers aware of their own and their students' learning style preferences. Nearly half the teachers surveyed by Marshall (1991) showed high mobility needs and a comparable proportion preferred an informal learning environment. The conventional classroom design affords teachers freedom of movement while restricting students largely to seatwork. Despite their own preferences, most teachers did not consider that students could concentrate and learn better if permitted comfort and movement in the classroom (Marshall, 1991). Although the teachers were not uniform in their preferences, Marshall concluded that, "Clearly teachers as groups reveal similar learning style preferences—and these preferences match the framework of traditional instruction" (p. 226).

With respect to processing style, Marshall (1991) found that the majority of secondary teachers described themselves as sequential processors, while most teachers of young children described themselves as global processors. In a study of math anxiety among preservice teachers Sloan, Daane, and Giesen (2002) found a correlation between math
anxiety and global learning style. Global learners have been described as holistic, spatial, divergent, intuitive, and imaginative, and may have a problem with details. Traditional mathematics instruction favors students who learn by sequential, rule-governed methods. As Sloan, Daane, and Giesen emphasize, all types of learners are capable of mastering mathematics, but some do not learn as well by traditional methods.

While it may be proposed that teachers who are global learners should be better able to teach math to students with the same learning style, this will only occur if teachers are knowledgeable about learning styles and their impact. Without such knowledge it is more likely that teachers whose learning styles predispose them to math anxiety will transmit math anxiety to those students who are already at risk. As stated by Sloan, Daane, and Giesen (2002), "Preservice teachers who recognize that students differ in learning styles might be taking the first step in reducing the mathematics anxiety of those students" (p. 86).

Stevenson and Dunn (2001) have designed a framework for teaching education majors of diverse learning styles. They recommend that college faculty and preservice K-12 teachers should begin by identifying their learning styles and those of all students in one course via appropriate instruments. The evaluation is followed by adherence to a Homework Prescription and examination of the Homework Prescription on
the students' grades, attitudes, and attendance. Finally, the participants are asked to identify their teaching style and determine the relationship between students' grades and the match or mismatch between students' and professors' respective learning and teaching styles. The strategy is designed to prepare preservice teachers to be "knowledge management oriented" teachers for an increasingly diverse school population.

Learning Styles of Students

Most research utilizing the LSI to assess the learning styles of elementary and secondary school students has been oriented toward identifying the learning style preferences of different racial/ethnic groups, or alternately, identifying characteristics that distinguish gifted or high-achieving students from low-achievers both in the general population or within a specific group. Because of the overlap among categories this research will be presented concurrently.

The learning style preferences of the African American preservice teachers surveyed by Matthews and Jones (1994) clearly reflects a departure from the assumption that African American students prefer collaborative learning and nonverbal communication (Durodoye & Hildreth, 1995). In fact, the African American teacher candidates showed more traditional learning style preferences than their Caucasian counterparts. The implication may be that academically
oriented African American students have learning styles that differ from their lower achieving peers—a common finding among students regardless of ethnic background. To explore this phenomenon, Ewing and Yong (1992) compared the learning style preferences of gifted African American, Mexican American, and American born Chinese students in sixth, seventh, and eighth grades (N = 155).

The findings of Ewing and Yong (1992) supported prior research on gifted students, which reported them to be highly motivated, responsible, persistent, and to prefer an informal learning environment. Overall, the group displayed a preference for kinesthetic and visual learning. The authors suggest that the students' high motivation may reflect parental expectations that they succeed; in particular, African American families may instill in their children the idea that academic and behavioral excellence (or failure) reflects on the group as a whole. Chinese students displayed the strongest preference for the visual mode, while Mexican American students showed the lowest preference for auditory learning and were less visual than the other two groups. In fact, there were more significant differences in preferences for noise, visual learning, afternoon studying, and persistence between the Mexican American and Chinese American students than between the Chinese American and African American students. Gifted African American and Chinese American students showed
similar learning style preferences, while the Mexican American students tended to be less visual, less persistent, and prefer softer lighting.

The preference for kinesthetic learning and informal environment exhibited by the gifted African American, Mexican American, and Chinese American students may have been met by innovative learning strategies. Alternately, their success may reflect Rita Dunn's assertion that gifted students can learn through a variety of modalities, even if their major preferences are not met (Shaughnessy, 1998).

Collinson (2000) investigated the learning styles of 110 third, fourth, and fifth-grade students to determine whether learning style preferences were associated with academic achievement. Certain patterns emerged. High-achievers tended to prefer independent learning and informal structures, while low-achieving students preferred a more traditional classroom setting, collaborative learning with one or more peers, and learning new and complicated material in the afternoon. Middle-achieving students showed no significant preference for a particular learning style.

Collinson (2000) cautions against over-simplifying research findings on learning styles. This is especially pertinent since findings can be inconsistent. In comparing the characteristics of high-achieving students with average and low-achieving students in grades 4-8, Burns, Johnson, Scott, and Gable (1998) found some notable distinctions
between their own sample and previous research by Dunn and Gianetti (1990). Two variables that consistently distinguished high achievers, persistence and a preference for informality support the findings of Ewing and Yong (1992) and Collinson (2000). In the Dunn and Gianetti (1990) study, however, high achievers preferred a formal setting and viewed themselves as less responsible than their peers in the general school population. Perceptions of lower responsibility contrasts sharply with the findings of Burns et al. (1998) and Ewing and Yong (1992). Scores on seven variables (light, mobility, auditory and tactile/kinesthetic learning, time preferences, adult motivation, and preference for learning alone) did not correspond in the studies of Burns and colleagues and Dunn and Gianetti (1990).

Based on these findings, Burns, et al (1998) suggest that the learning style preferences within groups of students are at least as great as those between groups. In addition, they question whether learning styles preferences distinguish between higher or lower achieving students. Indirectly, the authors support the need to individualize instruction, by emphasizing that significant differences exist within groups. However, they are ambivalent about using learning styles as a basis for teaching.

Darling-Hammond (1998) emphasizes that poor children are at risk academically because they are least likely to
attend schools that boast effective teachers, small class size, and adequate resources for varied instruction. Some researchers argue that low SES is the single strongest predictor of school dropout. Caldwell and Ginther (1996) propose that low SES, combined with learning styles that are at odds with traditional classroom instruction and places students in double jeopardy for school failure. To explore this hypothesis, they examined the learning style preferences of 73 white and 46 African American elementary school students, all eligible for free lunch.

The results of this study supported the research characterizing high achieving students as highly motivated, persistent, and responsible. The high achievers surveyed by Caldwell and Ginther (1996) tended to be teacher motivated, as compared to a predisposition toward parent motivation found in the study of Ewing and Yong (1992). The distinction may reflect differences in cultural backgrounds between the two samples.

Rita Dunn describes motivation as one of the elements of learning style that is not genetically determined: "Rather it develops as a reaction to each learner's experiences, interest in the content that is being learned, and the ease with which it can be mastered" (Shaughnessy, 1998, p. 143). According to Caldwell and Ginther (1996) a defining factor is that highly motivated students are mastery-oriented; they associate success with effort (rather
than ability) and have an intrinsic locus of control. Students who do not develop this orientation may attribute their failure to master academic content to lack of ability, which further undermines motivation. Like Dunn, Caldwell and Ginther assume that motivation is learned, and advocate classrooms structured to foster self-direction and intrinsic control.

Nunn (1995) studied the impact of an intervention for at-risk middle school students (N = 103), which employed learning strategies designed to promote a sense of control and mastery over learning. The Learning Styles/Strategies Intervention Course was developed to help students at risk for school failure to apply learning styles and strategies. The strategies focused on acquisition, storage, motivation, and expression of competence, along with encouragement to engage in goal-setting and problem-solving with the program's expert teachers. The program was effective in raising the students' grade point averages (GPA) and promoting internal locus of control, supporting Caldwell and Ginther's (1996) assumption that locus of control can be an important factor in academic success. For the purpose of the present study, Nunn (1995) advocates that a similar approach should be implemented at the elementary school level, as a proactive intervention strategy.

Noting that Hispanic students are at particular risk for school dropout, Dunn and Griggs (1993) examined the
learning styles of Mexican American elementary school students \((N = 687)\), comparing them to a population sample of Anglo American students. Differences emerged between this sample of Mexican American students and their gifted peers surveyed by Ewing and Yong (1992), as well as compared to the Anglo sample. In the study of Dunn and Griggs, Mexican American males had the strongest preference for tactile learning, indirectly confirming the low preference for auditory or visual learning of the gifted Mexican American students. The Mexican American students studied by Dunn and Griggs preferred learning in a variety of ways and were strongly peer-oriented, consistent with the interpersonal orientation of Mexican American families.

Female participants in both the Mexican American and Anglo population sample were more motivated and more responsible than their male peers (Dunn & Griggs, 1993). An interesting finding was that Mexican American females showed the highest need for mobility, which contrasts with an assumption that male students have higher mobility needs and underscores the risk of over-generalizing. Although some variations are found with respect to a preference for afternoon or late morning studying, a preference for early morning learning is rarely reported. Dunn and Griggs propose that 11AM to 2PM is the most favorable time for presenting new or complex material to young students.

In a cross-cultural study, Dunn and Gemake (1990) found
that African American, Chinese American, Greek American, and Mexican American students in grades 4-6 tended to be field dependent. Some sources argue that students who are field dependent are disadvantaged in a learning environment where analytic tasks and independent learning are the norm, as opposed to the global and relational orientation of field dependent students (Durodoye & Hildreth, 1995). However, there is some suggestion that students become more field independent as they advance in grades, thus the predominance of field dependence may reflect the children’s young age.

In the study of Dunn and Gemake (1990), significant differences were found between African American students and both Mexican American and Chinese American students, while among gifted children, African American and Chinese American students in the study showed similar learning style profiles (Ewing & Yong, 1992). In the study of Dunn and Gemake, African American students were most similar to Greek American students. The authors stress that there were many within group differences as well as differences between ethnic and cultural groups. Overall, these findings support the rationale that teachers must be prepared to work with a diverse array of learning preferences, reflecting both the increasingly multicultural population and the unique characteristics of each individual learner.

Southeast Asians represent the newest groups of immigrants in the U.S. Consequently, they have been least
studied in educational research. Park (2000) explored the learning style preferences of 738 participants from a larger study, including Hmong, Vietnamese, Cambodian, Lao, and Anglo students in grades 9-12. The study yielded no significant differences according to gender, academic achievement, immigrant/U.S. native status, or ESL placement. However, significant differences emerged in the learning style preferences of the Southeast Asian students as compared to the Anglo sample, and among different Southeast Asian groups.

No significant differences were found for auditory learning style preferences, although Cambodian, Hmong, and Vietnamese students displayed a major preference for auditory learning. Hmong students were the most visual learners, followed by Vietnamese students, with Anglo students the least visual (although other research portrays Anglo students as visual). All ethnic groups showed strong preferences for kinesthetic learning. In fact, a preference for kinesthetic learning has been reported by many studies, yet few classrooms are designed to accommodate kinesthetic learning. All the Southeast Asian groups were favorable toward tactile learning, with Hmong students showing the highest preference. In contrast, the Anglo students had the least preference for tactile learning (Park, 2000).

According to Dunn and Griggs (1993), female students in general have a lower preference for tactile learning,
however no gender differences were found among the Southeast
Asian students with regard to tactile learning or other
learning style preferences.

According to a study of 25,104 students in grades 5-12, students with a preference for tactile learning can be
identified on several variables that distinguish high
tactile learners (N = 3,862) from low tactile learners (N =
4,938) (Gadt-Johnson & Price, 2000). Although the results
are highly general, students with high tactile preferences
also prefer kinesthetic and auditory perceptual modes,
prefer higher intake (of food and/or beverages), favor a
variety of learning strategies, are less responsible, and
are motivated by teachers and a parent figure. The finding
that a preference for tactile learning is associated with an
auditory preference contradicts a popular assumption that
tactile learners do not respond well to auditory teaching
methods. The authors stress the importance of encouraging
students to strengthen their weaker learning styles, noting
that overall, versatile learners tend to do best
academically.

In the study of Park (2000) the most significant
difference between the Southeast Asian and Anglo students
was found in their attitude toward group learning. All
Southeast Asian groups showed some degree of preference
toward group learning, with Hmong and Vietnamese students
exhibiting significantly higher preference. Conversely,
Anglo students showed a negative attitude toward group learning. Not unexpectedly, a preference for group or collaborative learning among students whose cultural backgrounds emphasize communality. Mexican American students display a similar preference for group learning (Dunn & Griggs, 1993).

Snyder (2000) explored the relationship between learning styles, MI, and academic achievement among high school students. Overall, students with higher GPAs regarded themselves as more self-motivated, persistent, and preferring to study alone, consistent with other studies of high achievers. While a general sample reported female students to have a low preference for tactile learning (Dunn & Griggs, 1993), high achieving girls displayed a tactile/kinesthetic learning style and were strong in bodily/kinesthetic intelligence. They also had a global learning style, counter to the assumption that global learners are disadvantaged in the academic setting. For male students high GPA was correlated with spatial, logical, and visual orientation as well as self-motivation and working alone, which was common to all high-achievers.

In the overall sample regardless of GPA, 64% of the students were global learners and an overwhelming 81% were tactile/kinesthetic learners (even for the combined categories of tactile and kinesthetic learning, 81% is higher than reported in most studies). Like other advocates
of learning styles and MI, Snyder (2000) argues that facilitating academic success is contingent upon teachers' awareness of students' learning preferences.

Applying Learning Styles in the Classroom

In an early study, Dunn and Gianetti (1990) explored the impact of matching or mismatching students with a preference for learning alone or with peers to selected instructional strategies. As anticipated, students who were matched with their preferential mode had higher academic achievement and more favorable attitudes toward learning. Those students who indicated no preference learned better working independently than with peers.

In general, research on learning styles contradicts the assumption that students work better with partners or peers. At the same time it appears that lower achieving students prefer working with peers; this may suggest that some students do not do well because their social learning style is not being met (although other factors are usually present). If, however, a majority of students are not favorable toward collaborative learning, teachers must be especially careful in how they organize learning groups. Jeffrey (1994) employed an innovative strategy in which students were first given the LSI and then organized in groups so that no more than two students of one learning style were in each group and no groups had more than one student who exhibited disruptive behavior.
The thoughtful but simple organization of groups according to learning styles enabled students to strengthen their learning preferences while experimenting with the style preferences of their peers. All students were given opportunities to practice leadership skills as well as work cooperatively. In response to critics who argue that cooperative learning for all students fails to consider individual differences, Jeffrey (1994) describes the groups as "a balance of cooperative, competitive, and individual goal structures for all students" (p. 306).

Klavas (1994) accounts how use of the LSI at a failing elementary school in North Carolina yielded significant gains in academic achievement. The most noticeable result was an immediate improvement in student behavior; during three years of implementation the number of discipline referrals dropped from 143 to 14 to 6. The fifth grade class, which had been described as "the worst ever" was transformed into high achievers when schedules were revised to accommodate the students' preferences for afternoon learning. Standardized test scores for reading and math rose steadily with the most significant gains reported for African American students. Both black and white students achieved impressive gains with the learning styles program and performed well above their peers in the state.

In terms of perceptual preferences, the largest number of students were kinesthetic learners, followed by tactile,
visual, and auditory learning preferences (Klavas, 1994). Overall, the research reviewed for this project indicates that students prefer kinesthetic or tactile learning and learn least well through the auditory mode, which is most preferred by teachers and the traditional practice in U.S. schools (Wallace, 1995).

Ebeling (2001) strongly recommends that teachers establish a plan for incorporating learning styles into classroom teaching. The keynote of the plan is to employ a variety of strategies to engage students of all learning styles. The first step in planning a lesson for the whole class, specifically delineating learning objectives and goals. Teachers are encouraged to write down a variety of techniques and methods for teaching the lesson content. Second, teachers think of the plan in terms of specific learners who might not benefit from the lesson design. If there are any, the strategies should be adapted to accommodate their learning needs. In step three, teachers analyze the lesson and one or more specific learners from nine different standpoints (size, time, complexity, participation, environment, input, output, support, and goals). Step four, as in Kolb’s learning cycle, is the application of knowledge to practice. Ebeling calls on teachers to observe how the adaptation works; the plan can be continually refined so that all students will master the lesson content.
Prescott (2001) proposes that teachers must help students become self-directed learners, a process that involves helping students to identify and communicate their learning needs. As a strategy, Prescott recommends using reflective writing, which effectively engaged her students regardless of learning style preferences.

Advocates of differentiated instruction recommend flexible grouping practices (Differentiated instruction, 2000). Students can be grouped according to readiness, interest, or learning style preferences. Tomlinson (2000) points out that groups do not need to be homogenous; indeed, Jeffrey (1994) effectively organized heterogeneous groups so that students could be exposed to a variety of learning preferences. Overall, differentiated instruction can be categorized with learning styles, MI, and brain research as approaches with different theoretical rationales, but which share a common theme of individualizing learning and providing students with opportunities to learn through a variety of materials, strategies, and techniques (Guild, 1997).

Conclusion

Although research on learning styles tends to be inconsistent in identifying characteristics that can be generalized according to academic achievement, ethnicity, gender, or other group classification, one may argue that the prevalence of within group differences is a case in
point for being aware of each student's unique learning needs. One theme, however, appears consistent throughout the research on learning styles; specifically, the learning style preferences of students differ dramatically from those of their teachers. Students demonstrate a strong preference for tactile and kinesthetic learning; only a small proportion of students prefer auditory learning. Conversely, a majority of teachers prefer auditory learning, which conforms to the lecture format of the traditional teacher-centered classroom. The poor academic performance of a substantial proportion of U.S. students may reflect the lack of attention given to learning styles in most teacher education programs.

The study of Horton and Oakland (1997) demonstrates that teachers can be educated to prepare lesson plans that reflect a learning style that may differ from their own. Of particular significance, the most effective lesson was based on the NF MBTI type, which overlaps with the AR style preference. Wakefield (1993) found the AR style prevalent among graduate students in teachers, yet rare among practicing teachers. Instead, the teachers displayed a preference for CS learning, which corresponds to the teacher's traditional role and the MBTI type most often found in managers and administrators.

If teachers do adapt their learning styles to reflect the expectations of administrators, one may infer that they
can also adapt their learning styles to the preferred styles of their students. According to Rita Dunn, a meta-analysis of 42 studies of college students conducted with the Dunn and Dunn model found that students whose learning style preferences were matched by instructional strategies could be expected to score 75% of a standard deviation higher than students whose learning preferences were not met (Shaughnessy, 1998). Although it is a single case study, the report from the North Carolina school yielded impressive results at the elementary school level (Klavas, 1994). Case studies of teachers and schools that have successfully adapted teaching practices according to learning styles or MI clearly show that once aware of their students' unique needs, teachers are capable of flexibility and innovation.

Lawrence (1997) is not convinced of definitive evidence that matching students' learning style preferences enhances learning. However, she believes that a consistent mismatch adversely affects academic achievement and attitudes toward learning, an assumption that tends to be supported by research. One distinguishing feature of high achievers is their versatility in learning through other modalities than their style preference. Low achievers seem to require teaching strategies matched to their learning styles, as well as encouragement for developing intrinsic locus of control. These are the students who are most disadvantaged by discrepancies between their learning style and those of
their teachers.

A critical feature of effective teaching is having high expectations for all students. To fulfill such expectations teachers must let go of the perennial justification for traditional teaching methods that, "It's the way I was taught" and "It's the way I learn" or "It's the way all children learn." The schools of the 21st century demand teachers are open to innovation and new ideas, and who recognize the fact that there will never be a single way that "all children." This fact is especially critical and in accordance with the increasingly diverse multicultural environment of the schools of today and of the future.
CHAPTER III

Methodology

The purpose of this research study was to explore teachers' perceptions regarding the match between teachers' teaching styles and students' learning styles. This Chapter describes the design of the study, the population and sample, the instrument used, the method of data collection, and the method of data analysis.

Design

This research design was a qualitative study whereby diverse elementary school teachers were interviewed. The interview consisted of five open-ended research questions; and each question had one or two subsidiary questions for the purpose of an in-depth interview session with each participant.

The instrument, which was the interview, addressed aspects of teaching and learning that were related to the research questions for this study. The research questions encompassed teachers' knowledge of their students' learning styles, teachers' selections of their teaching styles, teachers' techniques for matching teaching strategies to learning styles, teachers' perceptions toward learning styles, and teachers' incorporations of a learning styles approach that is useful within the classroom.

Teacher participants were profiled and patterns of existing common themes and frequencies emerged, whereby data
was analyzed and reported in a descriptive qualitative research language for the purpose of enabling educators to gain insight into the knowledge and influence of learning styles regarding the teaching practices of elementary school teachers.

The information gained from these interviews was discussed in conjunction with the findings from prior research to determine whether teachers deem it necessary to adapt their teaching practice to different learning styles as advocates of learning styles insist, or whether they prefer other framework for selecting what they consider to be effective teaching strategies. In the midst of a major school reconstruction effort nationwide with the goal of raising the quality of education, insight into the teaching practices of elementary school teachers can be a valuable asset for redesigning the conventional school classroom. This research consists of personal in-depth interviews from diverse elementary school teachers, whereby a descriptive qualitative design is the appropriate means to gather and interpret information.

Michael Patton (1990) contends that "the qualitative-naturalistic formative approach is especially appropriate for developing innovative or changing programs when the focus is on program improvement, facilitating more effective implementation, and exploring a variety of effects on participants" (p. 53). Teaching and learning styles are
crucial agendas whereby process and developments are moving, purposeful, and educational forces in action. Formative evaluation is centered around the process relevant to a new or revised program of instruction; qualitative approaches must appraise the benefits of a curriculum design as it is being implemented (Ornstein & Hunkins, 1988). Gary Shank (2002) notes that "Evaluation is used not to make some final judgement, but to set up and sustain an ongoing assessment of the project, the goals, and the methods used to try to reach these goals" (p. 143).

Population and Sample

The study population for this study was teachers who were currently teaching in grades one through eight. These teachers volunteered to participate in this research for the purpose to explore teachers’ perceptions regarding the match between teachers’ teaching styles and students’ learning styles. The sample population consisted of one elementary pre-K-8 private school in an above average socioeconomic residential suburban Morris County New Jersey school community, whereby five diverse teachers according to grade level, subject matter, assignment, and experience participated. The participants had previous training about learning and teaching styles as part of their professional development prior to the interview. The sample population, also, consisted of one elementary pre-K-8 parochial school in an average class residential suburban community in the
Paterson Diocese in New Jersey, whereby five diverse teachers according to grade level, subject matter, assignment, and experience participated. The participants had previous training about learning and teaching styles of which one hour of Professional Development was conducted by the researcher of this study.

All teachers in the population sample gave their voluntary consent to respond to this research study for the purpose of contributing their perceptions to an already existing collection of research concerning teachers’ perceptions regarding the match between teachers’ teaching styles and students’ learning styles.

*Instrument*

The interview was the instrument used to gather qualitative research from the participants in the research study. The interview consisted of five open-ended in-depth research questions having one or two subsidiary related questions as a follow-up for each participant in the research study groups.

*Question #1*

How do teachers determine students’ learning styles?

a. Do you observe students’ performance to determine their learning styles?

b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?
Question #2

How do teachers select their teaching styles?

a. Do you teach the way you learned in school?
b. Do you teach according to what fits your own teaching style or what is most comfortable and appropriate for you or the students?

Question #3

How do teachers match their teaching styles to the learning styles of their students?

a. Do you have a method of matching your teaching style to students’ learning styles?
b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

Question #4

What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students’ learning styles?

a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?
b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching
strategies to learning styles of students?

Question #5

How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

a. Can you reflect and comment on some or all of these areas mentioned?

The researcher interviewed each teacher participant who volunteered to participate in this research study and who previously signed an Informed Consent Form prior to the interview. The interview took place at both of the sample schools in appropriate meeting locations for both the researcher and the teacher participant for the purpose of privacy. The interview was taped for the purpose of accuracy and spontaneity. Before the interview questions began, the researcher presented the teacher participant with their original Informed Consent Form and asked each participant to acknowledge and identify the document on record. At the end of the interview the researcher asked the participant if they had any further comment before concluding the interview session. Next the researcher identified herself and stated the purpose of the interview. She then identified the participants by a code number 1-10, age, grade level, subject matter, assignment, experience,
degrees, achievements, certificates, and/or awards. Each participant was given the opportunity to receive a copy of their own recorded tape upon completion of the research work and each participant tape was labeled according to their individual code number and the date. All tapes, Informed Consent Forms, and relevant data were stored in the researcher’s home office in a locked file cabinet.

Data Collection

The data for the research was collected through the voluntary investigated taped interview sessions from ten elementary private and parochial school teachers in the research study for the purpose of accuracy and spontaneity. Assurance of confidentiality and anonymity was given to the participants in the study through the Informed Consent Forms. If a participant decided to decline from participation, a replacement candidate would be selected from same school in accordance with the criteria of the research.

Data Analysis

The data for this study was analyzed descriptively. The responses to the research and subsidiary questions were examined for differences and similarities among participants. There was no comparison between private and parochial school teachers or between teachers in different grades, subjects, assignments or with different credentials, except as a reference point for exploring any potential
influences that might be related to these factors. Participant teachers were profiled, whereby common frequency patterns and themes were analyzed, categorized, and discussed accordingly.

The findings from this study are discussed in conjunction with the literature reviewed in Chapter II. A synthesis of findings from the present study, combined with prior research on learning styles and related topics, are presented in the conclusions and recommendations section in Chapter V.
CHAPTER IV

Findings

Introduction

The purpose of this research study is to explore teachers' perceptions regarding the match between teachers' teaching styles and students' learning styles. This chapter focuses on the participants' profiles and the actual transcribed interview sessions with the ten elementary school teacher participants.

The profile of each teacher participant reveals age, gender, race, experience, school grade, subject, degree, students in class, and certifications. This information is reported in descriptive written qualitative language and, also, by table format. Tables 1-10 identify and match with each of the individual participants' profiles, while Table 11 represents the summation of all of the participants' profiles.

The interviews were held with the ten elementary school teacher participants from both private and parochial schools after written consent forms were signed and acknowledged. Each interview was inclusive of the five research questions and related subsidiary questions. (See Appendix H)
<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>34</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
</tr>
<tr>
<td>Experience</td>
<td>6 months</td>
</tr>
<tr>
<td>School</td>
<td>Private</td>
</tr>
<tr>
<td>Grade</td>
<td>2</td>
</tr>
<tr>
<td>Subject</td>
<td>Self-Contained</td>
</tr>
<tr>
<td>Degrees</td>
<td>B.A.</td>
</tr>
<tr>
<td>Students</td>
<td>9 in class</td>
</tr>
<tr>
<td>Other</td>
<td>Special Education (Certification)</td>
</tr>
</tbody>
</table>

Participant 1 is a 34-year-old white female, first year second grade classroom teacher in a pre-K-8 private school. She has 9 students in her self-contained classroom. Her teaching experience includes 6 years of being a substitute teacher and an instructional classroom aide at the elementary level. Her educational background encompasses earning a B.A. degree in both elementary education and in history. She, also, holds a certification in special education.
Table 2

Participant Profile #2

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
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</tr>
<tr>
<td>Gender</td>
<td>Female</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
</tr>
<tr>
<td>Experience</td>
<td>26 years</td>
</tr>
<tr>
<td>School</td>
<td>Private</td>
</tr>
<tr>
<td>Grade</td>
<td>3</td>
</tr>
<tr>
<td>Subject</td>
<td>Self-Contained</td>
</tr>
<tr>
<td>Degrees</td>
<td>B.A. and M.A.</td>
</tr>
<tr>
<td>Students</td>
<td>3 in class</td>
</tr>
<tr>
<td>Other</td>
<td>Credits toward M.S.</td>
</tr>
</tbody>
</table>

Participant 2 is a 53-year-old white female, third grade classroom teacher in a pre-K-8 private school. She has 3 students in her self-contained classroom. Her teaching experience is 26 years of teaching in total, whereby approximately 75 percent is in secondary education and 25 percent in both elementary and middle school education. Her educational background encompasses earning both a B.A. and an M.A. degree in English and in theater. She, also, holds credit towards an M.S. degree.
Participant Profile #3

<table>
<thead>
<tr>
<th>Question</th>
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</tr>
</thead>
<tbody>
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<td>Age</td>
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<tr>
<td>Gender</td>
<td>Female</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
</tr>
<tr>
<td>Experience</td>
<td>2.5 years</td>
</tr>
<tr>
<td>School</td>
<td>Private</td>
</tr>
<tr>
<td>Grade</td>
<td>1</td>
</tr>
<tr>
<td>Subject</td>
<td>Self-Contained</td>
</tr>
<tr>
<td>Degrees</td>
<td>B.A.</td>
</tr>
<tr>
<td>Students</td>
<td>9 in class</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Participant 3 is a 27-year-old white female, third year first grade classroom teacher in a pre-K-8 private school. She has 9 students in a self-contained classroom. Her educational background encompasses earning a B.A. degree in elementary education and in English.
Table 4

Participant Profile #4

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
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<td>Gender</td>
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<td>Race</td>
<td>White</td>
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<tr>
<td>Experience</td>
<td>20 years</td>
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<td>School</td>
<td>Private</td>
</tr>
<tr>
<td>Grade</td>
<td>6-8</td>
</tr>
<tr>
<td>Subject</td>
<td>Social Studies, Mathematics</td>
</tr>
<tr>
<td>Degrees</td>
<td>B.A.</td>
</tr>
<tr>
<td>Students</td>
<td>Different classes</td>
</tr>
<tr>
<td>Other</td>
<td>School Director</td>
</tr>
</tbody>
</table>

Participant 4 is a 55-year-old white female, grade 6-8, subject area social studies and mathematics, middle school teacher in a pre-K-8 private school. Her teaching experience includes 20 years of teaching. Her education background encompasses earning a B.A. degree in education. She also serves as a director of the pre-K-8 school.
Table 5

Participant Profile #5

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<th>Response</th>
</tr>
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<td>Gender</td>
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<tr>
<td>Experience</td>
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</tr>
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<td>School</td>
<td>Private</td>
</tr>
<tr>
<td>Grade</td>
<td>5-8</td>
</tr>
<tr>
<td>Subject</td>
<td>Science, Mathematics</td>
</tr>
<tr>
<td>Degrees</td>
<td>B.A.</td>
</tr>
<tr>
<td>Students</td>
<td>Different classes</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Participant 5 is a 38-year-old white female, grade 5-8, subject area science and mathematics, middle school teacher in a pre-K-8 private school. Her teaching experience includes 15 years of teaching. Her educational background encompasses earning a B.A. degree in education.
Table 6

Participant Profile #6

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<td>Race</td>
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<tr>
<td>Experience</td>
<td>8 years</td>
</tr>
<tr>
<td>School</td>
<td>Parochial</td>
</tr>
<tr>
<td>Grade</td>
<td>6-7</td>
</tr>
<tr>
<td>Subject</td>
<td>Language Arts, Literature, Religion</td>
</tr>
<tr>
<td>Degrees</td>
<td>B.A.</td>
</tr>
<tr>
<td>Students</td>
<td>Different classes</td>
</tr>
<tr>
<td>Other</td>
<td>Teacher of the handicapped (Certification)</td>
</tr>
</tbody>
</table>

Participant 6 is a 44-year-old white female, grade 6-7, subject area language arts, literature, and religion teacher in a K-8 parochial school. Her teaching experience includes a total of 8 years of teaching in grades 4-8 and in the same subject areas. Her educational background encompasses earning a B.A. degree in education and in psychology. She, also, holds a certification for teaching of the handicapped.
Table 7

Participant Profile #7

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<tbody>
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<td>Age</td>
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<td>Experience</td>
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<td>B.A.</td>
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<tr>
<td>Students</td>
<td>18 in class</td>
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<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Participant 7 is a 43-year-old white female, fifth grade classroom teacher in a K-8 parochial school. She has 18 students in her self-contained classroom. Her teaching experience includes ten years of teaching in total, whereby 2 years are in grade 5, and 8 years are in pre-schooling. Her educational background encompasses earning a B.A. degree in English and in education.
Table 8

Participant Profile #8

<table>
<thead>
<tr>
<th>Question</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
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<td>Gender</td>
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<td>Race</td>
<td>White</td>
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<tr>
<td>Experience</td>
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<td>School</td>
<td>Parochial</td>
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<td>Grade</td>
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<td>Subject</td>
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<td>Degrees</td>
<td>B.S.</td>
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<tr>
<td>Students</td>
<td>21</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Participant 8 is a 26-year-old white female, first grade teacher in a K-8 parochial school. She has 21 students in her self-contained classroom. Her teaching experience includes 3 years of teaching and several months of substitute teaching. Her educational background encompasses earning a B.S. degree in elementary education and in psychology.
Table 9

Participant Profile #9

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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<tbody>
<tr>
<td>Age</td>
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<td>Gender</td>
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<tr>
<td>Race</td>
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<tr>
<td>Experience</td>
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<td>School</td>
<td>Parochial</td>
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<tr>
<td>Grade</td>
<td>3</td>
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<tr>
<td>Subject</td>
<td>Self-Contained</td>
</tr>
<tr>
<td>Degrees</td>
<td>B.A.</td>
</tr>
<tr>
<td>Students</td>
<td>21</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Participant 9 is a 26-year-old white female, third grade teacher in a K-8 parochial school. She has 21 students in her self-contained classroom. Her teaching experience includes 3 years of teaching. Her educational background encompasses earning a B.A. degree in elementary education.
Table 10

Participant Profile #10

<table>
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<th>Question</th>
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Participant 10 is a 45-year-old white female, grade 6-8 subject area mathematics and science teacher. Her experience includes 25 years of teaching, whereby 22 years are at the college level and 3 years at the middle school level. Her educational background encompasses earning both a B.A. and an M.A. degree in business education. She, also, holds certifications in general business, secretarial subjects, accounting, data processing, and supervision.
Table 11

Summary of Participants Profiles

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Summary of Profiles

A summary table of all participant profiles is shown in Table 11 whereby each of the profile categories are recorded accordingly. The results of this summary table of participants' profiles indicates the average of each specific profile category in the area of age, gender, race, experience, school, grade, subject, degrees, students, and other information.

1. The average participant age is 39.1 years old.
2. All participants are females and white.
3. The average experience is 11.4 years.
4. Five participants are from a private school and five participants are from a parochial school.
5. Two participants teach first grade. One participant teaches second grade. Two participants teach third grade. One participant teaches fifth grade. Four participants teach more than one grade between grades five through eight.
6. Six participants are self-contained teachers. Four participants are special area subject teachers.
7. Seven participants have earned Bachelor of Arts degrees. One participant has earned a Bachelor of Science degree. Two participants have earned Masters of Arts degrees.
8. Two participants have 21 students in class and two participants have 9 students in class. One participant has 18 students in class. One participant has 3 students in
class.

9. Three participants hold one or more certifications. One participant is a school director. One participant has extra credits towards a Master of Science degree.

Presentation of Interviews

Participant #1

1. How do teachers determine students' learning styles?
   a. Do you observe students' performance to determine their learning styles?
   b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: Okay. What I think you really have to do, and especially like in the smaller class, I am able to do this more -- with more opportunity than someone having a larger class, is observation. You need to be teaching with different learning styles and observing what they're taking in. And then what we can do at the end of the week is do comprehension tests and see where they fell in, what type of learner they are, what may be their strong pursuits. We do ERBs which does give us the idea that they're auditory learners and how their reading comprehension is. But that's kind of used more like a benchmark. So it can change from year to year and I think you have to realize that each student's learning style can also change as the year goes on. So definitely I use observation. And what I
do, is I personally work independently with each child so I can get more of an idea where they’re falling; what type of learner they are.

Q: That’s very good. Do you have anything else that you’d like to add to that? It sounds like you’ve given me a very interesting outline of what you’re doing and some depth. Do you want to give me any specific examples?

A: Okay. Basically, one of our students we know was having unique problems and because of the behavior he wasn’t able to finish work. And what we determined was that he wasn’t finishing work because he was an auditory learner. So being an auditory learner, what we needed to do is, in turn, get him to control himself. For him what worked best was more direct instruction which now with today’s thoughts and everything you get away from direct instruction. I do have children in my class that really need the direct instruction. Not always the kinesthetic and not always the tactile learning. They really need it direct, they need to hear things. Sometimes by having a child take a book instead of just reading to themselves, I’ll have them come in the back and they’ll read it with me. This way they’re hearing it for the auditory processing.

Q: So you’re really adjusting it to a student’s level.

A: Yes. Definitely.

Q: Academically, socially, whatever you have too.
2. How do teachers select their teaching styles?
   a. Do you teach the way you learned in school?
   b. Do you teach according to what fits your own
teaching style or what is most comfortable
   and appropriate for you or the students?

A: I just remember going through college because I just
recently went back to college for that. We did the surveys.
We did everything in class, pick out what you are, see if it
falls in with what you thought you were, what can you
handle, can you handle children’s speaking in your class.
Just you’re whole personality for teaching. And I always
believed that even if I have a way that’s easier to teach
for me, if it’s maybe, you know, direct instruction or
process learning, that you have to teach it in each way.
So even though if I have a learning style, I really need to
adapt my learning styles to -- my teaching style needs to
adapt to their learning styles.

Q: So they’re the priority, the students is what you’re
saying.

A: Oh, definitely. Definitely.

Q: So my second question was, do you teach the way you
learned in school and you answered that. And do you teach
according to what fits your own teaching style or what is
most comfortable and appropriate for you or the students.

A: No. You have to listen to the students first. You’re
teaching for them, not for yourself.
Q: Okay. Can you give me any specific examples on that.
A: Well, basically, when I went through school and everything, I wasn’t taught process learning. So that was new for me. The way I was taught was normally when you went through school, it was always direct instructions; we didn’t do process learning. And going through college I really came to -- using it with my different classes, leader process learning where -- instead of telling them how to do something, you’re giving them a problem and they find different ways to solve it. And you go over the strategies on how they solve it.

3. How do teachers match their teaching styles to the learning styles of their students?
   a. Do you have a method of matching your teaching style to students’ learning styles?
   b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

A: Okay. You adapt to everyone. You have to adapt to everyone and be flexible. This is what I told you like with my one student how, you know, he needs to read out loud. So he would come back with me and he’ll read. Some of my other students may need that extra one-on-one attention to explain directions and read it to them in a different way because they may not understand the way something is worded in text.
You have to be adapting. If something is going on during the year, an event, a holiday, recently, the SuperBowl. We did poems geared to the word, football, and we play up on that a little bit so everyone has a subject that they’re involved with. We’ve done fairy tales and everyone is able to pick out what type of fairy tale and from what country they want.

Q: So that’s basically, academically and interest related.
Q: And that can relate to further motivation too, you’re saying.
A: Yes.
Q: And they’re learning.
A: Yes.
Q: Okay. Is there anything else on that?
A: I just think it’s really important that you do find a child’s interest. You can do a little bit off a questionnaire in the beginning of the school year, you can do your typical what’s your favorite color, what’s your favorite sport. But as you get to know each child, and I’m very much on -- we don’t have official class meetings, but a lot of times I’ll sit my class in a group and we’ll go around and I’ll pick a subject and we’ll do a journal writing on it. The journal writing, the entire class will read to the other students. One that we recently did is if you were in second grade and today you had to choose what
job you would have to do for the rest of your life. What would you choose and why? It brings out a lot of things about the personality of the child and it is a small class, so they really do know each other really well. But you'd be surprised what they come out with, things that they may not have known, which always makes it interesting for the next person to hear, and maybe they have something in common they didn't really realize they have in common.

4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students' learning styles?

   a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

   b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

A: Okay. Kind of what your question does, it falls in the line with what I would say homogeneous and heterogeneous grouping. What I attempt to do in my classroom is I do the heterogeneous grouping with my direct instruction or my process learning with my entire class, then I see my class as some are falling behind and some are extremely ahead. Now I could do heterogeneous grouping then again to do my
reading groups and my math groups. But what I actually do, because then I feel like I could bring the child up to a higher level in each case, is that I do more independent work with them and we have times that we do independent work for children at higher math, children at lower math. I do separate out my reading groups, even though it’s not the norm right now. But what I can do is I can bring -- you know, the children aren’t getting bored then. The children at the higher level aren’t bored; the children at the lower level are achieving better because we can concentrate more on the phonics that they may be missing or --

Q: So is this sort of like the whole language approach?
A: No, no. Definitely. But I just found a few of my students do not have a strong phonics base and that’s where they’re missing the reading because they can’t analyze the words, they’re not comprehending. The type of student that would take a passage and maybe skip over a couple of words or sound a word out to the wrong word, so they’re kind of filling in the blanks. So even though it’s not the prescribed way, I do do homogeneous groupings for reading groups and I’ve seen both groups doing better. But what we do is, we don’t just have reading groups that way, we come back and we read out loud together, we play different games during reading. And it’s -- we’ll review information through games. One of the things we did is we were doing homophones recently. So we played a game where they were
all set up in teams of two, and they had a certain amount of time to write down homophones for a certain type of word. And they learned it because they were bouncing ideas off of each other, plus they’re cooperating and learning to work in pairs. Which believe it or not in a small class, I think is harder than a large class to break them apart.

Q: Yes, that’s true.
A: And have them work as teams because they all have their own personalities that are strong and some that are more passive. So I’ve had a challenge with that more than I ever had in a larger classroom. That’s hard.

Q: How many students are in your classroom?
A: Nine. So it’s nice. We can do many, many things with them and that’s why I really had an opportunity to work with them one on one, a lot more than I would anywhere else.

Q: So that enables you, probably, to group what you’re doing and interest wise and motivation wise a lot.
A: Oh, definitely. Definitely.

Q: So you did tell me about their motivation, their cooperation, their academic achievement and their success. And if there was anything negative -- did you ever experience anything like boredom or misbehavior if there wasn’t a match without probably remedying it.
A: Oh, definitely. Two students right now actually use -- we’re using behavior charts. Parents in the class are very proactive, they’re involved with the whole process. What
we're doing is, you know, we -- I don't just give them a star, I give them a smiley or an unhappy face, what we do is we have a chart and I debrief with all the students at the end of the day and we talk about how did the day go. They write down, you know, this was good about my day, this was maybe things I could work on, this was a problem. And then what they do is they go home and inform their parents and they talk about it. And there are parents at home that are keeping the token chart. Because we felt that it was like a match. Instead of me always being the negative one, the parents would be the negative person, coming from home.

Q: I see.
A: So they can earn their rewards. It might be a movie out.

Q: So the parents are giving them the rewards, in other words, not from you?
A: Yes. Yes.

Q: Okay.
A: But based on their behavior in school and their behavior at home.

Q: That's like a reversal.
A: Yes. It's taking in the whole daily behavior instead of just saying, well, in school you can act this way, but at home you may act a different way. We're trying to tie everything together. And that seems to be working
wonderfully. The other one recently, he -- I started to pinpoint that I think he visualizes himself as the person who has to bring the jokes to the classroom. What I’m going to start doing with him is we’re going to have a formal period where, okay, this is the time for today where you can tell the class a joke. And what I said to the parents is why don’t we have him take these jokes and write about them. If he sees something funny, let’s keep his humorous journal, things he finds humorous, write them down and -- each item with his parents. He’s a creative child, so maybe put him on a tape recording, which I don’t like, or like have him videotape himself to kind of -- instead of being distracting in the classroom, have him have a focus for it and like contain it somewhere.

Q: Direct his energy.
A: Focusing it.

Q: Yes, that’s very interesting too. It sounds very interesting. It’s exciting. I’d like to see your class sometime just to see how it works.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

a. Can you reflect and comment on some or all of these areas mentioned?
A: Basically, it starts from the beginning with your first lesson plan, you plan out how you’re going to do it. I mean, basically, when I teach a lesson I feel that I need to know everything about that subject or as much as I can because I don’t want the children asking me a question, and if they do ask me a question I don’t know, we always go over to the computer and try to look it up or go to the resource book and try to find the answer because I don’t want it being out in limbo. But when I try to write lesson plans, I try to gear it towards each style and I write that out in my lesson plan. I guess we’re going to gear it to the auditory learner, obviously there’s going to be a part where it’s either a choral reading or someone reading out loud, taking turns, or doing something as such. We also have children in my class that are much better independently reading on their own. So I normally try to work a time into that. I actually do this like every day, just with all our activities.

Q: So you must do an awful lot of planning in this.

A: Yes. And it’s actually -- you can even notice like if you really get to know your children in your class, you know, sometimes there may be days where they’re tired and you really need -- I feel the ability to be able to change, like in the middle of a lesson. Okay. In the lesson, they’re getting tired here or maybe they don’t have voices that day. Maybe they were out yelling at a basketball game
or something. You need to have the ability as a teacher to be able to make that change.

Q: Right. So you really have to apply psychology and --

Q: It takes a lot of energy.
A: Yes. Just like sometimes what I’ll do is instead of doing, you know, -- even have them act it, like times during the day I’ll just have them put down their pencils, stand up, and they laugh at it, but we do the chicken dance. We do a modified chicken dance, like doing some stretch and get them warmed up. What I’ve done for -- just to get out their energy also is when I’m teaching them at the same time, many of them are playing baseball or softball right now and I actually coach softball. Not here. I’ll have them in gym, run the gym as if they were running on the lines of the softball field and from different points. And we talk about how it’s a rectangle and --

Q: Making everything meaningful to them.
A: Yes. You have too. You have too.

Q: That holds their interest and probably gets them more interested.

A: And what we do is something -- somebody brings up in the news and it’s related to what we’re doing, then we’ll talk about that. You know, you can’t -- what’s nice is my schedule, I can be flexible and it’s, you know, some thing denotes more time, because they brought it up, we’ll spend
more time on it. And I’ll just shift my schedule around a little bit and we’ll do something in a different way.

Q: And do they -- basically, are they a cooperative group, your class, when you’re doing this type of teaching?

A: Yes, they are. The few behavior problems are working out fine. They’re very cooperative. We just have some people that are distractable. That’s the only difficulty in the class. It’s a very, very cooperative group. Attentive, listening. We’re working more on cooperative skills because we do have a class with very, very strong, independent personalities. So what I’m actually trying to do with the class besides the classroom is I want to -- looking into taking them to a camp, an overnight camp, and do a team building and team leadership experience.

Q: That’s very interesting.

A: Because I think they need that because our school, where it is different, is they will stay in the same class together. And they will be here for several years.

Q: Oh, they stay together.

A: Yes. It’s really important that they kind of -- the peers that they set up among themselves, because one is a strong personality and the other is going to rebel from it. We kind of break this down so they can work together.

Q: I see. So it is one big family then.

A: Exactly. They see each other more than their own family.
Q: Couldn’t possibly change? Is there like different -- more than one second grade where they --
A: No. No. We don’t have more than one grade right now.
Q: They really can’t change.
A: They can’t change. And it actually works for the teacher, myself and the other teachers, they’re coming in, they kind of know who you can like group together, who you can’t. But I kind of put pressure on it to make sure everybody can work together. And it’s nice because they know each other. Like a lot of times you’ll see them like helping each other, like if one student does have difficulty reading, they’ll help out that one student.
Q: That’s very nice.
A: They’re very like empathetic for each other which in other schools I’ve taught at, because they’re a different group every time and in that period of settling down -- we don’t really have that period of settling down.
Q: No, because they know each other.
A: Exactly.
Q: Well, you’ve given me a very broad spectrum and it was very interesting talking with you.
A: Thank you.
Q: And I learned a lot and I really would like to see the class someday, if possible. And I thank you very much for this interview, for your time. Do you have anything else you’d like to say?
A: No.

Q: Okay. Thank you very much.

Participant #2

1. How do teachers determine students' learning styles?
   a. Do you observe students' performance to determine their learning styles?
   b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: Well, being in a small school like this is a great advantage because we can discuss with the previous year's teacher what they think works best for the students. Because there are so few students, we have the opportunity to give them a lot of one-on-one work which I could not do when I taught in public schools and had 25 and 30 kids in the class; it's really impossible to do that. If I wanted to do it in a very large setting in a public school, and I would do this normally anyway, try different methods of approaching subject matters. So I would always try to, if I'm teaching say a story or I'm teaching a section in science or a section in social studies, even in math, I try to bring in as many different techniques as I can. So I won't just read a story, will also maybe do something with music and all types of social studies and the math and some science in with the story, but when you have a number of kids, you're doing that to the overall class. You really
can’t tailor those things for the individual students because there’s just too many of them. Here, we can tend to do that. We don’t always, but I always draw the different elements into just about everything that we teach. So it’s not just, here, we’re going to read this story, we’re going to talk about it, and now we move on. No. We read the story in a literature book or in one of our magazines and then we do something else with it. So we’ll play or we might play a song that might carry through the same theme. That would tailor it to the needs of a student there who is very musically inclined or picks things up because sound is more important to them and is easier for them to understand than the words.

Q: So you observe a lot, in other words, to pick up their learning styles.
A: Yes.

Q: And you do this through observations. Do you actually ever give them like a formal survey or a questionnaire, do you try to do that?
A: Not in third grade.

Q: Not in third grade. But you conference --
A: The kids will tell you, I mean, I might informally find out do they tend to lean more in artistic needs or musical needs or are they very active students who might want to dance something out or act it out. And so we do that on an informal basis. But no, in third grade I think they’re not
quite attuned to what their learning needs are.

Q: So you have to really be very perceptive.
A: Yes. And we can do that when we have few students.
Q: Yes. And how many students did you say you have?
A: I only have three this year. I was supposed to have ten, but seven of them ended up moving over the summer.
Q: That’s like private tutoring.
A: Yes. So it’s very nice. I mean, one disadvantage is that you lose a little bit of the group dynamic thing. But one advantage is that there’s so much, I can take them out of the room a lot. For example, we were learning parts of speech. We would go on noun and verb scavenger hunts and I could walk them through the entire school. I wouldn’t do that if I had ten kids. In the spring I’m going to take them across the street to the beach and we’ll be able to do things that way, maybe drawing numbers in the sand. I would hesitate to do that if I had ten kids. It’s nice.
Q: So then you’re saying you have more flexibility because it’s such a small number.
A: Yes.
Q: Let me go to my next question and we’ll come back to that in some of my other questions.

2. How do teachers select their teaching styles?
   a. Do you teach the way you learned in school?
   b. Do you teach according to what fits your own teaching style or what is most comfortable
and appropriate for you or the students?

A: Being 53 years old, which means that my schooling was in the '50s and '60s, no, I am not teaching according to the school styles then because the teaching style then was everybody sits in rows and everything is teacher oriented and all the students do is raise their hands and answer questions. No. I will say that there were a lot of advantages. I think we have been too quick to write off that style in terms of discipline. And there is very little discipline in the public schools today, in general, in our society. There is very little discipline. Self-discipline or outer imposed discipline. So I won't write those styles off completely. They definitely have advantages to them. I think some of the rote memorizations that we were forced to do were very good. And I'm beginning to see the difference in my own daughters, I have a 17-year-old and a 15-year-old at home, and because they're doing, "more fun things" in the classroom which would be great if you weren't sacrificing some of the more unfun rote skills to go along with it. They are definitely not learning as much as I did when I was in school.

Q: You're saying because they didn't have a constraint on them or discipline.

A: That's right. That's right.

Q: Too much doing what they want.

A: Yes. I think what you have to do is find a happy medium
between the two. There are times when, yes, you need for
the teacher to stand in front and the kids to keep their
mouth shut and pay attention.
Q: And would you say that’s probably more possible -- it
has to be more structured when you have more students, is
that what you’re saying?
A: Of course.
Q: You have more flexibility because you have three
students.
A: Yes. Yes. Now even when I was teaching, though, in the
public schools, I would try to do a lot of work in groups.
We did almost all of the unfun things like grammar and
vocabulary and stuff like that. I always did those in
groups because the kids did enjoy them more, but I was still
insisting on the same quality of learning the material.
So I won’t write off those early days. We definitely
learned more than kids are learning.
Q: You learned it from the past.
A: Yes. There is a time for those rote skills. But it’s
also, I think, makes it more enjoyable when you can do these
other techniques. So in that sense, I was always trying new
techniques which I have been doing for over 20 years and
every year I will change. I’ll say, well, I didn’t like
exactly how that went last year, let me try it this way. Or
I did like what I did last year, but let’s try to build on
that. Because to me the most important thing is education
and turning kids into life-long learners.

Q: That's a very good statement.

A: And you don't do that if they're bored to death.

3. How do teachers match their teaching styles to the learning styles of their students?

   a. Do you have a method of matching your teaching style to students' learning styles?

   b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

A: I think I pretty much covered that, but one thing I do, and especially here where you have only three students, is I try to pick things that I know they're specifically interested in. And we'll add that to the mix as well. So if I only have three students and I know that one boy is really interested in dogs, and he has some show dogs at home and we used one of his dogs in our play this year, so I'll try to tailor some things to dogs. Whether it's number problems we're doing, you know, how many dogs were there in the show ring or whatever. Or, for example, in March we'll be starting the book Stone Fox, it is a dog sled race. But what we do is we follow on the computer, we log onto that specific site and we will follow it day by day, the progress of the race. He'll be very interested in that and my other two kids, the two girls, are very interested in
environmental things, so we’ll log onto things there. What kind of animals would they see along the way out in the Alaskan wilderness. So, yes, that’s the advantage of having small classes because you can do little different things.

Q: I’m still amazed at that number.

A: Yes. At first I was shocked and wasn’t sure how things were going to work. And as I said, you do lose a little bit of the group momentum.

Q: But you can really do things together.

A: But what they’ve done is to make themselves one group. I thought this is the perfect time to do a lot of individualized work so that they can move at their own speed. They actually preferred not to do that. They loved working together, the three of them just have formed a very tight knit group. A so one of the girls who’s a little slower in math than the other two, I gave her the option of working at a slower pace and she didn’t want any part of it. She wanted to work with the group even though it might be a little bit more of a struggle for her. And the group dynamic is good because they help her along and she forces herself to move more quickly. So it worked well that way.

Q: You have a perfect small example.

A: So instead of having three groups, I have one group.

Q: One grouping. You can get very much into details with that one group.

A: Yes.
4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students' learning styles?
   a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?
   b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

A: Well, again, I think I touched on some of that.
Q: You've covered a lot of these actually. Do you want to comment a little more?
A: Once more, I think in large classes -- here's the thing, I was a post-war baby and so in the suburb that we lived in outside of Pittsburgh, the suburbs were booming, I mean, they were just expanding exponentially and they couldn't built the schools fast enough. So in my first and second grade I was in an old 150-year-old four-room schoolhouse. But when I went to third grade, they had by that time built a school already which was completely outdated before the last brick was even put in because the population was growing so rapidly in the suburbs. I had 60 kids, more than 60 kids, in my third grade class. What they did was they put two teachers in there, but they
weren’t dividing the class up because there was no room to do that. So it was just 60 people from one end of the room to the other, one behind the other in row after row, and there wasn’t a sound in the room because those were the days where kids were expected to have some discipline and where teachers kept discipline. You were actually able to do that in those days. Today can you imagine 60 kids in a modern classroom, it would be absolutely bedlam. And because kids are so undisciplined today. Not all kids certainly, but the majority of them. So I think I lost my train of thought here. Yes, I know what point I was trying to make. So when I hear politicians say that class size really doesn’t matter, they don’t know what they’re talking about. It didn’t matter back in the good old days because we all learned, and some of us learned really well and some of us lagged a little bit behind and really couldn’t get the individual help, but we kept pushing because there was no choice, there were 60 kids in there, there was not going to be a teacher who was going to be able to give you individual help, and there were a handful of kids who just fell through the cracks because they weren’t getting any help at all. There was nothing a teacher could do with that many kids. What I found in this school is how very, very important small class sizes are. And it’s too bad that we don’t understand that here because the rest of world understands. I lived for year in Norway, I probably should have told you
that as background. I went on an exchange program to Norway for a year back in 1969. And I went to a high school there and I never knew what education was until I left this country. And I'm sorry to say, because I left when I think I was 19 years old, and I left, I was probably the typical American thinking that America was the best country in the world and the way we did everything, we knew the best way to do it, and after that year abroad, and I did a lot of traveling during that year, I also spent a month in Finland living with a family there and did a lot of traveling in western Europe. I've never felt the same about this country since, I'm sorry to say, particularly with education. They understand and they have understood for many, many years, all of the things we are just starting to do here now. How important class size is if you want to have the most well educated population you have to be able to reach the learning needs and styles of individual students. They have big populations too. Norway only has 3 million people, but then they have that many less classrooms. But what the difference is is the value put on education. We don't value education here and really we never have and I think we fool ourselves into thinking we do. If we really truly valued education, we would not have classrooms in the inner cities that are being taught in bathrooms and broom closets. We would not have kids being taught where the ceiling is falling down on them.
Q: You think if we fix those problems --

A: We have to pour the majority of our wealth into education and we don't. We pour the majority of our wealth into the military, they don't, in western Europe, they don't. Teachers are like gods in every place in the world except here. Even 200 years ago, they started out as little poor schoolmarm's and that's the way they were always thought of. They have national standards and in those national standards they have maximum class sizes nationwide. Because they recognize the importance of low class size in order to meet those individual needs of students and for teachers to be able to teach those individuals.

Q: Well, you gave me a lot of interesting background. We might be a little bit off the track here.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

a. Can you reflect and comment on some or all of these areas mentioned?

A: Again, I think I probably touched on this today. Well, I gave you the example of tying in the student interest to this novel that we're going to teach. In math today one of the students is very interested in -- her family rescues cats and dogs, unwanted cats and dogs. And so I tied that
into the math problem. Which then immediately got her interest in that problem. Now because the other two also like animals, it might not be as personal to them, but they still love animals, so, again, they like being able to play around with those. And then what I’ll do is I’ll have them create their own problems to test each other. So we do that with the three students where student one will give her problem to student two and student two to three and three to one. So we go around in the circle and they make up their own problems and they make them up according to their own personal interests.

Q: So a lot of this is very flexible.
A: Yes.

Q: You do a lot of flexibility.
A: Oh, yes.

Q: Like you have a plan set in your mind, you’re saying, that would be flexible day-to-day or hour-to-hour.
A: Oh, yes. I’ll just make it up right on the spot. If I see that they’re not paying me as close attention, perhaps, then I’ll just switch the problem. So instead of we see a problem on the paper that says 9 plus 5, so instead of 9 plus 5, it’s 9 dogs and 5 cats. That automatically wakes them up and it gets them more interested. And then it’s a lot of fun for them when you ask them to make up their own problems using items or people or animals or things that they’re interested in.
Q: Do you give them a choice of auditory or written or hands-on participation?
A: It depends. Yes. But it has to be planned ahead of time, obviously. Because you have to get the equipment ready. But, yes, I will do that. Especially when we do special projects. I’ll give them a choice, you can do an art project or you could do this project -- I’ll give you a specific example. We just finished our space unit, space science, and they’re going to have a project that they have to do with it. And I give them choices in the project. So you can do a poster or you can design maybe a stamp for NASA or something. So for people who are interested in art. For somebody who’s very mechanical and loves to work with their hands, they can make a space rover or a martian dune buggy, they can actually build one from parts. And I’ll tell them you can put these parts together and you can do that.
Q: So they sometimes have a choice.
A: Or I’ll tell them they can write a poem or they can create a piece of music, sing to it, because we have a couple who play musical instruments, so they might want to do it that way. So, yes, I give them a lot of opportunities. But those are mainly in follow-through projects that we would do.
Q: In other words, are you trying to encourage what their style is or do you address all the styles and they have to try a little of each?
A: No, they can pick. If I'm doing it that way, then I would have them pick the style that they like the best, what they're most interested in. And usually by the quarter of the way into the year you kind of have a pretty good idea of who's going to choose which one of those things. But I give an option out there to meet all those various styles. Now it's hard to do that on a day-to-day basis with individual work that you're doing. If we're reading a story, we kind of have to do it together. But I'll vary it in the sense of maybe I'll read a little bit or they may read it. Then later on we can do something creative where they can turn it into a play, they can turn it into dialogue or they can write a poem about it or music about it or something.

Q: Well, thank you. Do you have anything else to add? This has been very interesting.

A: No. I think it's just -- I don't know how to put this. So many things that I'm reading now, the techniques and strategies that people are using I used years ago when I first started teaching before they gave it a name.

Q: Changing the names, that's what you're saying more or less. Different things, but they're basically the same ideas.

A: I did these before they ever came up with these names and strategies. And I think the reason I did it was because when I became a teacher, I asked myself what was it that I
would have liked if I had been in school that I didn’t get. And I think the whole way through high school I thought about this all the time. Whenever a teacher would give us something to do, my wheels were always turning, I was always thinking, how would I have done this if I were the teacher. Which is probably a good indicator that I was going to be a teacher because that’s really what I was thinking about. When I became a teacher, I approached it that way. I said, this is the way my teachers always taught this. I was an English teacher at first, so I would say, well, this is the way my teacher always taught Hamlet, but I remember thinking if I ever became a teacher, how would I teach it? And that’s how I started teaching. I was doing strategies before they ever had a name for these strategies, before you ever heard about people coming up with these things.

Q: And you’re background is very varied and you have a lot of different experiences and you went from 60 students to 3 students, so you are very diverse.
A: Yes.

Q: Thank you very much.
A: I have a musical background also, most my family are professional musicians, so I always try to bring that into my things. And I would bring my nature education in there. I’m a history buff, so I would always throw history into the mix. I love art in museums, so I always throw that in. That’s what I found over the years that my students would
always say at the end, I would always ask them to evaluate at the end of year, and I’d ask them to evaluate my teaching for the year. That was consistently, I would always get this reply. The reason we loved your class and the reason we think we learned so much was because you always added all this other stuff to everything we were reading.

Q: It was highly motivational.
A: Yes. And so I’ve done that my whole career. It challenges me to keep finding new pieces of music, new pictures of art, new science things that I can throw in there.

Q: I learned a lot from you today. I enjoyed your interview. Thank you very much.
A: Thank you.

Participant #3

1. How do teachers determine students’ learning styles?

   a. Do you observe students’ performance to determine their learning styles?

   b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: In the first grade what I do is I observe. We don’t do written tests, we don’t teach to tests. Everything we do is observe and then from there what I would do is gear because there’s interest in a certain learning style and then from there take it from there. There’s tactile and then I take
it from there.

Q: And you probably conference with them.
A: Yes, I do, yes.
Q: As they change or whatever.
A: Yes.

2. How do teachers select their teaching styles?
   a. Do you teach the way you learned in school?
   b. Do you teach according to what fits your own
teaching style or what is most comfortable
   and appropriate for you or the students?
A: Teaching style, I would have to say depends on each
student. My style is to go according to the child. That's
a tough question.

Q: Do you teach the way you learned in school?
A: No. Our school is much different than that. It's a
very liberal school. So we are left to do however we feel
we should teach the kids, whatever it's going to take. My
learning style definitely adapts to the child, depending on
what their learning style is, my teaching style adjusts to
them. There's certain things we certainly have to teach.
But we don't teach to a test. We don't have that type of
pressure where if they don't -- we're not competing with the
public school. So given that, and the small classrooms, are
kids are very bright. And it gives me, I mean, I still
leave here at 6 o'clock at night because I'm still trying to
say how is this one going to learn this concept because I
know if I show him on the overhead, he's still not going to get it. So I have to come up with about two other ways that I know he'll get it. Maybe he has to write in sand to get it. That's what I do. I don't have one particular style. Whatever is going to work with them.

Q: And you're always constantly, I guess, evaluating and re-evaluating.

A: Constantly. Constantly. Observing. They all have their own clipboards, they don't know this, but they have their own clipboard. And when they're doing math and stuff, they work on math on the floor in groups. There's a lot of hands on there. And I walk around and check off my own little notes that I have. That's what I do.

Q: You are grade 1?

A: Grade 1.

3. How do teachers match their teaching styles to the learning styles of their students?

a. Do you have a method of matching your teaching style to students' learning styles?

b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

A: All right. I'll take my morning review in the morning, for an example. I have one child who is extremely abstract. And then I have the few who really need to hold things or
see it, visual learners, tactile learners, I have
everything. So what I do, I always give them a word problem
every morning that they have to do. They have to always
come up with a solution. They can’t just give me answer,
they have to tell me how they come up with that answer. So
let’s say it’s an addition problem, 2 plus 3 apples, or
whatever the case is. Some kids might say, well, I already
know that it’s five. I pretended I ate -- they give me
different ideas or some kids they write it on the chart
paper with me. So they actually learn a lot from each
other. It’s not necessarily me. I’d like to think that I’m
not the one who is lecturing. I’d like the kids to learn
from each other because they have a lot of insight on that.
They’re in the minds of a 6-year-old. So I kind of, you
know, I like to leave my classroom open to the kids.

Q: You’re a guide.
A: Yes, I guide, right. Exactly. I’ll introduce
something, but then I let them take off with it. So my
teaching style definitely is based off of the way all of my
kids learn. I have 9 kids, so it’s interesting. It’s
interesting. Too bad you couldn’t observe the class.

Q: Well, I could, yes. That would be interesting.
A: To see. I’m not sure I answered that question clearly.

Q: Did you want to give me another example of how you meet
their needs? Their subject levels or their interest levels.
You can give me another example, if you would like to.
A: I use the overhead a lot. The overhead, especially in first grade where some can’t read and some can read beautifully. I’ll also do depth perception, they have a hard time with. The overhead is a beautiful thing. They think it’s a cool tool. That helps them along. All styles, I feel, that really gets them. I use geometric shapes on it, I use a calculator on it, it’s great for math. But, again, I use introduce concepts that the kids pretty much fly with. We do a lot of things, like outside. I like to make all experiences real for them. So if I can make anything come to life for them, I’ll do it.

Q: Then it’s more meaningful from a motivational standpoint.

A: Yes, absolutely. Absolutely. Maybe that is my teaching style. I bring things to life for them. Make it real. And they love it. I hope they love it.

Q: Is this similar to the way you were taught or do you deviate?

A: No.

Q: Basically, student interested.

A: Oh, yes.

Q: And individually students too.

A: Yes.

Q: Your matching the individual style.

A: Right. I don’t use one particular text. I pick from different things. I don’t believe in spelling books. I
haven't used them since I've been teaching here.

Q: What do you use?

A: I integrate Project Read with SRA. And I kind of pull from there what I think I believe they should be spelling as they're learning to read and everything. So I make up my own every year, it's different, it's never the same. I have different ones for the kids. All the kids aren't on the same page, so they all have different spelling.

Q: How do you attack that when you have so many different levels?

A: That's probably my toughest thing, their spelling. Well, I pretty much put them into groups of two, as far as their spelling goes. Because with this group I can, I've had other classes that I couldn't, but this group I can. And what I do, it's just they're on different reading levels. And if I know some are halfway here, then they're in this, and then the other would be in the other. But it works fine, so far so good.

Q: And you do that similar thing, like with math or science?

A: Math, they all need to do the same written work, they all need to do it. But they do a lot of hands on things on math. It's like they get to play a lot of games, is really what it is. They play a ton of games.

Q: But they're educational games.

A: Yes. Right. What it is is they do it to the level that
they’re capable of doing it. So it’s just a completely different ball game than spelling.

Q: That would be more like a hands on approach, probably, when they’re doing the games.

A: Math, yes. But then they also have to do the written assessment part of it so I know they can translate it into numbers on a piece of paper.

Q: So each student probably gets an opportunity to do math in three ways, then.

A: Yes.

Q: Maybe writing, listening, hands on.

A: Yes. Yes. Reading is the same way. They have the listening center, we always do oral reading, every day we do that in small groups, if it’s one-on-one or two kids. It depends on what they’re reading. So that’s pretty much the same thing with that. And then the writing, I will give them more verbally and they have to write a word. And that’s pretty much a whole group thing.

Q: So your style is similar. They’re exposed to everything, but they can go out in their own area more.

A: Yes.

Q: I guess if they’re more kinesthetic or tactile, they do that more maybe than someone who is more auditory.

A: Right. Exactly. But they get a taste of all of it.

Q: Yes. And they develop their skills that way. And you observe to see what they’re good at.
A: Yes.

Q: And see what their motivation is.

A: Yes. But it works beautifully because I have 9 kids.

Q: That's very nice.

A: It is nice.

Q: You can really probably get some depth into this.

A: Yes.

4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students' learning styles?

   a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

   b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

A: On the behavior problems, my whole classroom is based off of positive reinforcement. There is never time outs, there's never any of that. What the do is they get group reinforcement and then they get individual reinforcement for behavior. If they go above and beyond what's expected of them, they make up their own classroom rules and they all sign it. But they pretty much make up their own rules.

Again, it's very nice. So individually, if they go above
and beyond what's expected of them, they get what's called -- they put their hand in a jar. And at the end of the week, if their hand is in the jar, they get to pick a pencil or an eraser, something like that. So they really try to earn that. Individually, I rarely have problems. As a group, if a teacher sees that they walk like angels in the hallway or that they've been fabulous in a special, and if they get a compliment, I have a compliment chain in my room and they get links on the top of the chain. If it reaches the end of the chalkboard, then the group votes for something that they really want, an extra recess or whatever the case is. So I really don't have -- and it's always worked for me. So we'll see.

Q: Sounds interesting.

A: Yes. It works. I don't take things away. I don't take specials away, I believe they need the specials. That's what makes them well rounded, that's the big thing of our school, you know, they get all these great things. That's what I do for behavior.

Q: I was just saying, if it doesn't, can you comment on experience in higher levels of -- you were talking about their motivation, their cooperation.

A: What motivates my kids?

Q: Do you have this type of system for academic achievements?

A: Well, I don't like to like reward academic achievement,
really. If they get a sticker, that could make them happy, but I don’t really bribe them with any kind of academic achievement. They’re pretty self driven. I’d like to think that I make learning so interesting and hands on and fun and real for them that they enjoy coming to my room. And I hear that from my parents at the conferences that they enjoy being in school.

Q: They like being in school.

A: Right. I never reward good academic behavior. I think it kind of puts pressure on. Well, maybe in the homework aspect, they have homework charts and every time they bring in their homework, they get a sticker. And when the chart fills up, then they can go and get that eraser or pencil or whatever it is.

Q: It’s not the quality so much, is the responsibility.

A: Yes. It’s the responsibility of it. And sometimes with their handwriting, I’m a little stickler for handwriting. I tend to just, you know, I don’t tell them, oh, it’s so great, you’re going to get a sticker for that. What I’ll say is, that needs to be redone, you need to erase that. But I won’t really go nuts with the you’re so great here’s a sticker.

Q: So then you don’t really have experience with much boredom or misbehavior or none at all maybe.

A: No.

Q: Or lower academic achievement or success.
A: No.

Q: You’re responsibility matching strategies with learning style.

A: Yes. I’m pretty fortunate.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

   a. Can you reflect and comment on some or all of these areas mentioned?

A: Being an effective teacher in order to have any learning style, you have to take all of those things into account, which is a matter of observation, when you can observe exactly how that child -- what their learning style is. You can fit different manipulatives or resources, definitely pull different resources. Whether it be -- you know, if I have a child that’s in the third grade math, I’m going to pull from third grade math textbook or whatever the case is and you just fit it into each child, that’s all. It sounds complex, it’s not as complex. It’s time consuming, very time consuming, but it’s well worth it.

Q: Assessment, do you have anything to comment on assessment?

A: Assessment, I have rubric for some things, I have rubrics -- I’m not a big rubric fan, but I have rubric for
math, some matching. For each subject I have different things that I assess. I can’t say one particular subject area that I -- I don’t specifically test. I do test on their spelling, writing them, the words, on a Friday. And I do test in math after a unit. But as far as -- they don’t test out of reading, they don’t test in science, they don’t test in social studies which I like, I really like that.

Q: Do you use any standardized type of testing?
A: No. Not in first grade.

Q: Informal or book testing.
A: In math. There’s an end of unit test.

Q: So it’s strictly really student oriented.
A: But you’ll see every teacher does it different in the school. Like there’s not one specific --

Q: You all do your own.
A: We all do our own.

Q: Different teaching style.
A: Yes.

Q: And the students adapt to that. They go through one grade level --
A: Yes.

Q: And they switch?
A: Yes.

Q: You don’t have any double grades.
A: No.

Q: They stay with you all year and go the next one and next
one.

A: Yes. And it's interesting because we have a lot of kids that come and go. So they're not only adjusting academically to the teacher, but socially to a lot of different kids every year.

Q: Okay. I think we've covered everything. And it was very interesting, I've learned a lot from you. Very interesting and very enjoyable. And I thank you. If you have anything else to say, okay.

A: Thank you.

Q: Thank you very much again.

A: You're welcome, no problem. Good luck with it.

Participant #4

1. How do teachers determine students' learning styles?
   a. Do you observe students' performance to determine their learning styles?
   b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: I mainly observe them in the particular situation. I also observe how they respond to different techniques I try with them.

Q: So it's observation.

A: We tried a questionnaire which got messed up because they couldn't do it on the computer because we didn't have enough computers at the time. And as I was going over
those, they seemed to contradict themselves so many times, I’m not sure if they knew and they were able to make a determination, so we didn’t go too much farther with that. We may try it again sometime though.

Q: Basically, observation and talking with them. And some of their styles probably change.

A: Oh, absolutely.

2. How do teachers select their teaching styles?

   a. Do you teach the way you learned in school?
   b. Do you teach according to what fits your own teaching style or what is most comfortable and appropriate for you or the students?

A: I try a combination of different things depending on the makeup of the class and their abilities. There were several mistakes, I think, made when I was in school. I look at those and I try to correct them. When I look back at my own schooling and see where -- I was basically taught all I had to do was memorize or that was the perception that I had from school; you memorized and you put it down. And so I tried to do the opposite with my kids because I think that’s totally wrong, make them think rather than just memorize. I read to the group. Sometimes if I have a group that works well together, I can put them in groups for more group learning. If I have a very small group, sometimes we only have three in a class, it makes it hard to divide them up into groups when you don’t even have a whole group. So it
totally depends on the class and I try to vary what I do daily.

Q: And what is appropriate for them, naturally.
A: Absolutely.

Q: Do you have like a lot of different learning styles in your class, do you think, or basically just the one type like hands on.
A: There are several different styles as I’m dealing with the older students.

Q: What level is this?
A: Well, I have 6 through 8 and by the time we get -- I used to have the highest math groups, algebra and even going into geometry. Usually when they’re that bright, they pick it up quickly and actually get bored with the manipulatives, they don’t even want anything to do those variables to perceive it on their own, so I don’t do that too much.

With the social studies, it’s a little bit harder, but we do a variety of things, it’s not as much hands on in a class like that, but I try to approach it with different methods, drawing sometimes or graphic organizers, reading, having different types of questions on tests, giving them challenge questions because I call on them to make them start critical thinking.

3. How do teachers match their teaching styles to the learning styles of their students?
   a. Do you have a method of matching your teaching
b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

A: Going on from that, I have been teaching about since the turn of the century. Last weekend they had a Teddy Roosevelt video, four hours on PBS. And it just happened to coordinate very well with what we’re doing and I had both kids and parents say how much that helped to have them be able to visualize a lot of it. And in a school we don’t always have the access to all of the videos, and I realize that many videos gets boring for them too, but because I haven’t used them in a while and now they’re accessible, and I have a lot of them, I’m using them a little bit more. I think that they do gain from that.

A: We do different types of things. Different ways of working with math and interpreting by drawing. In talking about the first ten amendments to the Constitution, each child had one amendment to illustrate, to put their ideas of what it meant in a picture. And just different things.

Q: So they did a picture and did they do an oral report?

A: Well, they explained the amendment and what their picture was showing.

Q: And this was for your social studies. You do math and social studies.
A: Yes.

Q: Can you give me an example in math showing matching the teaching styles.

A: When we were doing volume, they didn’t seem to understand, they were having trouble with two- and three-dimensional objects, so I got blocks out and they put them together. We started out with a one dimensional, we talked about a line, and then we put them together and formed a square, and then we put them together.

Q: Did they all do this together?

A: It was a small group, there were, I guess, eight kids in the class and I guess they were working in groups of two and they put the blocks together and it showed them what we were talking about. They could count the blocks.

Q: So you were applying the hands on there and different strategies.

A: But, again, this was a very bright class and they seemed to not need as much of that as some of the lower grades.

Q: So you had the resources available to use, and then they got more out of that lesson.

A: Yes.

Q: Interest wise probably and academic wise and all around.

A: And they loved playing with the blocks.

4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students’ learning styles?
a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

A: The negative is probably easier to answer. When you have somebody who doesn’t particularly like to read and that’s a sign that they’re not going to do it, they’re going to just skim over it and do as little as possible.

Q: Do they have a choice? Certain things you have to read, naturally. But if they couldn’t read it, is there another way you could get around that?

A: I have help one-on-one, I worked with one girl and I’ll read it to her. They have suggested books on tape and occasionally people will use books on tape. They tend to get bored a little bit with that. But I give them different options as to what they can do with their reading. If they’re more comfortable taking notes and it helps them better to take notes, then take notes when I’m reading it. If they’d rather answer the questions at the back, then answer the questions at the back.

Q: So you can just see by what they’ve done with that.

A: Right.
Q: But they can do it anyway to get there.
A: I want them to understand the material and I have one boy who absolutely refuses to take notes. Okay, fine, do the questions at the end. I encourage them to -- social studies has a lot of facts and if you don’t like to read, you’re pretty much at a disadvantage or if you have trouble reading, but I encourage them to do the homework on index cards, if they have trouble. Then they have flash cards. They put the question or the identification on one side and use the back for the answer, then they have a study guide already done, they don’t have to do it all over again and that helps some of them.
Q: You adjust, if they’re having problems, you gave them other solutions like they can write note cards or they can have a video, or something that’s oral for them. They don’t have to strictly read the book if they’re having a problem. So you’re adjusting to their level.
A: Right. They still have to work with the book. I’ve given easier copies of the book, lower levels of the book to those who are having trouble reading.
Q: You can’t get totally around it.
A: No. And the social studies class is very, very difficult to avoid the reading. I did go over the material, tried to relate it to today, to things that they know as much as possible.
Q: But you have a higher level, your academic students’
level is quite high, you said, in class.

A: For the most part, it depends on the class. We have some students who aren't as bright as some of the rest of them and we do a lot of one-on-one, working with them, trying to have them visualize, sometimes trying to draw pictures of vocabulary words, and that type of thing.

Q: That could be the negative and the positive you're commenting on, telling me how they're motivated, how they cooperate with their different groups. And anything academic. If you want to add anything else to that, you can go ahead.

A: One thing when we studied the colonies, the three groups, the middle colony, the England colonies, the southern colonies, I put them in groups and they have to make a map and we have the overhead projector and make huge maps of the area. And they have to incorporate the material in the book, the economy and their lifestyle, everything onto this piece of paper. And they get their work together and then they get to visualize that too, and they seem to enjoy that. A huge break from having to sit in the classroom and just listen.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?
a. Can you reflect and comment on some or all of these areas mentioned?

Q: Now we hit on a lot of these already, but maybe if there’s something you want to talk about like grouping or assessment or planning or anything that you choose. Can you reflect on any of those?

A: One kind of test which I like to give which they moan and groan when I talk about it, but I’ve had several classes spend three class periods doing it. I’ll give them a very general question. We’ll be talking about the industrial revolution and the differences between the north and south. And I’ll say, you’re going on a trip and tell me about this trip. And they visit the factory and they just write. And even the one who can’t do well on an objective test will write and write and write about this trip and be very pleased with the success because I graded it partly on the student’s ability, partly on -- I put check marks every time I get a fact in there. And I tell them, you have to tell me facts, like you can make it as creative as you want. And they get to use their creativity too. And they enjoy doing that type of assignment.

Q: So it’s very practical. They can use their imagination, but yet it has to be realistic.

A: Absolutely.

Q: So that’s like a free choice type thing.

A: And as I said, they will spend three class periods on
it. If you told them ahead of time, and I don’t tell them because some classes don’t require that much time, but if I’m going to say, okay, you’re going to have a three-period test, they would absolutely be astonished. But they’ll say, gee, this is kind of fun, can we finish it tomorrow? Q: They don’t even realize that it’s a test.
A: Exactly.
A: Sometimes they are open-book testing, and I do that occasionally. I don’t tell them that because if they think it’s open-book, that means they don’t have to study and then they spend half of their time looking for the answers.
Q: When they do an open-book test, do you find that as productive as a regular test?
A: It depends on what the situation is. Sometimes I’ll give an open-note test to see if they’ve taken the class notes and that type of thing. It depends on what it is. And sometimes I give them an index card test. Especially when we do the depression and Roosevelt and alphabet soup. I’ll say to them, you can write anything you want and put it on one 3 by 5 index card and you may bring it to class for the test. It makes them organize. It make them do things that they don’t even think about that they’re having to do. And they think it’s neat because they get to have an index card.
Q: And they don’t realize that they’re actually learning and getting the points across. We mentioned assessment,
we've gotten a little on interests, is there anything else there that you can reflect on or comment on? What kind of resources do you have, like materials, varied, diverse? And how do you incorporate those resources into learning.

A: We, as far as having a lot of films and things like that, as I mentioned, we don't have a lot of those. I do go to the library and take out what I can there. I got cotton plants and we grew some cotton so they could see how hard it was to pick the seeds out of the cotton. We try to resources that aren't very expensive. I bring in material that I have and samples of these things to make them understand what's going on. And I had them write their own essay after that. It's mostly things that I can find since we're a small school.

Q: And you're state funded.

A: No. We get some textbook money and things like that, but as far as having film libraries and all the other things that bigger school systems have, we don't have those.

Sometimes I can get things out of the library and sometimes they're not available.

Q: Sounds very interesting, your class, in social studies and math. And you're with the middle school.

A: Yes.

Q: Sixth, seventh, and eighth graders?

A: Right.

Q: You change classes then.
A: Yes. One teacher in fifth grade is kind of the transition between the lower school and the middle school. And they have, in general, one fifth grade teacher, except for science. And a couple of the brighter ones go to the sixth grade class for some of the literature. Math is totally ability groups. They take a test and we go all the way from -- one girl in algebra is ready to start the geometry book, she's almost finished it. And we have most of the eighth graders in pre-algebra. Sixth grade is very, very bright this year, so most of them are starting the transition book and will get algebra finished by the end of their eighth grade year. And then we have a fifth grade in the fifth grade. And all math starts at the same time, so you can go between groups. If you have two and it doesn't matter what class you're in, you go where you are ability wise in math.

Q: Do you have report cards or conferences?
A: Oh, yes, both.

Q: The whole school does that?
A: We have report cards that have a grid with the grade and checks on it and then we have a one-paragraph commentary from every teacher on every subject.

Q: How often do they go out?
A: Trimester, three times a year. And then we have conferences twice a year.

Q: So there's five times --
A: And we talk back and forth with the parents as needed.
Q: Okay. I think we’ve covered everything, unless you want
to add to this. This has been very helpful to me, very
interesting, very enlightening. I thank you for your time
and patience.
A: Okay. Good luck with your writing.
Q: Thank you.

Participant #5

1. How do teachers determine students’ learning styles?
   a. Do you observe students’ performance to
determine their learning styles?
   b. Do you prepare or give students a written
questionnaire, survey or conference with
them to determine their learning styles?
A: I don’t know if I’d answer either one of those. What I
do in the beginning of the year is I actually will try all
of the learning styles and see which children perform the
best to each one. And then I’ll try another one and see how
they react to that and how their test scores perform to
that. So, yes, I guess you would say observation then. I
try all the learning styles, I’m actually doing each one,
and seeing how each child reacts to it and then I’ll assess.
Q: That’s basically how you do it and it works for you.
A: Yes, it does for me.
Q: And I guess it’s constantly changing too.
A: It is, because not all of them are strong in one area.
I do science. I do a lot of hands on which at times, obviously, for some that’s more difficult. But we do a lot of writing also, a lot of, obviously, oral with that. Visual is there. Actually, it’s probably easier for science because a lot more can be brought into it because there’s also then a lot of group work so students can learn off of each other besides me. I a lot of times will do more observation with a lot of labs.

Q: What grades?
A: 5 through 8.

Q: You’re a science teacher.
A: Science for the middle school, yes, I am. And then I also teach a class in math.

Q: So you can think of them too in these questions.
A: Yes.

Q: Math students. You do the same for them?
A: Yes.

Q: This is for both classes.
A: Yes, for all classes. Even when I was a self-contained teacher, it was the same thing when I taught all the subjects, I would do the same approach in the beginning of the year, hit all the areas, and see how they respond.

2. How do teachers select their teaching styles?
   a. Do you teach the way you learned in school?
   b. Do you teach according to what fits your own teaching style or what is most comfortable
and appropriate for you or the students?

A: That’s very interesting because when I first started, I’ve been teaching, like I said, approximately 15 years, when I first started, I believe I was teaching the way I was taught. And then as the years progressed, I started changing to the way I learned. And I didn’t realize that until all of this started coming, you know, to the multiple intelligence started coming into view about how we were. And then once we started learning about multiple intelligence, then I started becoming so much more aware of they’re all different styles and then I actually changed, it wasn’t easy, I actually had to change my way of teaching to try and fit in everybody’s way of learning.

Q: So what was that actually a change from? A whole class situation to group, more or less, when you did your change.

A: I would say it was, yes, less lecture, more hands on. Less lecture, more hands on, yes. Would be the biggest change.

Q: So as the years went on, you adapted to the students’ needs.

3. How do teachers match their teaching styles to the learning styles of their students?

   a. Do you have a method of matching your teaching style to students’ learning styles?

   b. Can you describe samples of how your teaching style matches with the learning style of
students regarding subjects, levels, or interest?

A: I don't really think I have a specific method. I really think that with me, -- see, it's so easy here because you have such a small group of students. I don't know if I could -- I'm sure I couldn't do what I do here in the public school.

Q: How many students do you have?

A: The public school was like 25, now my top class is 11. And it's not only just 11, but like my seventh and eighth graders, I've had since fifth grade. So when you have them for such a long period of time, it's very easy to learn their best way of learning. So I wouldn't say I match anything. I just observe them over -- because I have such a long time with them. That after working with them for not only just a year, but several years, you just get to know them so well that you know how they respond to the material.

Q: You're very perceptive then. Can you describe samples of how your teaching style matches with the learning styles of the students maybe regarding subjects or levels of interest. Can you think of any examples.

A: Well, I have one student who definitely is a very visual person. And we did a unit on dissection. Prior to that, I always do the reading, the lecturing, you know, to make sure they understand or hopefully understand everything before we proceed with the experiment. I wasn't sure if the child was
getting it or not, especially with some of the vocabulary. As soon as we got into the dissection part, and there was also a diagram to go along with it, it was amazing watching the child cutting open, this time it was a dog fish, this gigantic dog fish, and she became so excited because all of a sudden things were clicking on. Oh, this means that, that means this. Now I understand, now I see. She was actually able to see what we were talking about, which originally she wasn’t getting.

Q: Makes a big difference.
A: Made a huge difference in this case. A huge difference.
Q: Do you have any other examples in math where that happened?
A: Math would be with fractions. With, again, hands on, cutting fractions, cutting out shapes. They learn much better that way. In pre-algebra we were doing symmetry, a lot of children cannot imagine the symmetry in their heads. So we actually cut out the objects. That works much, much better.

Q: Now is this just for the students that have that problem? Or do they all do it?
A: They all do it. I have everyone do everything, whether they need it or not. Because some, like I said, even though they might be strong in one learning style, the other styles do not hurt them. So they might as well all participate in all of the ways and, hopefully, it’ll even benefit them.
And if not, just reinforce the material a little bit more.

Q: But if they had to, you could give more extensive work to, I assume, to the students that really needed it.

A: Yes.

Q: Whereas the other one could go onto something else.

A: Here we can do that, yes. Much easier than in other schools.

4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students' learning styles?

a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

A: I'm going to start at the lower end of that, the behavior and the boredom. I don't see too much of that. And, again, I think it's because it's a smaller school system, smaller classrooms. Our children are pretty good with staying with me. Motivation, cooperation. Again, -- well, I think that it is their learning style, obviously it's going to be they're more motivated because they're catching on. Whereas if it wasn't their learning style, I
would think that they would become bored. However, many of our students though, or many of my students, are so interested in science that it’s hard sometimes to become bored in what we’re doing, even though a lot of people might think that science is boring. All of my students just seem to be so thrilled with it. I mean, I never have a problem with that, luckily, as of yet, anyway. And plus like the small class, you find out what they’re interest is and you get them interested in it. It’s much easier to do it that way. Academic achievement. Yes, I would say, though, that if I’m not needing, like for whatever reason, you can’t -- I have found that I can’t always hit all of the learning styles in every topic. Sometimes I have trouble with that, I can’t find all of the areas to pull out in a topic. And I do think that at certain times, I don’t know if overall lower academic achievement, but I do think that some children are missing out because I can’t reach them at times. But, hopefully, though when I move on, they’ll somehow catch onto it in a different way. So I’m sure that definitely happens.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?
a. Can you reflect and comment on some or all of these areas mentioned?

A: Resources mean a lot. If you don’t have the resources, you’re not going to be able to hit on a lot of their learning styles, that’s a biggie, that’s a problem in many school systems and at times including here. If I don’t have the material, sometimes how am I going to help the child. I mean, you try to find what works, but that’s definitely very important. Student ability. When I set up my plans, I try to set them up in a range so that I can change my lesson to fit the student. I group differently with my lab, depending on what the lab is. Sometimes I’ll group the student who I know will catch on with one who might have a little bit more difficulty. Other times I’ll put those who I know have more difficulty together and put those that I don’t think will together. I do that for two different reasons, depending upon the lab. Sometimes when I’m grouping the students with where I think they’re going to have trouble together is so that I can actually lower the bar of my expectations so that -- I know that they can’t succeed as high as some of the others. So I approach it differently. And even what they do, I’ll adjust the lab so that it would help them understand it more.

Q: You try to reach everyone.

A: Right. Exactly. And vice-a-versa with the other group. Student interest. That is extremely important. I will try
to pull in, especially with my seventh and eighth graders
more so, the little ones are very interested in science.
With my seventh and eighth graders, things that are going on
that they can relate to. Movies, especially movies out
there. Anything to do with outer space or whatever, they’ll
bring in space movies that I never heard of and they’ll
share a movie or something, or this happened there or that
happened there. And even with music, I can even bring in,
at times, which they’re very interested in. And then they
just go crazy. Student grouping I said. Assessment. I’ll
assess differently depending on their learning style, that’s
a must. I don’t think there’s anyway around it.
Planning. I do plan according to the children and it’s
easier, like I said, because we have such a small group that
you can plan. My math class I have, I think, six students
and I have five different plans. I only have two children
that are together.
Q: That’s very time consuming.
A: It’s time consuming, but it’s great for them. Which the
only thing that bothers me with that is I worry, though,
sometimes that when they leave here, they’re not going to
get that. So I hope that it’s a strong enough base so that
when they go onto high school, it’s not overwhelming for
them though, because it’s so small and cozy here that with
some of them I’m just afraid.
Q: Everything has it’s ups and downs. It seems like you’re
all doing such a very good job, you know, very dedicated and spend an awful lot of time, even though you have small classes, you get into very -- very much in depth. A: Well, it helps them, though. I mean, that's what works, that's what it's all about.

Q: And you can really apply these varying teaching styles.
A: Oh, much. I can't imagine doing it in a public school. I mean, it can be done, I know it can because I was there when we started it. But it was not as easy as it is here. It's much more difficult. Much more difficult. And I would think behavior has more of an impact there. And I also think that interests have more of an impact there too. Because you have so many more children, the odds are their interest levels are going to be such a wide range, that it's even going to be more so.

Q: Yes, I see what you're saying. Is there anything else that you feel we left out? Or I don't see anything. I think it was very well done. Do you have any other comments or --

A: No. I think the whole idea of the multiple intelligence is very interesting. I don't know on a whole how in the end, though, is it really going to pan out. They say so many things, like way back when like, oh, this is the key to everything, the way to learning and everything. And then after 10, 20, 30 years goes by, it's like, oh, my gosh, why did we do that, that was ridiculous.
And I kind of wonder with this, only because we never had it before, I mean, it's interesting and I think it should be looked at and I think it should be tried and the whole nine yards, but I'm interested to see what's going to happen down the line.

Q: That's the purpose of the research. Actually, it's one of the missing links. Thank you very much.

A: Oh, you're welcome.

Q: I found it very enjoyable and interesting and you gave me a lot of insights.

A: Great.

Q: Thank you.

A: You're welcome.

Participant #6

1. How do teachers determine students' learning styles?
   a. Do you observe students' performance to determine their learning styles?
   b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: Somewhat of a mixture of both of those, although it's not as formal as a written questionnaire. It's a combination of observing, conferencing. I have on occasion given -- those are more interest inventories than learning style inventory. And one of the things that I do is I make sure that I present the lesson in more than one way and
seeing who's picking up on which que.

Q: Yes. Okay. So that you're individualizing more or less.

A: In some ways and in some ways it's scatter shot like I know somebody out here will be auditory, so I'm going to give it this way and somebody will be visual --

Q: So they can change, probably, on different subjects or whatever. What subjects do you teach?

A: I teach literature, language arts, and religion.

Q: And what grade are you?

A: Sixth grade homeroom and I have 60 seventh graders this year. I've also in the past taught eighth and fourth and fifth.

Q: Oh, so you're varied. Okay. I guess that's it for question one, that was rather quick. Do you have any other comments for it? I think you answered it.

A: No.

2. How do teachers select their teaching styles?

   a. Do you teach the way you learned in school?

   b. Do you teach according to what fits your own teaching style or what is most comfortable and appropriate for you or the students?

A: That really depends on the class. I prefer, when it works, to do what is most comfortable for me and the students. But I've also noticed that with some classes just no matter how much you want to be a little bit spontaneous
or a little bit fun or whatever, that breaks their concentration. So you just can’t do that with those classes and you have to figure out at the beginning of the year what kind of class you have and how -- if you’re going to be more formal in presenting things to them and more teacher directed or if it’s more student directed.

Last year I had a class that -- these kids were the most -- they were the best -- the most student directed I’ve ever seen. That by the end of the year, the only -- the best way to get them working, they learned so much, was to tell them the outcome I wanted and let them plan how they get there.

Q: Oh, that’s very interesting, yes.

A: And for this one particular group --

Q: Only that one group.

A: -- it worked beautifully. And they probably worked harder than I would have asked them to.

Q: Right involved in it too.

A: Yeah. You can’t do that. You have to really see who you’re working with, the size of the group sometimes matters.

Q: You’re really student oriented, it’s not like what you want to do, it’s basically what your class is made up of, and then you adjust to them, not they adjust to you, right? That’s what it sounds like you’re saying.

A: Right. And even with things that are hard to teach in any other way, like let’s say punctuation, I always try to
find something to come in with it to get them on board and interested.

Q: Yes. Okay.

3. How do teachers match their teaching styles to the learning styles of their students?
   a. Do you have a method of matching your teaching style to students’ learning styles?
   b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

A: A number of years ago I taught a group of fourth graders who were all below level in reading and language arts. There were seventeen boys and two girls in that class. And it ended up being one of the best classes I ever had.

Q: Seventeen boys and two girls.

A: Yes. Now when I first became a teacher, you know, there’s certain things you have in your mind, like I can remember my whole eighth grade year diagraming sentences and thinking it was the biggest waste of time. So it wasn’t something that I really taught when I first started teaching. Well, with this group, these boys were so visual and like they built and they did and that. You know what, when I started diagraming sentences with them, they caught on like that and they loved it. And they really went so far in English that year and they -- by the fifth grade, they
had caught up to the rest of the class. To the rest of the kids.

Q: Yes.

A: Because it was something that they could really understand and --

Q: And it was visual, they could see it.

A: It was visual, they could see it, it was a way of presenting it, we can build the sentence. And so even though it wasn’t something that I normally would have done, that group showed me by the rest of their work that that’s what they needed.

Q: Yes, I can see that. I experienced that actually myself, personally. And I learned it very well that way.

A: These kids are just like oh, now, it makes sense because they could see it, a visual, that’s what I need to do. And ever since then, even if I don’t have groups as needy as that, I will always present it, not so much that I’m going to test you on this, you have to know it, but this is a tool for your tool box, if it helps.

Q: Some of the other classes you’re saying you couldn’t do that with, but that particular class really learned that way.

A: I never tried it before, really.

Q: But it worked.

A: It worked so well for them.

Q: You definitely match their style with that.
A: Yes.
Q: Do you have any other interesting examples like that?
A: I'm trying to think.
Q: Or just regular examples, that's okay, they don't have to extraordinary.
A: Let me mention on interests.
Q: Yes.
A: I do sometimes try to use their interests to pull them into -- especially with reading. Where I try to match the interest and I figure I can always find a way to teach the skill, as long as they're reading.
Q: How do you know their interests in reading?
A: Part of it is I do take an interest inventory. Part of it is from talking to them. Even this year we have a girl in seventh grade, when she came here in sixth grade, she hadn't read a book in two years. And getting to know her, that she was interested in different types of things and tried to think back to what it was like being a thirteen-year-old girl, as an example, this isn't a real thick book, but I really think you'll like it. And it was knowing more the type of --
Q: Motivational.
A: Yes. It wasn't anything you'd ever call great literature. But you can work with that. Because she liked it and she didn't want to put it down.
Q: So you got her interested in something by her interest
level.

A: Right.

Q: And you can do that with many subjects, I guess. And what did you say you teach again?

A: Literature, language arts, and religion.

Q: Okay. So you can do that a lot with those areas, I'm sure.

A: Yeah.

Q: So you've given me a couple of examples. Should we move onto the next question or do you have anything else?

A: I can't think of anything off hand.

4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students' learning styles?

   a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

   b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

A: I guess I firmly believe that you have to go to where the student is. My job is to teach the student, whether the students wants to learn or not. I know the material. It's up to me to find a way to present it that will benefit the
student. So I don’t really see benefits to going in and saying, well, this is the type of teacher I am. Like it or lump it. You know, I don’t think that’s doing -- that’s doing me some good, maybe, but not the student. I know some teachers do that, but -- and that was also part of my training. There’s no room in teaching for that. You’ve got to --

Q: It’s so diverse nowadays. You have so many ideas out there and so many children from different ethnic backgrounds too, it’s probably all -- you know, it takes --

A: I think if you don’t match it to the student, you’re just basically -- they’re putting in time in your class. They have to be a partner in the learning process.

Q: Have you ever experienced -- you say you don’t do this, but if you did, say a student wasn’t learning properly. Was it do you think because that it was something they couldn’t handle like your style didn’t match theirs and then you probably quickly changed it. I mean, I’m sure this happens sometimes. Or the reverse, they’re doing extremely well because you were doing something -- just like the girl with the book or the boys with the mapping of the diagraming.

A: Well, if I thought I wasn’t reaching them, I always just kept trying until I did. Usually I’d be successful. I know there was one boy that I felt I didn’t reach over the year, but I think he also had so many problems at home that there was possibly nothing the school could have done.
There’s never a class with any one learning style where if you’re paying attention to so and so’s strengths, somebody else has to learn to be patient. And that’s -- you know, somebody else has to learn to be patient that -- well, okay, you don’t get it yet, but you will.

Q: Yes. That’s all part of the cooperation too, and it’s part of life.

A: And part of it is just teaching them to trust me.

I was also going to say the other thing is, I also try to do to minimize a mismatch, I try to have a variety of assessments, assessment styles, so that I’m not just testing them on how well they take a test, I want to see how they know the material. So in every marking period there’s a -- I’m a firm believer in the different intelligences, multiple intelligences. So besides the unit tests and the things that I know they need to know, they can’t leave without knowing how to write an essay. They have to know this, they have to know that. But I also have assignments that they can choose, how they’re going to respond.

Q: Okay. I think that is actually my next question.

A: Oh, okay.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other
related areas?

a. Can you reflect and comment on some or all of these areas mentioned?

A: Okay. In response to assessment, I like to have a variety of assessments because, like I said, I don’t want to just test them on how well they take a test. I know they need to be able to take tests, I know they need to be able to write essays. So it’s not like all we do is this. But it’s -- your whole grade isn’t going to be dependent on that one thing if it’s really not your --

Q: Yes. And some people can be very frustrated and nervous during a test.

A: So there’s usually a number of assessments and a number of different types. Very often, at least once a marking period, I let them choose --

Q: What do you mean by let them choose?

A: Let them choose -- for example, right now I know they need to write a book report. As long as they know how to do that, we’re not going to write one every single month. We have a standard book report. Right now they’re reading a book and they have a choice, they can write a narrative poem of at least 20 lines to tell me the theme, the story, the characters. They can videotape something. They can write a song about the book. They can do a puppet show. They can do an oral report.

Q: So you’ve got your mixture of auditory, visuals and
tactile.

A: Or they can do a normal -- if they feel more comfortable in a regular old book report, they can do that as well. So it's free choice. You choose the book, the choose the response. And I usually get some interesting --

Q: I would think so, yes.

A: As far as grouping, when I was at another school, we grouped -- and then we grouped our groups. Our principal was very, very big on that.

Q: So that got you familiar with grouping.

A: I'm familiar with it, but my personal feeling is that, in general, it only benefits the better students.

Q: And how did you group, actually.

A: There were two classes; there were the ones and the twos. Aren't they wonderful little labels. Wouldn't you love to be a two? And then the ones we're splitting to the high ones and the low ones. And then some are pulled out to Kaleidoscope because they were gifted and talented. And then the twos, there were the high twos and the low twos, and then there were the ones who got pulled out to the trailer.

Q: They kind of knew who they were, I guess.

A: Yes, they surely did. And I find that it's more helpful to the lower students to have somebody to work with them and emulate. And better students are going to learn no matter what.
Q: So we talked about grouping, assessments, interests, how about -- well, you did mention your resources, different things you have done. Anything else you can reflect on or comment on? Anything in general or anything regarding this question?
A: No. Except that I don't really sit down and, per se, think about it, but I do know that I keep this in mind as I'm planning and so forth.
Q: You have been very enlightening and very interesting. And I thank you.
A: You're very welcome. I hope this is helpful to you.
Q: It's very helpful. Thank you very much.

Participant #7

1. How do teachers determine students' learning styles?
   a. Do you observe students' performance to determine their learning styles?
   b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: I think probably I use a combination of the two. In the beginning of the year it's pretty much observation and noticing how they perform on different assessments that I give, which are not always a graded thing, sometimes I like to give little "let me see what you know" kind of things for them to do. And so it's not a pressure situation, but it's an instant feedback from what they're doing. And then,
certainly, as we get into the year, if I notice someone is having particular problems, especially -- or is very able, on the other hand, I might talk with them to ask them how I can help or facilitate their learning. So I think a combination of the two.

Q: You are level what, did you say?
A: Fifth grade.

Q: Fifth grade. So do you have a mixed grouping?
A: It's -- how do I want to answer this. It's a heterogeneous group.

Q: And self-contained?
A: And self-contained and sometimes, depending on what we're working on, we will break into groups.

Q: Okay.
A: Different ways. Sometimes pairing.

Q: Okay. That's okay. You can get into that a little bit more with my next question.
A: Okay.

Q: One of the later questions. Was there anything else for this question in determining your learning style?
A: No.

2. How do teachers select their teaching styles?
   a. Do you teach the way you learned in school?
   b. Do you teach according to what fits your own teaching style or what is most comfortable and appropriate for you or the students?
A: I really try to offer a variety. Certainly there are things that I’m more comfortable doing. I like question and answer discussion type things where everyone can participate, but that doesn’t do it for everybody, so I like to incorporate art and/or music, and/or writing, and/or anything, really, that I can think of. And I try not to only evaluate on tests and quizzes, but to give projects that, you know, require other skills as well.

Q: That sounds very diverse.

3. How do teachers match their teaching styles to the learning styles of their students?
   a. Do you have a method of matching your teaching style to students’ learning styles?
   b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

A: Again, by observation and/or discussing with the student what might be beneficial to help them learn. I know that I have had, and have this year, some students that are having difficulties. And even though they’re not classified, I try to alter the tests by spacing things out on a page or giving them some hints that might help them in their test taking. But, also, I get a general feel for the class as a whole. I think that was very striking to me last year, which was my first year, and how I didn’t really understand how dynamic
the class personality is going to be. And last year, if you could draw anything, they lived for that as a whole, the group as a whole. And this year they want to get up and present and act it out. It's helpful to notice trends like that that can really get the whole group enthused about something, to notice. So I think knowing the class personality, that they can then work with each other and off of each other and learn from each other has been one of the things that I try to do.

Q: Now if you have some students that are not exactly like that, you said the majority of the class, do they fit into this category or do they -- you have to actually adapt to something else for them, more of a reading or a writing or a, you know, some --

A: It's been my fortune that last year they really all loved to draw and that this year they really all love to actively participate in oral presentations. So I've been very lucky. But I know that I would if there was somebody that didn't quite fit into that, I would adapt and encourage them to fit in.

Q: Is there anything else?

A: That's the only thing I can think of right now.

4. What do teachers perceive to be the strength and weaknesses of matching their teaching strategies to students' learning styles?
a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

A: Again, last year being my first year and I noticed the class as a whole was very weak in math, yet there were several students that were excellent in math. And we really had to go at, what I call, a snail's pace. Because you can't move on in math if you don't understand the basics, the foundation. So I felt it was very important to, you know, to give that foundation to the class as a whole. And, you know, I found that was difficult for the brighter students to kind of stay on board.

So I learned that -- I used them as mentors or helpers in the classroom and also by supplementing materials for them that, you know, everyone had to do ten problems, but they could do the whole page for extra credit, which they -- it sounds like it could be punishment, but they were actually wanting to do that.

Q: They wanted to do extra.

A: Yes. And, again, speaking to motivation, I think, again, to key into what they like as a class, as a whole,
and then having them work together on whatever their interests are really adds enthusiasm to the class.

Q: Okay. That sounds good. It's a little of bit both here, negative and positive. Is there anything extra to add to that?

A: Well, just -- I know there are some students that eagerly come to see me at lunch or after school and I try to make it a very open atmosphere where they're not afraid to say they don't understand something. And by -- in some cases, it takes working individually with the students to get them to understand something. And I can so quickly see the positive results of that, either small group or individual, or by teaming up with --

Q: So you're constantly evaluating, more or less, and you're kind of matching their style. It sounds like you are. And you're not like making -- like they adapt to your style exactly, you know their style and you're working with it.

A: Correct. I really try to do that. I really try because --

Q: Okay. You find it works better that way when you do that?

A: Right. By offering a variety of ways because some people -- you know, all the different learning styles. And as far as book reports each month, we have a different format of the book report because, you know, one, it might
be as simple as drawing. Another time it's a written report. Other times it's oral presentation.

So, again, by varying --

Q: Do they all have to do one of each? Or do they just do what is of their interest? Like do they have to do an oral?
A: Sometimes I have, you know, you pick. Free choice. But usually it's each month I offer a different assignment that they all are required to do.

Q: Okay. So in other words, they get a, probably, the option of at least trying something. I mean you can, more or less, see where they're going, what their style is, and work more on that.
A: Right. That's correct. And also I think it's very important to provide the specific guidelines and either rubric -- if you want to call it rubric, or just, you know, presentation of what's expected ahead of time. This is how you can get an "A", you need to do this, this, this, and this. And if you don't do that, you can't get an "A". If do do that, you will probably get an "A". So you set them up to succeed.

Q: Does it usually work that way?
A: Yes.

Q: That helps a lot of students?
A: Absolutely. Absolutely.

Q: Okay.
A: They know -- they are motivated and they know, there's
no question, that if they do this, they will probably get an "A".

Q: Are there some students that don’t, maybe a few that don’t, it doesn’t make a difference to them?
A: In the beginning when this is offered, there are a few that it didn’t make a difference. Not that it didn’t make a difference, because they cared about their grades, but they didn’t understand the importance of following the directions exactly. And so when they didn’t achieve the "A", they quickly learned, gee, it’s important to follow directions for the next time.

Q: Okay. That sounds good.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

   a. Can you reflect and comment on some or all of these areas mentioned?
A: Yes. This really sums up everything that we’ve been talking about. I think it’s really important to be aware of the needs of the class as a whole, the individual needs of each particular student, to offer a variety of approaches so that what works for one might not work for another, and then vice-versa on a different thing. And it takes a lot of work to offer such a variety and be constantly aware and
assessing in different ways. But it's such a joy to see, you know, the fulfillment because all the students really want to achieve and their goal is to achieve and it's such a joy to offer that chance to every student.

Q: Yes. Is there any areas you want to comment on specifically? I know you did some.

A: I had a thought as I was talking. Something different that hasn't been mentioned here because I came to teaching later and had my own children who were having their own school experiences, to see the types of projects and things that they would bring home, and to know what worked in my own children from the things that they received from really gifted teachers was a tremendous help. So not only the fact that my children had some wonderful teachers along the way, that inspired me, but also working with other teachers here or in any environment that you would be in, can really -- really help meet all these goals.

Q: And you work positively and you're learning yourself.

A: Right. Exactly.

Q: And it's a total educational experience.

A: Exactly. And also in a school of this size, which is so small, to -- where you have the chance to talk to the teacher that will get them next and say, just watch out for this one, watch out for that one. Not in a negative way. Not they're going to be a problem, but help them through. You know, help them through something and they will respond
to this or that. And that the lower grade teacher, you know, can tell me that as well. And not in a negative way to -- that negative expectation, but in a positive way, really, to look after the student.

Q: Yes. Now what grade did you say you taught?
A: I'm fifth grade.

Q: Fifth grade. And how many students do you have in your class?
A: This year I have eighteen.

Q: And that's a nice size.
A: Yes.

Q: You're self-contained. Do you find that's a problem when you're grouping?
A: No. It gives me the benefit of knowing them a little better. And, you know, see their different strengths and weaknesses. You know, the great math student might not be the best reader or vice-versa. And it helps me understand the total student, I think. I also get to see them in a social interaction much more often.

Q: When you're self-contained, it's the whole gambit of everything.
A: When you're self-contained, yes.

Q: Okay. Well, you've been very helpful, very enlightening, and very interesting. And thank you very much for participating in this research study.
A: My pleasure, and good luck to you.
Q: Thank you. Thank you.

Participant #8

1. How do teachers determine students' learning styles?
   a. Do you observe students’ performance to determine their learning styles?
   b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: Because I teach first grade, I usually use the observation process first. And then normally, I -- I'll then look at their work. But it's hard to conference with them and use questionnaires in the beginning of the year because they're so young. So, definitely, I observe them and see what type of performance they do on their work.

Q: Is there anything else that you do?

A: No.

2. How do teachers select their teaching styles?
   a. Do you teach the way you learned in school?
   b. Do you teach according to what fits your own teaching style or what is most comfortable and appropriate for you or the students?

A: Well, I don't teach the way that I was taught in school just because there really wasn't a lot of visual learning going on, not a lot of manipulatives either. So I like to use a lot of those, especially with the young children because they really do need to see things on the blackboard,
things that catch their attention. And also this year I do have students that are from another country. So I need to use a lot of visual this year, more than I did last year. So I definitely have to supplement, depending on who’s in my class.

3. How do teachers match their teaching styles to the learning styles of their students?
   a. Do you have a method of matching your teaching style to students’ learning styles?
   b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

A: Matching my teaching style. All right. I definitely like using visuals and manipulatives, especially in math. And also I can give you an example, in reading, in first grade they’re usually learning how to read for the first time. We use a lot of flash cards, a lot of pictures with the flash cards in the beginning of the year. Also we have like tiles that they can create sentences with. So besides reading out of a book, I do a lot with manipulatives. Even in reading. Because mostly you do it in math, but I definitely use it a lot in first grade in reading.

Q: Do you allow all the students to do this?
A: This is done during learning center time. We work
together out of the book, the reading book, we read, we go over vocabulary. And then the students who are struggling have flash cards that they do bring home with them once in a while if they're still struggling. And then during free time, like after snack or during learning center time, they're able to use flash cards with a partner. They can unscramble words, they can do crossword puzzles, they can use the learning tiles. That's usually when we do that. With reading auditory, we also have the Walkman. I got Walkmen donated to my class and they read along with the book. That would be auditory.

Q: Could you explain what Walkman is?
A: A Walkman?
Q: Yes.
A: Oh, it's a cassette player, like an individual cassette player. They read by themselves with the book. They also use the computer for reading and math. Oh, and I also play a math game with them. And also in reading they have flash cards on the table which would be kinesthetic. And they're up out of their seats dancing to music kind of like musical chairs. When the music stops, they sit down, they flip over the flash card, and it might have two plus two, two plus four. They solve the problem and then they stand up when they're done, and then when the music begins again, they dance around the room and then they sit down and -- you get the idea.
Q: So they’re exposed to a variety.
A: Yes.

Q: Now you probably know that some students like the music end of it better or some like the flash card end.
A: It depends on them, yes.

Q: And that’s how you can probably identify their learning style.
A: Yes, I can.

Q: And you can match it. Then do you then expand on that if you see that this one likes it more this way? Do you give them more in that area? Or is it the whole class?
A: The whole class participates in it. But they do it free time, when they’re done with their work. They’re allowed to choose what they would like to do. They get to pick what they’re interested in.

4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students’ learning styles?

a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?
A: I think that -- I really do think that children get bored when you're doing the paper and pencil work. And I -- in the grade that I teach I really do think that they all enjoy the visuals. They love working with the manipulatives. I even had students in the beginning of the year that already knew how to add. And when you give them something in front of them to work with, they're still excited about it. They might get a little bit tired of it before any of the other ones will that were struggling, but I think when you're just doing the paper and pen work, which I do -- I mean, I do have to do that. But I really don't see a lot of boredom when you're working with visuals. And maybe it's just at that level that I have that I don't really see that that much.

Q: Visuals you mean charts or manipulatives or tactile when they're actually using their hands?

A: And then also -- I mean, also vocabulary words. We put them on pictures, like it could be a frog. We put them on the blackboard on magnets. And even though I had students who knew those words, they probably knew them before they came to my class, I give them a fly swatter and you cut a hole in it and they get -- when I give them a word, or they give their friend a word, they whack it on the blackboard. Nice and easy though, of course. But even if they knew those words, it's still the excitement of being up there and -- and then I try to put some
challenging words up there also. Or I'll try and do rhyming words. I try and not let them get bored, I try to keep them excited about learning.

In first grade I really do a lot of visual and hands on and it's good because it does match my learning style.

Q: Do you have anything else to comment on that area?

A: No.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

   a. Can you reflect and comment on some or all of these areas mentioned?

A: You mean for the students?

Q: Yes. Like what resources do you use for the students or maybe what -- you can take that either way. How can you incorporate, and it's what resources you use or the students. You know, books, videos.

A: We definitely try and use things that they like. For instance, with resources, I know they like the Magic School Bus. So if we're working on science, I try and use a video that they're interested in. And they're still learning, even though they like the characters. So that would also tie into the students' interests. Same thing, I mean with reading, I try and pick books that I know that they like the
characters that they're familiar with.

Q: Now how do you do that? How do you judge the characters they're familiar with. Is there a way to know or are you just --

A: You know just by what they have in their desk or they'll tell you. You see what they order from the Troll Book order that I do. If there's a movie out or something, I don't really like those books too much, but you try and keep some of them in the classroom. If there's a movie out that they're really excited about, you know, they like to see that character. Student grouping. What I try and do, just so the students are comfortable and they don't feel left out, I have one -- with reading, I have one group of students who really can read very well. They're probably almost at a second-grade level. And I try and separate them, and then I have an assistant in my classroom so we can do three groups sometimes, and then I have a medium, a middle group, and the lower group. I try to mix that up a little bit. And then I'll take some of my top readers from the middle group and push them into the higher group. And I just kind of flow them back and forth. So they don't automatically -- I do it about once or twice a week. I don't -- they can't automatically say, oh, I'm in this group with this, you know, this one, I can't read or -- I try to flow them back and forth so they don't really know what group they're in.
Q: Now what is your reason for doing that? Is it an academic reason you're doing it, or a social reason?
A: I guess for self esteem issue. Because I know that in the past what happens in groups according to their levels, and I'm very strict about them. They go home and they say, I'm in the low group. And it really -- it really discourages them a lot from reading and sounding out their words. So I'm trying to keep them -- you know, so they don't really know where they fit in. There's no black and white, it's gray.
Q: Is this sort of like a cooperative group, where you have a leader in the group, a writer.
A: No. We do that also. But I normally -- I usually let them pick who the writer is going to be. And I don't like to have to say, oh, this one spells the best. And then even yesterday we were doing a project with opposites. And we just had our 100 days of school, so they did 50 objects that you can fit in your pocket, 50 that you can't. And they kind of -- they figured out their own way of, you know, facilitating the paper. They wrote down what they thought, and then they passed it on to the next person. And they worked it out trying to help each other spell. So rather than pick one student that is a great speller and all the kids know they can spell or they can read. I don't really like to do that. I like to give them options.
Q: So they merge from within that group themselves.
A: Yes.

Q: You more or less guide them and you kind of oversee what they're doing and if there's a problem, you have to direct them.

A: Yes.

Q: That sounds interesting. Very flexible.

A: Yes, you really have to be. And there's things that I did my first year here that -- I look in my plan book from the past and you don't know whether you -- you know, it's not that you forget, but it's like -- it just doesn't fit in with your plan for the year.

Q: Your resources may change even year to year somewhat.

A: Yes. Yes, they do.

Q: Well, this has been very interesting. And I thank you very much. Is there anything else you'd like to say before the session is over?

A: Thank you.

Q: Thank you very much. Nice meeting you.

Participant #9

1. How do teachers determine students' learning styles?
   a. Do you observe students' performance to determine their learning styles?
   b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: At the beginning of the year, right off the bat, I give
them different surveys to determine reading style, a
questionnaire of what kind of a story like they, how they
think that they read, do they think they’re a good reader,
they think they’re a good writer. That’s a questionnaire I
give them the beginning of the year.
I also give them conferences during times that we’re doing
the writing process, I conference with them to read out loud
to me what they have written to see if it makes sense to
them. I talk with them about different styles and how they
can make their writing better. I observe their learning
styles when we do learning centers throughout the day.
I do observe their learning styles when they -- especially
when they do learning centers. We have a checklist as to
what I’m looking for. So I can keep track that way.
Q: What grade do you do?
A: Third grade.
Q: Third grade. How many students are in your class?
A: Twenty-one.
2. How do teachers select their teaching styles?
a. Do you teach the way you learned in school?
b. Do you teach according to what fits your own
teaching style or what is most comfortable
and appropriate for you or the students?
A: I don’t think I teach how I was taught in school.
Mostly because I don’t remember a lot of specific things my
teachers did. If I do remember a specific thing my teacher
did that stuck in my mind, I will do that with my kids
because I know it made an impression on me. I do a lot from
when I was doing my student teaching, from my cooperating
teacher. What I observed her doing, like her style like
that. I do what’s comfortable for me most of the time, and
if I see that they’re not getting along with that, I’ll have
to adjust my style for that. I might not like doing it a
certain way, but I know some kids need -- you know, I might
not like to stand up there and say, you know, lecture to
them, but some of them like to listen to you talk, they like
to listen to you. I might not like to that, but --
Q: So your style is --
A: It’s varied, you know, from my own style towards what
could be considered conformed from teachers, you know.
3. How do teachers match their teaching styles to the
learning styles of their students?
   a. Do you have a method of matching your teaching
      style to students’ learning styles?
   b. Can you describe samples of how your teaching
      style matches with the learning style of
      students regarding subjects, levels, or
      interest?
A: The first thing that came to my mind when I was teaching
how to count change or how to make change in my class. The
first way I taught it, half the class got it and half the
class didn’t. So what I did from there is I separated them
into two groups and I gave an enrichment thing, maybe like a work sheet or an enrichment problem that they had to solve together. And then I worked a different way with the other group. Whether it was using manipulatives over and over again, showing them how to count up to a dollar or using a chart to help them. I had to kind of had to experiment with the other group who didn’t get it right away. The first thing I think I did was auditory. And the kids who caught onto that right away I put aside and said, okay, here’s some challenging things for you to do. And then the other group I had to work more with them, make a chart with them.

Q: But your own style is different from how they can learn.
A: Yes.

Q: Can you think of anything else in another subject?
A: Reading. Yes. Reading more when it came time to oral reading. Some of them like to do one-on-one reading together, like group reading. Some of them like to read to me. Some of them like to read in front of the whole class. So I tried to vary that from week to week. One week I’ll do something different, but also let them do what they enjoy, at least once.

4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students’ learning styles?

   a. Can you comment on experiencing higher levels of motivation, cooperation, and academic
achievement or success when you match teaching strategies to learning styles of students?

b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

A: Where you said can you comment on the boredom and misbehavior, kind of -- a lot of parents say, oh, my kid isn't being challenged and that's why he's acting out. And I can say, well, part of it is that reason, but, I mean, obviously, sometimes it is -- their challenge is to behave. But I find myself -- I do find kids getting off the topic because they're not into the learning style that we're doing. For instance, you're supposed to be looking up a certain thing and they get off topics, they're not interested, they get lazy, they don't want to read what's in the encyclopedia to finish their project, so they'll like wander around the room and start talking with their friends and try to look at it as free time rather than group work time. So I find myself like having them do something else. Kind of take them aside and say, hey, you don't want to do this, here's something else for you to do.

Q: Relevant to the what they're doing?

A: Relevant to what they're doing. Maybe give them a picture book to look at, whatever we're talking about, like a different type of book rather than an encyclopedia.
Q: This is all, more or less, preplanned.
A: Yes. If this doesn't work, yes. I mean, even if it's not preplanned, I feel like I have the ability to kind of fly by the seat of my pants and kind of, you know, make it up as I go along or give them something --
Q: Would it be easier if you had an assistant to help you doing this.
A: Sometimes. Sometimes in group work there's always -- it's always better to have an extra set of eyes, as long as they know what's expected.
Q: Especially with -- how many students did you say?
A: Twenty-one. Sometimes an extra set of eyes does help. You know, I've brought in parents to help when we've done art projects. The children who need to be motivated or need to be challenged more with whatever we're doing, they usually tend to finish early and do a good job and -- okay, and then they're like, okay, what do I do next? Usually I have them just sit and read a book, but if it's too noisy, it's hard for them to read a book. So what I'll have them do is I'll have the enrichment folder out for them to start something in there. Or I'll have the computer on for them to go back and do some enrichment back there.
Q: And this is enrichment on the subject they're doing?
A: Sometimes it's on that, sometimes it's something else we've been learning throughout the week. You know, from last month.
Q: So when you're doing grouping like this, what's you're saying, that does tend to have a certain amount of noise level. Would you say that's one of the hardest points or a negative point of this type of thing?
A: They have to be talking to do it. But I think sometimes they take that as free time, let me talk to my friend about what's coming on with the weekend. So I try to discourage that. Try to walk around and listen to them and discourage them from straying off the topic.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

   a. Can you reflect and comment on some or all of these areas mentioned?
A: Resources, I have a lot of math manipulatives in the room. I also have a computer set up in the room. I try to get a few kids working on the computer every day. I, only once in a while, do ability grouping. I try to do whole class instruction.

Q: Why? Do you have a special reason?
A: Like I said, in the math, sometimes I find myself grouping them in two abilities. During reading time, I group them only when it's time for enrichment or reinforcement. But other than that, like any other subject,
like science, religion, we always try to do together.
Assessment comes in forms of tests, comes in forms of class work, comes in forms of homework, comes in forms of me observing them or me using a rubric for their writings.
Q: Do you use any standardized testing?
A: Our reading series has like a Terranova format type of testing. I do use that.
Q: Are any of them substantial for grading --
A: The testing, I mean, that's the easiest thing. On paper, documented, sent home, it's seen. But a lot of the times it's not -- I don't give the A, B, C, D, I give more open ended things because by third grade they should be developing their writing skills and putting things into their own words. So I try to assess on that.
Q: Long range, short range, or a mixture?
A: The only thing I can think of right now off the top of my head is when we do the writing process, to try to do one step a day so that way we're done by the end of the week.
So we try to stick to that. Make them committed to finishing a project.
Q: Okay. It's been very enlightening and rewarding for me to listen to each of you teachers. And I thank you for your participation.
A: Thank you.
Participant #10
1. How do teachers determine students' learning styles?
a. Do you observe students' performance to determine their learning styles?

b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

A: Yes, I do. I actually incorporate both of those -- both of those methods. Usually, generally, the first week of school rather than jump into subject matter, I always do a study skills unit with the students. And part of that is helping them to determine what kind of learner they are to make their studying easier. Usually once I’ve complete that, I have a pretty good idea of what they think their learning styles are. And then from that, and then within the next few weeks afterwards from observation of how they work in class and their organizational skills and such, I’ll begin to adjust and set my teaching style based on what their learning styles might be.

Q: Okay. Now what grade did you say you have?

A: I have sixth, seventh, and eighth grade math and science. In science, we don’t group for it, we remain as one class. We range from sixteen to twenty students in those three grades. For math we do group. There is another math teacher that also works here. And I have the students -- we call them the on-level students. They are the ones that are doing the on-level grade work. The other teacher has the more proficient and accelerated students.
2. How do teachers select their teaching styles?
   a. Do you teach the way you learned in school?
   b. Do you teach according to what fits your own teaching style or what is most comfortable and appropriate for you or the students?

A: I really think that I teach for what's the most comfortable for a combination, mostly for me. But also I try and get the feel of where the students are and what they're comfortable with. I mean, obviously what I use one year works perfectly, and then you see another -- not even one year, you'll just have another group of students come in the classroom and find that that just doesn't fly with them at all. Do I teach the way I learned in school? Gosh, I hope my department chairman could see me and say, yeah, that's what I taught her to do. I hope I took the best of what -- looking over, you know, my years of working, I hope that I took the best of what I learned and incorporated it into my style. I guess that's the most that we can hope for.

Q: Yes. That sounds very good.

3. How do teachers match their teaching styles to the learning styles of their students?
   a. Do you have a method of matching your teaching style to students' learning styles?
   b. Can you describe samples of how your teaching style matches with the learning style of
students regarding subjects, levels, or interest?

A: I try and arrange each class based on all of the different learning styles. I try and vary activities throughout a class. I won’t just walk in the class and give a work sheet and say, okay, this is it for the day and sit at the desk and let the students work on it. I get bored with that sort of arrangement.

So what I try and do, particularly -- this is very easy in math. It’s a little bit more difficult in science, but in math I try and arrange the class in little short spurts. We do a warm-up activity, we do review of yesterday’s assignment, we do new activity, we do practice, we do board work. And likewise, in science I try and incorporate the same thing, so we’re going from, you know, reading in the book to question and answer, to hands on approach. And I find that if I vary it in that way, nobody really gets truly bored in class because if they’re out of it for a small segment of it, then I move onto something where they’re more comfortable so they’ll jump into it. It’s actually -- I like that approach simply because everybody ends up participating before the day is out, even the quiet kid, because I end up hitting on something that they like to do. So, you know, even if it’s just one response or one comment or one question, they’ve at least paid attention for that little bit of time that it was -- where they were
comfortable.

Q: Now when you're saying you have different activities that they're doing, say, like oral, visual, or moving onto different things, is this one objective where they're doing like -- one objective doing it in different ways, the same thing; or is it different objectives that they're doing --

A: It's usually one objective, particularly in the math because I am working with the more challenged student. I try and keep the objective simple and I try and break them down into more days because some of them can't handle multi-objectives in one day. So by breaking it down and concentrating on never more than two objectives a day, particularly in math, I'm able to vary the activity.

Q: Okay. So it's presented to them, in other words, in two ways or three ways --

A: Exactly.

Q: -- so if they don't get it visually, they will get it hands on.

A: Exactly.

Q: So it fits their style is what you're doing.

A: Exactly. Yes.

Q: It's not they're moving from well, you do this visually, you do this --

A: No. I'm sticking with the same objective and just presenting it in different methods. I find it's a little bit more challenging because of the nature of the class, for
example, if you’re doing hands on, it’s rather difficult to have them doing different hands on type of projects. I can’t vary the activity during the class the same way in science, but I try and vary the days of the week that way. If you’re setting up for lab, you can’t necessarily jump from lab to lab, from application to application. So that we don’t -- I don’t move quite as rapidly in a class with science. I still limit it to two to three objectives a day, but I still, I try to vary it where I’m incorporating, perhaps, the overhead projector and the board. We might be doing some kind of seat work. They might have a manipulative in their hands, particularly if we’re doing units on earth science, I have a lot of manipulatives in earth science that we can pass around and talk about so that, you know, that they’re actually seeing and feeling for those that are, you know, more visual.

4. What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to students’ learning styles?

a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching
strategies to learning styles of students?

A: I think that this is really tied in with student achievement. Very often you see students that are not achieving well, might not be achieving well for a variety of reasons. One of those reasons might be teaching style is not matching. And for those students that do have that problem, usually I find if I ask them to come in for extra help, I can find a time in extra help where I can present it to them in the way that they need it. But I do think that there’s definitely a correlation between my teaching style and student involvement, cooperation, and then ultimately success. Obviously the students that are more involved in the learning process are more successful because they’re understanding the information as well as -- as giving it back to me. Particularly when you get to the junior high level. One of the things that’s extremely difficult for the students to get away from is regurgitation of information. It’s very difficult for them not to come in and say, oh, I memorized those facts and give me the whole list. And, you know, that’s really terrific, but -- in math I guess that’s okay, you can get away with it, in science you can’t get away with it. Science is more kind of a think on your feet sort of thing. And a lot of students don’t experience success without thinking on your feet approach because they’re used to regurgitating facts. So I find if I can alter the strategy and get them a little bit more involved
and get them to a place, some of the stuff the kids just aren't going to -- physical science, for example, you might have one child in sixty in a year that say, oh, I loved physical science. By and large like, physical science, and, you know, they make the cross in front of themselves so that it doesn't come near them. But if I could find one little thing or present it to them in a way that makes them understand, then I think the block of physical science is the understanding isn't quite as strong, then they're more successful and in turn they're more cooperative, they're behaved in class, they're more interested in what's going on, they're more willing to jump into activities and get involved in a question. So I really think that they're all tied together. And I do think there is a relationship between their -- my teaching style, their learning style, and their success.

Q: Thank you, you've answered that one very nicely.

5. How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

   a. Can you reflect and comment on some or all of these areas mentioned?

A: You know, I really think to answer this question based on where you are in your career, if you want to call it
that. I would have answered this extraordinarily differently if I were a first year teacher, even a fifth year teacher because you asked the earlier question of are you teaching like you were taught. I probably did teach a lot like the way that I was taught because I didn’t know any better. At the time this is what I was the most familiar with, this is what they told me would work and I figured I’m going to try it. But I can remember those early first attempts and, you know, the ones that were successful and the ones that really I bombed with and, you know, went home licking wounds. And I think that after teaching for so many years you get extremely comfortable. You’re comfortable enough with your subject matter that you don’t have to go in with a plan of action the first day. I remember -- you know, my first weeks of teaching twenty years ago, I was going with my script written out because this is the way my lesson plans were when I was in student teaching. Now I don’t even bother the first three weeks of school, other than, you know, I do have to write in my blocks with my objectives, but I try and keep it very, very loose and very unstructured because like I want them to think on their feet, I have to think on my feet too because you need to get to know the students. You want to be able to get to know what their learning styles are, obviously you don’t say hello, nice to meet you, and know what their learning style is. And although I try to do an assessment with them in the
first week, just because they tell me that’s what it is, doesn’t mean that that’s -- sometimes they answer based on what they think they want me to think, you know.

Q: Yes. Yes.

A: So it really takes time to learn what their learning styles are and see if I can match my teaching style. I don’t like to totally amend or change or throw out my comfortable teaching style because I know I do best where I’m comfortable. So it needs to -- you really need to incorporate it. And each of these are things that you build. You know, the learning strategies, you become more comfortable as you go along with them, being able to pick out those learning strategies that they’re the most comfortable with. Obviously resources, depending on where you are, your resources might be extraordinarily limited and ties your hands. In a lot of cases where you would like to do some additional things, but the resource isn’t there to do it.

Q: Do you feel your resources are adequate at least?

A: Oh, I believe they’re adequate. Oh, I would love to have more. You hear about school systems that have rooms full of like math manipulatives, for example, just laying and wasting, collecting dust. And I say to myself, oh, I’d like to get my hands on them. But I really -- teaching in a private school in this way, the funding isn’t there to buy everything new. So I’ve learned to be very resourceful in
creating a lot of manipulatives both in math and science. Particularly in the area of science, if I use household things that the kids know of, they're a little bit more accepting of what they're seeing and what they're doing because they're like, wow, if you could do it with this, this -- you know --

Q: Well, that's actually to your advantage.

A: It does, it works to your advantage. For example, we did a science unit on acids and bases and rather than using a purchased inhibitor, we created our own using cabbage. And they were just completely amazed that you can use a natural product like that, that they know of, and this works and it's getting the results, they're seeing the results. So I've learned to be more resourceful. Perhaps doing some things in a little more old fashioned approach, but I find that it's more real for the kids than to have store bought things that they're not necessarily familiar with, that weird little bottle and what might be inside.

Q: Well, that's it, it's very practical.

A: Exactly. You know, so as far as that goes, our resources have been adequate and, of course, our parent base is absolutely marvelous and what they're willing to -- if I need something in particular that I don't have, all I have to do is put a little memo out and you get flooded with things that you -- we needed baby food jars. And I put out a call for baby food jars and we had so many baby food jars
that it was -- I did have to recycle them. I couldn't keep them all, but we do have a wonderful, you know, a wonderful base.

Q: That's good.
A: And, again, I guess to, you know, to get back --

Q: All these other areas interest grouping, I think -- is that planning and basically, you've answered these. Unless you can think of anything else?
A: Not really. As I said, it's -- the style that I'm in right now and what I'm doing has really come through years of practice and, you know, what has worked and what hasn't worked. You know, oddly enough you might have a student with the exact same learning style that one year you tried something it worked; and the next year it didn't spark that kids' interest. And, you know, you've got to change and you have to adjust and you have to be flexible with them.

Q: Thank you very much for your time.
A: It was my pleasure.

Q: It's been very enlightening to me and very interesting and helpful.
A: Great. Good luck with your research project.
Q: Thank you very much.
Summary

The findings of this research study are reported in Chapter IV. The participant profiles and verbatim transcribed interview sessions reveal descriptive qualitative data concerning teachers' perceptions regarding the match between teachers' teaching styles and students' learning styles. The interview session focuses on five research questions and related subsidiary questions.
CHAPTER V

Summary, Conclusion, and Recommendations

Chapter Summaries

Chapter I provides an in-depth qualitative and descriptive introduction that links the focus of this research to relevant past and present research studies and findings. Other components of this chapter include the Purpose of the Study, Research Questions, Definition of Terms, Significance of the Study, Limitations of the Study, and Organization of the Study.

Chapter II presents a literature review that is pertinent to the study of learning styles. This encompasses the theoretical background of learning styles research, and exploration of the predominant learning styles model for children and adults, multiple intelligences, differentiated instruction, and related personality typologies. This chapter examines the parallels between learning styles and teaching styles and discusses the ways that the models overlap and diverge. Chapter II also discusses ways that existing disparities between teaching and learning styles are addressed to the advantage of all students.

Chapter III describes the methodology of the research study with the various components. Design is qualitative and descriptive in style. The population and sample consists of ten diverse elementary private and parochial school teachers. The instrument is the interview containing
five open-ended research questions and related subsidiary questions. The data for this research is collected via individual tape recorded interview sessions with the participant teacher. Assurance of confidentiality and anonymity is present by the Informed Consent Form. The data analysis is descriptive while response to research and subsidiary questions is examined for differences and similarities. Participant teachers profiling enables common frequency patterns and themes to be analyzed, categories, and discussed.

Chapter IV reports the findings for this research study. After a brief summary introduction participant profiles are presented in two styles. One style is the descriptive narrative format and the style is table format. In depth, verbatim interviews are then transcribed for each of the participating teachers whereby the research and subsidiary questions are used for the interview instrument.

Chapter V contains a brief summary of each chapter in this research study along with the findings being discussed in conjunction with the literature review in Chapter II. A synthesis of findings from the present study combined with prior research on learning styles and related topics are presented in the conclusion and recommendations section of this chapter.

Conclusions
This research design was a qualitative study whereby
diverse elementary school teachers were interviewed. The interview consisted of five open-ended research questions and nine related subsidiary questions. The research questions encompassed teacher's knowledge of their students' learning styles, teachers' selections of their teaching styles, teachers' techniques for matching teaching strategies to learning styles, teachers' perceptions toward learning styles, and teachers' incorporations of a learning style approach that is useful within the classroom.

Common themes and frequencies emerged whereby data was analyzed and reported in a descriptive quantitative research language for the purpose of enabling educators to gain insight into the knowledge and influence of learning styles regarding the teaching practices of elementary school teachers. The information gained from these interviews was discussed in conjunction with prior research findings to determine if teachers find it critical and necessary to adapt their teaching styles to student learning styles or if they prefer other framework for effective teaching strategies. Commonalities from this research and prior research regarding the themes, patterns, and frequencies from Research and subsidiary questions are discussed, analyzed, and summarized briefly.

Although this research study concludes that observation is the primary critical method of determining students' learning styles, while conferences, questionnaires, and
surveys are sometimes used. This is not congruent with some prior research. According to Rita Dunn, teachers cannot identify students' learning styles without using multidimensional instruments (Shaughnessy, 1998). Without evaluation, even experienced educators may misinterpret student behaviors.

Other pertinent models to determine students' learning styles include Gregorc's model of manner of ordering, Gardner's (1995) multiple intelligences, and Kolb's experiential learning. Honey and Mumford designed the Learning Styles Questionnaire. Thereby, there learning theorists support other than observation as being the prime measure to determine students' learning styles.

Not all of the participant teachers of this research study teach according to the way they were taught. However, prior research by Marshall (1991) indicates that teachers' opinion is that they teach the way they were taught, primarily, than the way they learn and, third, the easiest way to cover the material. According to a study by Wallace (1995) Philippine teachers' response to same indicate even different results. Teachers teach the way all teachers teach, then the way they were taught and, third, the way students learn more easily.

All ten research participants concluded that flexibility is a means to match teaching style to learning style. Some prior research is congruent. The hallmark of
Effective teachers is their flexibility in individualizing learning by employing a variety of strategies to guide students through a challenging and enriching curriculum (Darling-Hammond, 1998).

All ten research participants concluded that when effective teachers incorporate a learning style approach that is useful within their classroom regarding most or all of these areas, learning strategies, resources, student ability, student interest, student grouping, or planning, they then experience higher levels of motivation, cooperation, and academic achievement or success. Prior research is congruent with this belief also.

Advocates of learning styles, brain-based learning, and multiple intelligence unanimously support the use of a variety of techniques that engage all students as active participants in the learning process (Green, 1999; Guild, 1997). Where a variety of resources are available and children are allowed to select different materials, they are then encouraged to begin learning through their strongest modalities (Gardner, 1995). Students' learn best when they connect curriculum content to their interests and life experiences. Students learn best when learning opportunities are natural (Tomlinson, 2000).

The recommendation of Hanson and Silver (1991) that teachers be aware of their students' learning styles and use strategies that engage all learning styles (with a focus on
incorporating arts and music into the curriculum) is consistent with multiple intelligence theory as well as with other advocates of learning styles.

Research Question #1

How do teachers determine student learning styles?

Research Question 1 and Subsidiary Question (a) are congruent whereby all of the participant teachers' responses indicate that observation is an integral or focal point to determine students' learning style.

Research Question 1 and Subsidiary Question (b) reveal similar but somewhat diverse results. Participants 9 and 10 agree that questionnaires, surveys, and conferences are also methods to determine students' learning styles.

Research Question #2

How do teachers select their teaching styles?

Research Question 2 and Subsidiary Question (a) reveals that participant 1, 2, 3, and 4 do not believe that they teach the way that they learned in schedule. However, participant 2 believes that you cannot forget the part because it is incumbent to the present, especially in terms of discipline. Participant 5 used to teach the way that she was taught, but now conforms to Howard Gardner's (1995) Multiple Intelligences learning style. Participant 6 and 10 indicate that a balance is necessary depending upon the student population. Sometimes teaching style reflects past strategies and a different approach is necessary. You must
be flexible in accordance to your students. Participant 9 admires and emulates the cooperating teachers’s style as part of her teaching style.

Research Question 2 and Subsidiary Question (b) are congruent whereby all of the participant teacher responses indicate that they teach according to what is most comfortable and appropriate for their students. Participants 6, 7, 9, and 10 agree that they will teach according to their students’ learning styles, but agree that their own teaching style is significantly important to them also.

Research Question #3

How do teachers’ match their teaching style to the learning styles of their students?

Research Question 3 and Subsidiary Question (a) are congruent whereby all of the participant teacher responses indicate that flexibility is a method to match their teaching styles to the students’ learning styles.

Some of the participants also suggest additional diverse methods. Participants 2 and 4 agree that interest is a key component to match their teaching style to the learning styles of their students. Participant 3 suggests that realism and letting the students lead the way or share ideas from one another with the teacher as a guide is a method to match their teaching style to the learning style of students. Participant 7 suggests that observation and
one-on-one discussion with students is a method to match their teaching style to the learning style of their students. Participant 8 suggests that modification of lists and assignments is another method to match their teaching style to the learning style of their students. Participant 9 suggests that grouping in diverse ways is a method to match their teaching style to the learning style of their students. Participant 10 suggests that teaching one lesson in diverse ways is another method to match their teaching style to the learning style of their students. Also, exposure to short segments of diverse learning styles for one lesson will probably enable every student to find, then adapt to their own learning style in this manner, thereby, making every lesson applicable to all students.

Research Question 3 and Subsidiary Question (b) have varied examples, but similar themes because of the nature of the question whereby participants are to discuss personal samples of how their teaching style matches with the learning style of students regarding subjects, levels, or interests. All participants did respond to this question by giving examples accordingly. Participants 1, 2, and 6 agree that interest related subject matter is an important factor. Participant 6 reveals that a problem student actually read a high interest level book for the first time. Participant 3 suggests that realism, creativity, and hands-on participation in all subjects make learning more adaptable.
Participant 4, 5, 8, and 9 agree that visuals and manipulative are motivational, education, and interest related. Participant 7 suggests that mapping out or diagramming sentences works wonders for one particular class where learning style is visual. Participant 10 suggests that pacing lessons in short spurts or segment and presenting objectives in two or three ways is another means of matching teaching styles to the learning styles of students.

Research Question #4

What do teachers perceive to be the strengths and weaknesses of matching their learning strategies to students' learning styles?

Research Question 4 and Subsidiary Question (a) show congruency whereby all of the participant teachers' responses indicate that they have experienced higher levels of motivation, cooperation, and academic achievement or success when they match teaching strategies to learning styles of students.

Participant 1 suggests that reviewing information through games and teams encourages cooperation, motivation, and academic success. Participant 2 suggests that group dynamics enables more children to be cooperative, motivated, and successful. Participant 3 discusses how a compliment chain encourages further motivation, cooperation, and achievement. Participant 4 suggests how a group multi-
approach assignment about the colonies encourages cooperation, motivation, and academic success. Participant 5 suggests that by adapting to an interesting science lesson enables students to experience cooperation, motivation, and success. Participant 6 suggests that you must go where the student is, so to say, and then they can experience motivation, cooperation, and success. Participant 7 suggests that by offering a variety of ways for a book report encourages cooperation, motivation, and success. Participant 8 suggests that visuals and manipulative create an exciting fun learning situation whereby cooperation, motivation and success occur. Participant 9 suggests that having an enrichment folder for students who finish work early is helpful and bolsters motivation, cooperation and success. Participant 10 suggests that there is definitely a correlation between teaching style and student involvement, cooperation, and then ultimately success. Extra one-on-one helps and enables students to experience a teacher meeting their needs.

Research Question 4 and Subsidiary Question (b) indicate similar but somewhat diverse results. Teacher participants 1, 4, 7, and 8 agree that they may be experiencing boredom, misbehavior, lower academic achievement or success when they do not match teaching strategies to learning styles of students.

Participant 1 reveals that a students’ negative
behavior can be turned around by redirecting his behavior to a positive channel. Participant 4 reveals that you must vary reading and use other strategies instead of manipulative for bright children. Participant 7 reveals that bright mathematic students become bored if not challenged with more assignments and responsibilities. Participant 8 reveals that paper and pencil work is often boring, so you must use visuals and hands on approaches.

Research Question #5

How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

Research Question 5 and Subsidiary Question (a) reveals similar results. All of the participant teacher responses indicate incorporations in one or more of the aforementioned areas.

Research Question 5 and Subsidiary Question (a) show congruency whereby all participant responses indicate that effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies that are basically student oriented. Participants 2, 3, 4, 5, 9, and 10 agree that resources are of key importance for learning and that teachers must often create their own resources if not available. Participants
3, 4, 7, and 9 reveal that diverse assessment is a crucial factor in teaching and in learning in order to be adaptive to every students' needs. Participant 2, 6, and 8 reveal that grouping is another key element in a sound student centered classroom.

**Recommendations**

After reviewing the descriptive qualitative interview session in conjunction with Research and Subsidiary Questions, necessary recommendations concerning policy, practice, and future research implications are suggested. Implications of the aforementioned recommendations may result with a broader sample and multi-interpretive analysis of teacher perceptions regarding the teacher and student teaching and learning style approaches.

**Policy Recommendations**

1. There is a need for private and parochial schools to arrange for several curriculum day programs whereby all staff earn professional development hours to participate in lectures, discussion, and practical applications regarding teaching and learning style approaches.

2. There is a need for private and parochial schools to establish teacher education related college programs whereby professional development hours and college credits are earned for the purpose of instructing all staff on theory, methods, and practical applications about teaching and learning style approaches.
3. There is a need for private and parochial schools to set aside a budget during the fiscal year for expenses concerning any training programs related to learning styles.

4. Guidelines should be established for the purpose of learning programs whereby no delays in implementation will occur.

5. There is a need to establish a minimum of professional development hours concerning training regarding the match between teachers' teaching and students' learning styles.

Practical Recommendations

1. There is a need for administrators to arrange for building site-based meetings whereby professional development hours are earned for the purpose of training regarding learning and teaching styles.

2. There is a need for all staff to visit schools or classrooms whereby professional development hours are earned for the purpose of observing learning style approaches in action.

3. There is a need for all staff to attend conferences and/or workshops whereby professional development hours are earned for the purpose of learning about teaching and learning style strategies, applications, theory, and methods.

Future Research Recommendations

1. Use a larger and more diverse sample in terms of gender and ethnicity to explore teacher perceptions regarding the
match between teachers' teaching styles and students' learning style.

2. Use a qualitative and quantitative design for reporting and interpreting research findings whereby weight and units of measure indicate academic achievement.

3. Research colleges that have required graduate student appropriate training regarding learning and teaching style.

4. Conduct a comparative study with schools using the learning style approach against those schools not using learning style approach.

5. Conduct a longitudinal study to target success and performance of a particular sample.

6. Teachers use a survey to be able to evaluate their own effectiveness in their classrooms regarding the match between teachers' teaching styles and students' learning styles.
References


Dunn, R., & Gianetti, M. C. (1990). Grouping students for instruction: Effects of learning style on achievement


historical look. Theory Into Practice, 23(1).


Psychology, 22, 99-100.
REQUEST FOR APPROVAL OF RESEARCH, DEMONSTRATION OR RELATED ACTIVITIES INVOLVING HUMAN SUBJECTS

All material must be typed.

PROJECT TITLE: A STUDY OF ELEMENTARY SCHOOL TEACHERS' PERCEPTIONS REGARDING THE MATCH BETWEEN TEACHERS' TEACHING STYLES AND STUDENTS' LEARNING STYLES

CERTIFICATION STATEMENT:

In making this application, I (we) certify that I (we) have read and understand the University's policies and procedures governing research, development, and related activities involving human subjects. I (we) shall comply with the letter and spirit of these policies. I (we) further acknowledge my (our) obligation to (1) obtain written approval of significant deviations from the originally-approved protocol BEFORE making such deviations, and (2) report immediately all adverse effects of the study on the subjects to the Director of the Institutional Review Board, Seton Hall University, South Orange, NJ 07079.

Sandra E. Sutton
RESEARCHER(S) OR PROJECT DIRECTOR(S)

Date
11/21/02

Use separate sheet of paper, if necessary.

My signature indicates that I have reviewed the attached materials and consider them to meet IRB standards.

RESEARCHER'S ADVISOR OR DEPARTMENTAL SUPERVISOR

Date
11/24/02

The request for approval submitted by the above researcher(s) was considered by the IRB for Research Involving Human Subjects Research-at-the in December 2002 meeting.

The application was approved ☑ not approved ☐ by the Committee. Special conditions were ☑ were not ☐ set by the IRB. (Any special conditions are described on the reverse side.)

DIRECTOR,
SETON HALL UNIVERSITY INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS RESEARCH

Date
1.15.03

APPROVED

JAN 15 2003
IRB
SETON HALL UNIVERSITY
SETON HALL UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN SERVICES
OFFICE OF GRADUATE STUDIES

APPROVAL FOR DISSERTATION PROPOSAL.

Candidate, Shoch F. Sutton, has successfully completed all requisite requirements. This candidate’s proposal has been reviewed and the candidate may proceed to collect data according to the approved proposal for dissertation, under the direction of the mentor and the candidate’s dissertation committee.

If there are substantive differences between what has been approved in the proposal and the actual study, the final dissertation should indicate, on a separate page in the Appendix, the approval of the committee for those changes.

Title of Proposed Dissertation: A Study of Elementary School Teachers' Perceptions Regarding the Match Between Teachers' Teaching Styles and Students' Learning Styles.

Dissertation Committee:

Mentor (sign/date):

Committee Member (sign/date):

Committee Member (sign/date):

Committee Member (sign/date):

Approved by Seton Hall University Institutional Review Board on December 2002

Department Chairperson (sign/date):

APPROVED

JAN 15 2003

IRB

SETON HALL UNIVERSITY

TOTAL P. 21
Appendix C

SETON HALL UNIVERSITY IRB APPLICATION SHEET

Application must be typed.

According to my understanding of the IRB Guidelines, this application qualifies for the following review:

Exempt ________ Expedited X ________ Full Review ________
(13 copies enclosed) (13 copies enclosed) (13 copies enclosed)

If more than one researcher, give information on a separate page for #1-4 for each researcher. Indicate who is Principal Investigator.

1. NAME: Sandra Sutton  HOME PHONE: 973-335-0170

2. HOME MAILING ADDRESS: 11 Orchard Way, RFD, Boonton, New Jersey 07005

3. PLACE OF EMPLOYMENT: Parsippany Board of Education

4. POSITION OR JOB TITLE: Teacher  WORK PHONE: 973-428-7584

5. TITLE OF STUDY: A Study of Elementary School Teachers' Perceptions regarding the Match Between Teachers' Teaching Styles and Students' Learning Styles

6. Study is: (a) Thesis ________ (b) Dissertation X ________ (c) Class Project ________ (d) Other [specify] ________

7. Name of advisor, thesis or dissertation, class professor (if applicable): Dr. AJ Colella, Ph.D.

Dept: College of Ed. & Human Svs.  Phone: 973-761-8397

8. Anticipated starting and completion dates: Fall '92 to Spring '93

9. What is the purpose of the study?

Purpose of study is to explore teachers' perceptions regarding the match between teachers' teaching styles and students' learning styles.

10. What is the Hypothesis or Research Question? This study is designed to be a qualitative and exploratory research. There is no hypothesis to test. However, the purpose of this research is to assess teachers' perceptions on the effectiveness of matching their teaching styles with the learning styles of their students. (See Appendix B Research and Subsidiary Questions for Interview.) There are five research questions with subsidiary questions.

11. Explain your qualifications for conducting this research. Teacher – 34 years – B.S. Education – M.A. Special Education – Supervisory Certification.

12. Explain the rationale and significance of the study.

A review of related literature indicates that not only are there few studies investigating the learning style preferences of elementary school students, but there are fewer studies employing the use of learning styles in the elementary school classroom, despite the fact this is a potentially rich area for exploration. The existing literature on the implementation of learning styles consists primarily of single case studies. In addition, there are theoretical articles advocating the use of a learning styles framework with guidelines for how to do so, but there appears to be a notable absence of studies that explore the
ways in which teachers structure their classrooms in accordance with learning styles.

In spite of the massive reform efforts that have been underway since the publication of A Nation at Risk in 1983, it is clear that there are many students whose learning needs are still not being met. Understanding the diverse ways in which learners process information offers a valuable framework for restructuring the elementary school classroom to meet the learning needs of an increasingly diverse student body. Therefore, I hope this study fills a critical gap in research by examining the ways in which elementary teachers accommodate diverse learning styles. In conclusion, I also hope that the overarching question asked by this research project, the extent to which teachers match their teaching styles to the learning styles of their students and the impact this has on student performance, will prove advantageous for today and for education in the future.

13. Describe the subjects: Elementary school teachers, 1-6

   Age(s) of subjects: 23 - 55
   Number of subjects: 10

14. From where and how will potential subjects be identified (e.g., outpatient list, class list, etc.)?

   Identified by principal/voluntary
   How do you have access to this population?
   Access from principals/will obtain consent from teachers

15. Do you have a supervisory and/or professional relationship with the subjects? Yes ___ No ___ X
    If yes, please explain how this relationship will not compromise the voluntariness of the subjects' participation in the study.

16. Will data be collected from or about any of the following protected populations:

   ___ minors (under 18 years of age; specify age)
   ___ prisoners
   ___ pregnant women
   ___ fetuses
   ___ cognitively impaired persons

   For additional requirements regarding these categories of protected subjects, consult and follow the IRB Guidelines.

17. What are your criteria for subject selection? Selection of subjects must be equitable and, in the case of protected populations (see #13 above), should reflect their special needs. IRB Guidelines also require researchers to be sensitive to the use of educationally and economically disadvantaged persons as subjects. If you are excluding women or minorities from your subject pool, you must include a scientific justification for such exclusion.

   Criteria for selection of research participants is open to all elementary school teachers in grades K through 6, regardless of age, gender, race, religion, and who are currently teaching in one of the two participating elementary schools. All participation is voluntary.

18. How will subjects be recruited once they are identified (e.g., mail, phone, classroom presentation)? Include copies of recruitment letters, flyers, or advertisements, or copy of script of oral request at time of recruitment.
Approval has already been granted and written permission given from both elementary school principals in the study (via letters from original IRB application). Elementary school teachers in Grades 1-5 (5 teachers per each school) will be contacted via a letter of introduction/collaboration, along with the informed consent form which will be delivered by the researcher in both of the elementary schools. The researcher will pick up consent forms at a date to be announced in the main school offices of both schools. Participants’ sealed envelopes will be placed in a special research envelope provided for this purpose. Envelopes will be stored in the principal’s office in a locked file cabinet in each of the two schools in the study.

19. Where will research be conducted? (Be specific)

Research will be conducted in the two participating schools in the study. Participants will be asked to participate in a 45-minute tape recorded interview session with me. The interview will consist of five open-ended research questions with subsidiary questions concerning teaching and learning style match. If participants agree to partake in this research study, the tape recorded sessions will be at their own respective elementary school sites at a pre-arranged, appropriate, and private setting, date, and time for all parties involved.

20. Will deception be used? YES __ NO X If YES, provide the rationale for the deception:

N/A

21. Please explain debriefing procedures, if any, to be used in this study:  N/A

22. What methodology will be taken to assure the anonymity of the subjects and the confidentiality of the data (i.e., coding system, how and where data will be stored and secured, how data will be analyzed, who will have access to data, what will happen to data after the study is completed)? Note that researchers should retain all data collected for at least 3 years after project completion.

Assurance of confidentiality and anonymity will be given to the participant in this study via the informed consent form, coding system, and storage of the taped interviews. The researcher will interview each teacher participant who volunteers to participate in this research study and who will have previously signed an informed consent form prior to the interview. The interview will take place at both of the school’s appropriate meeting locations for both the researcher and the teacher participant for the purpose of privacy. The interview will be taped for the purpose of accuracy and spontaneity. Before the interview, the researcher presents the teacher participant with his or her original informed consent form and asks each participant to acknowledge and identify the document on record. At the end of the interview, the researcher will ask the participant if they have any further comment before concluding the interview session. NExt, the researcher will identify herself and state the purpose of the interview. She then will identify the participants by a code number 1-10, age, grade level, subject matter, assignment, experience, degrees, achievement, certificates, and/or awards. Each participant will be given the opportunity to receive a copy of their own recorded tape upon completion of the research work and each participant’s tape will be labeled according to their individual code number and the date. All tapes will be stored in the researcher’s home office in a locked file cabinet for three years.

23. Is a subject follow-up anticipated? YES __ NO X If YES, for what reason?

24. Describe the design and methodology IN DETAIL (what exactly will be done to the subjects? What measures will be taken?)

Describe any equipment that will come in contact with the subject. Brand name and model, as well as description of its function. If electrical equipment is connected directly to the subjects, as with GSR and EFF measures, assurances concerning the safety of the equipment (technician should certify that
equipment was checked within the last month) should be included.

**ATTACH ADDITIONAL SHEETS IF NECESSARY.**

Include the necessary copies of any test instruments, questionnaires, etc.

**DO NOT ATTACH COPIES OF SECTIONS OF GRANT PROPOSALS, DISSERTATIONS OR CLASS PROJECTS TO ANSWER THIS ITEM.**

Organization of events:

1. Initial context of purpose for research was made with principals of participating schools via telephone conferences.

2. Formal letters followed telephone conference to participating principals requesting permission to interview their teachers regarding the purpose of the research and written consent was given from the participating principals for research to be conducted at their schools. (See Appendix E - Letter of Permission to Conduct Research.)

3. Letters of solicitation were sent to invite teachers to participate in the research study. (See Appendix F - Letter of Solicitation to School Teachers)

4. A letter of consent was sent for teachers to sign if they agree to participate in the research study. (See Appendix E - Teacher Consent Form.)

5. A follow-up meeting with principals at their respective schools was held to further discuss confidentiality, scheduling of events, and procedures regarding agenda.

6. Convenient, non-coercive, and voluntary interview schedules will be arranged accordingly to meet both participants' and researcher's agendas.

7. The taped interview will consist of five in-depth open-ended research questions, and each question will have one or two subsidiary questions. I will be using a Sony Cassette tape recorder, Model TCM-20DV with 60-minute HF Sony tapes for each participant. (See Appendix H - Research Questions and Subsidiary Questions for Interview.)

8. Teacher participants will be profiled and patterns of existing common themes and frequencies will be analyzed and reported in a descriptive qualitative research language for the purpose of enabling educators to gain insight into the knowledge and influence of learning styles regarding the teaching practices of elementary school teachers. Ultimately, the disparity between teaching styles and learning styles can be addressed to the advantage of all students.
Appendix D

Institutional Review Board Acceptance

SETON HALL UNIVERSITY

January 15, 2003

Sandra Sutton
11 Orchard Way
Boonton, NJ 07005

Dear Ms. Sutton:

The Seton Hall University Institutional Review Board has reviewed the information you have submitted addressing the concerns for your proposal entitled “A Study of Elementary School Teachers’ Perceptions Regarding the Match Between Teachers’ Teaching Styles and Students’ Learning Styles”. Your research protocol is hereby approved as amended through expedited review. The IRB reserves the right to recall the proposal at any time for full review.

Enclosed for your records are the signed Request for Approval form and the stamped original Consent Form. Make copies only of this stamped Consent Form.

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol must be reviewed and approved by the IRB prior to their implementation.

According to federal regulations, continuing review of already approved research is mandated to take place at least 12 months after this initial approval. You will receive communication from the IRB Office for this several months before the anniversary date of your initial approval.

Thank you for your cooperation.

Sincerely,

[Signature]

Graziella Mazzoni, Ph.D.
Associate Professor
Director, Institutional Review Board

cc: Aj Colella, Ph.E.
Appendix E

SETON HALL UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN SERVICES

TO: PRINCIPAL
FROM: SANDRA E SUTTON
SUBJECT: PERMISSION TO CONDUCT RESEARCH
DATE: 10/28/02

Dear _________________

I am writing to request your permission to interview teachers at St. Virgil's School for my doctoral dissertation. The purpose of my research is to explore teachers' perceptions regarding the match between teachers' teaching styles and students' learning styles. Each teacher will be asked to participate voluntarily in an individual taped interview session, which will take about forty five minutes. All aggregate results will be shared with you and copies of individual teachers' recordings will be available for each of the participants.

Please sign below to grant permission of this study. Informed Consent Forms will be obtained from teacher participants, who are involved in this study.

Sincerely,

Sandra E Sutton

I grant permission to Sandra Sutton to conduct the above research study with the teachers from
Appendix F

11 Orchard Way
Parsippany, N.J.
R.D. Boonton, N.J.
07905
973-335-0170

Fall 2002

Dear Teachers:

I am at present pursuing a Doctorate in Educational Administration and Supervision from Seton Hall University. I am, therefore, working on my dissertation entitled, "A STUDY OF ELEMENTARY SCHOOL TEACHERS' PERCEPTIONS REGARDING THE MATCH BETWEEN TEACHERS' TEACHING STYLES AND STUDENTS' LEARNING STYLES." There are theoretical articles advocating the use of a learning styles framework with guidelines for how to do so, but there appears to be a notable absence of studies that explore the way in which teachers structure their class rooms in accordance with learning styles of their students. Therefore, I hope to fill a critical gap in research by examining ways that elementary school teachers accommodate diverse learning styles and the impact that this has on student performance.

This research project has been reviewed and approved by the Seton Hall University Institutional Review Board for Human Subjects Research. The IRB believes that the research procedures adequately safeguard the subjects' privacy, welfare, civil liberties, and rights. The Chairperson of the IRB may be reached through the Office of Grants and Research Services. The telephone number of the office is 973-275-2974.

Your principal has given me approval to interview teachers who volunteer from your school for the purpose of this study. The interview will consist of a taped recorded session having five research questions and some subsidiary questions about the title of the study. It will take only about forty-five minutes for this interview. The interview will be scheduled for an agreed upon date and time.

I wish to assure you that your interview will be anonymous and confidential. Once again, participation is strictly voluntary and you may withdraw without prejudice at any time during the research study. Upon completion of the research, you may choose to have a taped copy of your personal interview, and I will be pleased to share aggregate data with you.

If you decide to participate, please sign the Informed Consent Form and leave it in the envelope provided for this purpose in the main office of your school. An early reply would be greatly appreciated.

Thank you in advance for your support, interest and cooperation.

Sincerely,

[Signature]

Sandra E. Sutton

Approved

JAN 15 2003.
Appendix G
Informed Consent Form

SETON HALL UNIVERSITY

Fall 2002

Dear Teachers,

My name is Sandra Sutton and I am presently an elementary school teacher pursuing a Doctorate in Educational Administration and Supervision at Seton Hall University.

PURPOSE

The purpose of my research study is to explore elementary school teachers' perceptions regarding the match between teachers' teaching styles and students' learning styles.

DURATION

The project will take about forty-five minutes of your time for a tape recorded interview session with me. The over-all length of the research project occurs within the approximate time frame of September of 2002 through March of 2003.

PROCEDURES

You will be asked to participate in a tape recorded interview session consisting of five open-ended research questions with subsidiary questions concerning Teaching and Learning Style Match. If you agree to participate in the study, the tape recorded interview session will be at your school site at an appropriate private setting, date, and time.

VOLUNTARY PARTICIPATION

Once again, I am writing to request your voluntary permission to participate in a tape recorded interview session with me. The entire research study process, tape recorded interview session, will be of a voluntary participation. Refusal to participate or discontinue participation during any time will involve no penalty, reprisal fear or loss of benefits.

ANONYMITY

Your name and identity will remain anonymous as you will be identified by a code system. Each participant's tape will be labeled according to their individual code number and date.

CONFIDENTIALITY

[Signature]

College of Education and Human Services
Department of Educational Leadership, Management, and Policy
(Previously Department of Educational Administration and Supervision)
Tel. 973.761.2997
400 South Orange Avenue - South Orange, New Jersey 07079-2685

[Stamp]

APPROVED
JAN 15 2003
IRB
In addition to the special coding system, all tapes will be stored in the researcher's home office in a locked file cabinet for three years after completion of the research. Teacher consent forms and relevant data will be stored separately in a locked file cabinet, whereby I alone will have access.

RISKS

There are no anticipated risks, stress, or discomfort that will occur as a result of your participation in the process. There are no human risks associated with this research.

BENEFITS

The results of this study will be available to the participants in aggregate form after completion of the research. Patterns of existing common themes and frequencies will be analyzed and reported in a descriptive research language for the benefit of enabling educators to gain insight into the knowledge and influence of learning styles regarding the teaching practices of elementary school teachers. Ultimately, the disparity between teaching styles and learning styles can be addressed to the advantage of all students.

CONTACT INFORMATION

You may contact this researcher for answers to any pertinent questions concerning this study. You may contact The College of Education and Human Services at Seton Hall University by calling (973-761-9397). I will be happy to assist you for any concerns pertaining to this study.

AUDIO-TAPES

Each participant will be given the opportunity to receive a copy of their own recorded tape or request that it be destroyed upon completion of the research work. Also, each participant has the right to review all or any portion of the tape and request that it be destroyed.

TEACHER CONSENT FORM

You will be given a copy of the signed and dated Informed Consent Form for your records. If you decide to participate, please sign the Informed Consent Form and leave it in the envelope provided for this purpose in the main office of your school, and the pick up date will be announced.

APPROVED

JAN 15 2003

IRB
SETON HALL UNIVERSITY
APPROVAL OF THE INSTITUTIONAL REVIEW BOARD

This project has been reviewed and approved by the Seton Hall University Institutional Review Board for Human Subjects Research. The IRB believes that the research procedures adequately safeguard the subject’s privacy, welfare, civil rights and liberties. The Chairperson of the IRB may be reached at (973) 275-2974.

I have read this material above, and any questions I asked have been answered to my satisfaction. I agree to participate in this activity, realizing that I may withdraw without prejudice at any time.

Subject or Authorized Representative

Date

APPROVED
JAN 15 2003
IRB
SETON HALL UNIVERSITY
Appendix H

Research Questions and Subsidiary Questions for Interview

Question #1

How do teachers determine students’ learning styles?

a. Do you observe students’ performance to determine their learning styles?

b. Do you prepare or give students a written questionnaire, survey or conference with them to determine their learning styles?

Question #2

How do teachers select their teaching styles?

a. Do you teach the way you learned in school?

b. Do you teach according to what fits your own teaching style or what is most comfortable and appropriate for you or the students?

Question #3

How do teachers match their teaching styles to the learning styles of their students?

a. Do you have a method of matching your teaching style to students’ learning styles?

b. Can you describe samples of how your teaching style matches with the learning style of students regarding subjects, levels, or interest?

Question #4

What do teachers perceive to be the strengths and weaknesses of matching their teaching strategies to
students' learning styles?

a. Can you comment on experiencing higher levels of motivation, cooperation, and academic achievement or success when you match teaching strategies to learning styles of students?

b. Can you comment on experiencing boredom, misbehavior, and lower academic achievement or success when you do not match teaching strategies to learning styles of students?

Question #5

How can effective teachers incorporate a learning style approach that is useful within their classroom regarding learning strategies, resources, student ability, student interest, student grouping, assessment, planning, and other related areas?

a. Can you reflect and comment on some or all of these areas mentioned?