The relationship of match or mismatch of student and teacher learning style preference and the formation of teacher expectations of student achievement
by Cynthia Jane Jacobsen

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University

Abstract:
During the first semester of the 1987-88 school year, the researcher conducted a research study of seventh through twelvth grade students in the Naknek School and the Newhalen School located on the Alaska Peninsula. The problem of this study was to determine if there was a relationship between the match or mismatch of learning style preference of students and teachers, actual student achievement, and teacher expectations of student achievement. The attribute variables of student gender, student age, student attitude toward school, student ethnicity, and the student's family structure were examined to determine the contribution each made toward the formation of teacher expectations of student achievement.

Ten teachers from the two schools identified 160 students who were enrolled in their classrooms for the first time. Each student was rated on a 5-point scale by the teachers as to expected levels of achievement. Each student's and teacher’s learning style preference was identified by Kolb's Learning Style Inventory. Preferences were compared to determine a match or mismatch in learning style preference. Each student provided their own demographic information. The Quality of School Life Scale was used to determine students' attitude toward school. Actual student achievement was obtained from first semester grades.

Multiple regression showed that actual student achievement and student ethnicity contributed to the formation of teacher expectations of student achievement. The match or mismatch of student and teacher learning style preference, student gender, student age, student attitude toward school, and the student's family structure did not contribute significantly. Teachers had higher expectations for Caucasian students than for Alaskan Native students. There was a relationship between student gender and match or mismatch of student and teacher learning style; student ethnicity and actual student achievement; and student's family structure and student gender, student age, and student ethnicity.

Based on this analysis, the researcher concluded that teachers hold higher expectations of achievement for Caucasians than for Alaskan Natives.

THE RELATIONSHIP OF MATCH OR MISMATCH OF STUDENT AND TEACHER LEARNING STYLE PREFERENCE AND THE FORMATION OF TEACHER EXPECTATIONS OF STUDENT ACHIEVEMENT

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A thesis submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Education

Montana State University
Bozeman, Montana

May 1988

APPROVAL

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Date May 13, 1988

ACKNOWLEDGEMENTS

I would like to express my gratitude to the many people who have helped me in the completion of this degree. A special thank you goes to Dr. Leroy Casagranda, chairman of my graduate committee, for his knowledge, expertise, and helpfulness during this study. Appreciation is also expressed to Dr. Gloria Gregg and Dr. Douglas Herbster as members of the reading committee for their much needed assistance. Dr. Eric Strohmeyer and Dr. Duane Melling as the other members of the committee contributed both of their time and expertise, which was greatly appreciated.

The Bristol Bay Borough School District and The Lake and Peninsula School District assisted greatly with this study by allowing me access to their schools. In particular, I would like to thank the teachers who participated in this study.

Finally, I wish to thank my husband, Gary, and two sons, Leif and Lars, for their support and understanding in seeing me through this endeavor.

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ABSTRACT

During the first semester of the 1987-88 school year, the researcher conducted a research study of seventh through twelvth grade students in the Naknek School and the Newhalen School located on the Alaska Peninsula. The problem of this study was to determine if there was a relationship between the match or mismatch of learning style preference of students and teachers, actual student achievement, and teacher expectations of student achievement. The attribute variables of student gender, student age, student attitude toward school, student ethnicity, and the student's family structure were examined to determine the contribution each made toward the formation of teacher expectations of student achievement.

Ten teachers from the two schools identified 160 students who were enrolled in their classrooms for the first time. Each student was rated on a 5-point scale by the teachers as to expected levels of achievement. Each student's and teacher's learning style preference was identified by Kolb's Learning Style Inventory. Preferences were compared to determine a match or mismatch in learning style preference. Each student provided their own demographic information. The Quality of School Life Scale was used to determine students' attitude toward school. Actual student achievement was obtained from first semester grades.

Multiple regression showed that actual student achievement and student ethnicity contributed to the formation of teacher expectations of student achievement. The match or mismatch of student and teacher learning style preference, student gender, student age, student attitude toward school, and the student's family structure did not contribute significantly. Teachers had higher expectations for Caucasian students than for Alaskan Native students. There was a relationship between student gender and match or mismatch of student and teacher learning style; student ethnicity and actual student achievement; and student's family structure and student gender, student age, and student ethnicity.

Based on this analysis, the researcher concluded that teachers hold higher expectations of achievement for Caucasians than for Alaskan Natives.

CHAPTER 1

INTRODUCTION

The area of teacher expectations of student achievement was brought to the forefront of educational research with Rosenthal and Jacobson's publication entitled, Pygmalion in the Classroom. This publication was a report of their study into the area of teacher expectations of student achievement conducted in 1968 at the Oak School in San Fransisco. Critics of Rosenthal and Jacobson's study have produced a great deal of evidence concerning the poor quality of the design and format of the research itself (Brophy, 1983). Supporters of this piece of research have looked beyond the problems with design and have felt that as soon as teachers were trained in communicating high expectations to students, all students would be able to achieve at higher levels. Whether the procedures were designed correctly or the findings were an accurate representation of the situation are no longer important. The fact remains that the study brought this issue to the awareness of educators and the public. The result has been that investigators have become interested in the general area of research concerning

teacher/learner interaction in the classroom, and more specifically, the area of teacher expectations of student achievement. Teacher expectations have continued to be a significant area of educational research as a part of the effective schools' research of the 80's.

The area of teacher expectations has been one of the major themes presented in the effective schools' research (Brookover, et al., 1982). People in the field of education must be aware of the effects they are creating when they categorize students' expected level of achievement. This can be done in many ways and, generally, is done without the individual teacher making a conscious effort to communicate those expectations to the student or to other teachers. Comments made in the teachers' room regarding the ability, the behavior, the attitude, or the home life of particular students can produce feelings as to what other teachers expect from those students (Brookover, 1982). The Coleman Report (1964) suggested that schools, and educators as a whole, could not make any real difference in the achievement levels of low socioeconomic and minority students. The report stated that the major controlling force in the development of these children resulted from the home environment. However, Brookover and others (1982:32) have stated that "our experiences and research indicate strongly that teachers' expectations of students' academic achievement are a major factor in what happens within a school." If an educational

system is to provide quality education to all of the students, there must be an acceptance of the idea that all students can achieve at high levels (Brookover, 1982).

Investigation into the broad area of learning styles is another example of attempts by education to better meet the needs of individual students. The original quest for more detailed and reliable knowledge concerning learning styles can be traced to teachers' observations of students during the learning process (Gregorc, 1984). Gregorc observed that many students achieved at high levels, and that different students used different methods to acquire the necessary knowledge. His observations showed that some students would utilize cramming, while other students would write detailed notes. Similar observations by teachers created the interest and need for more in-depth information gained through research as to why individual students in a classroom would use different methods to learn.

There is a wide range of categories and definitions within the broad area of learning styles. However, there still seems to be some question concerning the idea that different students learn better when different methods are used to present the information (Hyman and Rosoff, 1984). Hyman and Rosoff (1984) have observed that many researchers have investigated learning styles and there does not appear to be any one best definition or

instrument that will measure an individual's learning style in all situations and for all purposes.

Research continues to investigate how individual students process and internalize information. Friedman and Alley stated "cognitive style awareness embraces the concept that both students and instructors are accountable for learning" (1984:80). However, for the purposes of this project it was considered important to attempt to determine how the existing learning style information could be applied to the learning/teaching process. The question addressed in this project was not an investigation of what are learning styles, but rather how are learning styles effecting the learning/instructional process in a particular situation?

> The school learning process is a consequence of learning environment, teaching style, and student learning style. Learning style emerges from this picture as a key element in the movement to make learning and instruction more responsive to the needs of individual students (Keefe, 1979:16).

The issue of how learning styles effect the learning instructional process was approached in this research project by considering the learning style preferences of the individuals, both teachers and students, involved in the teaching/learning process.

Statement of the Problem

The problem of this research project was to determine if there was a relationship between the match or mismatch of learning style preference of students and teachers, actual student achievement, and teacher expectations of student achievement. The attribute variables of student gender, student age, student attitude toward school, student ethnicity, and the student's family structure were examined to determine the contribution each made toward the formation of teacher expectations of student achievement.

Need for the Study

Bargar and Hoover (1984) stated that during the learning process there is a four-way interaction between the learning style of the student, the learning style of the teacher, the instructional method utilized, and the demands of the subject area. As with any interaction, one component cannot be separated from the others without having an effect on the entire process. If the teacher alters the method of instruction within the demands of the subject area, the effects on the learning process must be examined and evaluated as to the overall impact the change could have on student achievement. Determining methods of instructional delivery may simply be a reflection of the teachers' learning style preference. For example, when the

teacher prefers to utilize the method of forming small groups to work on projects in science, it must be determined what the effect could be on students who prefer to work individually, and how effectively the information can be communicated through the chosen procedure. The question needs to be asked, if the objective of the lesson was for the student to understand the relationship of new information to something already known, and the primary method of instruction does not provide for this, would this reflect the student's interest and/or ability as much as it would reflect a difference between the student's learning style preference and the teacher's chosen teaching style?

> It would be useful, therefore, to know whether a given (teacher's) style leads a teacher to select a particular type of classroom activity to emphasize particular kinds of academic work or to treat students in particular ways (Doyle and Rutherford, 1984:24).

The implications for education are that when the teacher and student are of opposite learning style types, they are operating, unconsciously, in different manners (Bargar and Hoover, 1984). Bargar and Hoover (1984) further stated that teachers project information and behaviors utilizing instructional methods with which they feel most comfortable, and a student, who does not feel comfortable with the chosen instructional methods, can become confused, can feel rebellious, or can give in to the teacher's way of looking at information and

try to deal with the discomfort he/she is feeling. Bell (1986:18) also stated that, "Stress, frustrations and burn-out can result." Bargar and Hoover (1984:19) concluded that when the student does not show high achievement, the teacher may decide the student, "just isn't trying, doesn't care, or lacks ability" without considering the possible involvement of methods that different individual students employ to process and internalize information.

It is critical that the underlying causes for student frustrations be examined so methods can be implemented that will reduce those frustrations, thus allowing students to direct their energies toward more efficient learning. A thorough understanding of learning styles could help the teacher determine how best to help students work within their own styles, as well as learn to feel more comfortable when information is presented in a manner that is not their first preference (Gregorc, 1984).

> Perhaps teachers set a "tone" in their classrooms which favor certain styles, systems of thought, and mind qualities. Those learners who comply with the teacher's preferred style may receive favoritism while their counterparts are reprimanded for their individualities. Learners who refuse to accommodate to the preferred style may sometimes be labeled learning disabled (Gregorc, 1984:54).

Dusek and Joseph (1983) reported in their meta-analysis of research dealing with teacher expectations that research has

shown several non-academic pieces of information which have an effect on the formation of teacher expectations. They found that such things as student ethnicity, student gender, students' attitude toward school, and students' family structure played a part in the formation of those expectations. From Dusek and Joseph's research there appeared to be general agreement that teacher expectations of student achievement, formed as a result of those characteristics, are made unconsciously by the teacher. Although a majority of researchers support the idea that intelligence is independent of style (Guild and Garger, 1985), the question remains that when a difference exists between the characteristics and behaviors of teachers and students, how will the students' resulting frustrations effect the teachers' expectations for successful achievement?

When teachers' ratings of student achievement were based on classroom attentiveness, self-confidence, and the ability to work independently, there appeared to be higher and more enduring correlations with actual student achievement levels than when the ratings were based on fictitious students' names, records, or physical characteristics (Dusek and Joseph, 1983). The characteristics of work independence, self-confidence, and ability to concentrate on classroom presentations are frequently the same components that are present in discussions of learning styles. The degree that teachers perceive the relative strength and/or weakness of these characteristics in students can be

related to the teachers learning style preference as well as the learning style preference of students. Dusek and Joseph (1983) indicated that future research should be directed at examining the importance of the differential effects that student learning characteristics have for teacher expectancies.

General Questions to be Answered

The research process answered the following questions:

1. Were there multiple correlation between the dependent variable (teacher expectations of student achievement) and the independent variables of match or mismatch of teacher and student learning style preference, student gender, student age, student ethnicity, student attitude toward school, the student's family structure, and actual student achievement as measured by end of semester grades?
2. Did one or more of the independent variables make a unique contribute to teacher expectations of student achievement when the other independent variables were taken into account.
3. Was there any intercorrelation among the independent variables of match or mismatch of teacher and student learning style preference, student gender, student age, student ethnicity, student attitude toward school,

student's family structure, and actual student achievement as measured by end of semester grades?

4. Was there interaction between student learning style preference, based on the "Learning Style Inventory" developed by David Kolb and student ethnicity on teacher expectations of student achievement?
5. Was there a statistically significant difference between the mean scores of teacher expectations of student achievement of Caucasians and Alaska Natives?
6. Was there a statistically significant difference in the mean scores of teacher expectations of student achievement among the student learning style preferences of Diverger, Converger, Accommodator and Assimilator, based on the "Learning Style Inventory" developed by David Kolb?
7. Was there interaction between student learning style preference, based on the "Learning Style Inventory" developed by David Kolb, and student gender on teacher expectations of student achievement?
8. Was there a statistically significant difference in the mean scores of teacher expectations of student achievement between males and females?
9. Was there interaction between student learning style preference, based on the "Learning Style Inventory"

developed by David Kolb, and student attitude toward school on teacher expectations of student achievement?

10. Was there a statistically significant difference in the mean scores of teacher expectations of student achievement among the three student attitudes of high, medium, or low toward school?
11. Was there interaction between student learning style preference, based on the "Learning Style Inventory" developed by David Kolb, and student age on teacher expectations of student achievement?
12. Was there a statistically significant difference in the mean scores of teacher expectations of student achievement among the student age groups of 12-14, 15-16, or 17-18?
13. Was there interaction between student learning style preference, based on the "Learning Style Inventory" developed by David Kolb, and the student's family structure on teacher expectations of student achievement?
14. Was there a statistically significant difference in the mean scores of teacher expectations of student achievement among the student's family structure of both parents, one parent, or guardian other than a parent?

General Procedures

The population of this study consisted of seventh through twelfth grade students enrolled in school at the Naknek School in the Bristol Bay Borough School District located in Naknek, Alaska, and at the Newhalen School located in Newhalen, Alaska, in The Lake and Peninsula School District during the first semester of the 1987-88 school year. Criteria for student participation in this study was that the student had not previously been enrolled in a class taught by the participating teacher.

The study began during the second week of the fall semester of the 1987-88 school year. This allowed time for the organizational structure of the classroom to be established by the teacher and allowed the teacher time to become personally and academically acquainted with the students new to each teacher. However, the data were gathered prior to the first summative examination administered to students by each teacher.

For the purposes of this study, learning style preference for both teachers and students was determined by the "Learning Style Inventory" (LSI) developed by David A. Kolb (1985). The four learning style types identified by the LSI are the Converger type, the Diverger type, the Assimilator type, and the Accommodator type. Student attitude toward school was

assessed through the use of The Quality of School Life Scale (QSL) developed by Joyce L. Epstein and James M. McPartland (1978). This instrument is divided into three subsections that examine students' feelings toward school, students reaction to classwork, and students reaction to teachers. The subsection scores are combined into one raw score that is used to determine high or positive attitude, medium or average attitude, and low or negative attitude toward school.

Information regarding the attribute variables of student age, student gender, student ethnicity, and the student's family structure were gathered from students using a demographic sheet developed by the researcher (Appendix A). As a final step in gathering data during the initial stages of the research, each teacher was asked to identify each learner's expected level of achievement on a five-point scale with five (5) being high and one (1) being low. This information was gathered from information sheets developed by the researcher (Appendix B). At the completion of the first semester, each teacher's actual achievement level for each student was gathered from student report cards for the first semester.

The data were analyzed using multiple regression to determine if there was a relationship between match or mismatch of teacher and student learning style preference, actual student achievement, student age, student gender, student ethnicity, student attitude toward school, and the student's

family structure and teacher expectations of student achievement. The attribute variables were also analyzed using two-way ANOVA's to determine if there was interaction between each of those variables and teacher expectations of student achievement.

Limitations

The scope of this study was limited by the following items:

1. The population was limited to students in grades seven through twelve enrolled in regular classrooms with teachers for the first time.
2. The population was limited to students enrolled in the Naknek School of the Bristol Bay Borough School District and the Newhalen School of The Lake and Peninsula School District.
3. For those students enrolled in the Naknek School, the instructional content was limited to those goals and objectives established by the Bristol Bay Borough School District.
4. For those students enrolled in the Newhalen School, the instructional content was limited to those goals and objectives established by The Lake and Peninsula School District.

Delimitations

This study was restricted by the following delimitations:

1. Measurement of learning style preferences for students and teachers was made using Kolb's "Learning Style Inventory".
2. The timeframe of the study was the first semester of the 1987-88 school year at the Naknek School of the Bristol Bay Borough School District and at the Newhalen School of The Lake and Peninsula School District.

Definition of Terms

The following definitions were used during the course of this study:

1. Achievement - as measured by the end of the first semester grades of A, B, C, D, or F of students based on district curriculum guides and objectives of the Bristol Bay Borough School District and The Lake and Peninsula School District, respectively.

2. Frustrations - situations that prevent the student from using his/her best qualities -- behavioral signals that learning is being thwarted by style-controlled conditions (Butler, 1984:148).

3. Learning Style - a consistent pattern of behavior but with a certain range of individual variability (Cornett, 1983:9).

A. Accommodator Learning Style Preference - have the ability to learn primarily from "hands-on" experience. People with this style enjoy carrying out plans and involving themselves in new and challenging experiences and have a tendency to act on "gut" feelings rather than on logical analysis. These people may rely more heavily on people for information than on their own technical analysis (Kolb, 1985: 7).

B. Assimilator Learning Style Preference - are best at understanding a wide range of information and putting it into concise, logical form. People with this style are less focused on people and more interested in abstract ideas and concepts and find it more important that a theory have logical soundness than practical value (Kolb, 1985: 7).

C. Converger Learning Style Preference - are best at finding practical uses for ideas and theories. People with this style have the ability to solve problems and make decisions based on finding solutions to questions or problems and would rather deal with technical tasks and problems than with social and interpersonal issues (Kolb, 1985: 7).

D. Diverger Learning Style Preference - are best at viewing concrete situations from many different points of view. People with this style would rather observe than

take action and may enjoy situations that call for generating a wide range of ideas, as in a brainstorming session. These people have broad cultural interests and like to gather information (Kolb, 1985:7).

4. Matched Learning Styles - when the teacher and the student both have the same learning style preference as identified by Kolb's "Learning Style Inventory".

5. Mismatched Learning Styles - when the teacher has a learning style preference that is different from the student's learning style preference as identified by Kolb's "Learning Style Inventory".

6. Teacher Expectations - the level of achievement that the teacher anticipates from each particular student.

The next step in this research project was a review of the literature and research related to teacher expectations of student achievement and learning styles. This is found in Chapter 2.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

There are many different views as to exactly what learning styles are and what, if any value, the identification of students' learning styles can have for education. Although there does seem to be general agreement as to the value of knowing more about a student's learning style, there appears to be many different definitions and criteria for evaluating the learning style of students. Definitions for learning styles range from preferred sensory modalities to personality characteristics that suggest behavior patterns (Smith and Renzulli, 1984). Once a student's learning style has been identified, there exists a wide range of opinions concerning how this information effects the student in reaching his/her educational goals and objectives. Keefe (1979:16) stated: "Learning style emerges from this picture as a key element in the movement to make learning and instruction more responsive to the needs of individual students."

Teacher expectations have been found to have an effect on the level of student achievement (Brookover et al., 1982). Expectations have been defined by Keefe (1979:11) as follows: "Expectancy is the subjective certainty that a particular outcome will follow a particular act, that something will or will not occur."

Although the Pygmalion research conducted by Rosenthal and Jacobson has been critically analyzed as to weaknesses within the design, it did bring the subject of teacher expectations and possible effects and ramifications that teacher expectations might have on student achievement to the attention of educators.

> Early studies of expectations effects (i.e., Rosenthal & Jacobson, 1968) generated considerable controversy. This was due mainly to differences in educators' beliefs concerning the inferential power of isolated studies and to methodological problems associated with *in vivo* educational research. (Cooper, 1979:389)

Concerns regarding the early teacher expectations research have been overcome in the research of the 70's (Brophy, 1986). Since that time the research has been able to concentrate on the investigation of factors that could contribute to the formation of teacher expectations. Bargar and Hoover (1984) suggested learning styles could affect how teachers formulate their

expectations for students to achieve as well as what level of achievement teachers expect from different students.

The following review of literature concentrated on the subject areas of definitions of learning styles, matching teaching styles and learning styles, effective schools and teacher expectations, teacher expectations, communication of teacher expectations, factors that contribute to teacher expectations, and effective communication of expectations.

Definitions of Learning Styles

The basis of learning style identification and research can be traced to Jung's four psychological types (Bargar and Hoover, 1984). These psychological types have been used as the basis for explaining how different people perceive and judge the information they encounter (Kolb, 1984). An individual's psychological type is a reflection of what and how that individual thinks about things. Kolb further stated that learning style theory builds on the psychological types and relates them directly to the learning process. Just as one psychological type is not superior to the other three types, no one learning style has an advantage over the other learning styles. Kolb (1984:77) stated, "Each of us in a unique way develops a learning style that has some weak and some strong points."

There is a background of commonality within the style differences. Kolb (1984) established two distinct dimensions,

one deals with understanding experiences in the world, and the other deals with transforming that experience. He represented these dimensions with the following titles: Concrete Experience (CE)-Abstract Conceptualization (AC) and Active Experimentation (AE)-Reflective Observation (RO), respectively. Each of these functions has a dichotomy of descriptors which are polar to the other descriptors forming two continua. The differences are found within the commonality of attitude, perception, and judgement.

Hyman and Rosoff (1984) in their article, "Matching Learning and Teaching Styles: The Jug and What's In It," made an analysis and comparison of the various learning style definitions and related those definitions to the act of teaching. They made the following recommendations. 1. Teaching consists of student, teacher, and subject matter, in the context of environment and time. 2. Learning styles are not static. 3. Teachers should use a multi-dimensional perspective, looking at actions not ability. 4. Teachers should look beyond just cognitive areas. 5. Teachers should recognize they can control only their own actions. 6. Teachers need to be students of teaching - staying current. 7. Teachers should avoid a unilateral approach.

Rita Dunn (1984:12) defined learning style as: "Learning Style is the way in which each person absorbs and retains information and/or skills; regardless of how that process is described, it is dramatically different for each person."

However, Hyman and Rosoff (1984) stated that the Dunn definition of learning styles doesn't account for any interaction of the various elements, the differences of intelligence, or the processing of information. David E. Hunt (1979:27) stated that: "Learning style describes a student in terms of those educational conditions under which he is most likely to learn. Learning style describes how he learns, not what he has learned." Hunt's definition dealt with three conceptual levels identified as stages A, B, and C. Stage A describes a student as concrete, impulsive, and having a poor tolerance for frustration. Stage B describes a student as being concerned with rules, a categorical thinker, and dependent on authority. State C describes a student as inquiring, questioning, and self-assertive. This definition doesn't tell how students process information, although it does describe how much structure students need in their learning environment.

The area of learning styles is much more involved than just environmental considerations. Both Gregorc's and Keefe's definitions of learning styles are given in behavioral terms. Keefe (1984:4) stated: "Learning styles are characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment." Cornett (1983) further expanded the understanding of these behaviors by stating that the cognitive style refers to the way information is processed and is associated with hemisphericity; the affective

style deals with emotional and personality characteristics; and finally, physiological style pertains to environmental and perceptual elements. Keefe's definition did discuss all three style domains, but didn't provide any specific behaviors within each of those style domains.

Gregorc (1979:19) defined learning style as: "The consistence of distinctive and observable behaviors that provide clues about the mediation abilities of individuals." Gregorc's definition was in reference to cognitive style, while Keefe's included all three areas, cognitive, affective, and physiological style domains. Gregorc's definition only addressed one area and ignored the others.

The definition that has considered many of these various components is stated by Claudia Cornett (1983:9): "Learning style can be defined as a consistent pattern of behavior but with a certain range of individual variability." However, she further recommended that "Rather than simply looking at learning styles in isolation, educators need to understand styles as they are manifested in the classroom, interacting and influencing one another in an infinite number of ways."

Matching Teaching Styles and Learning Styles

There appears to be two categories within the general topic area of matching teaching and learning styles. One category addresses the matching of students and teachers by

personality characteristics or learning behavior, while the other category deals with matching the teaching strategies to be utilized with the student's learning style preference (Smith and Renzulli, 1984).

Within the category of matching students and teachers by learning style preference some type of assessment instrument would be used to identify both the student's learning style preference and the teacher's learning style preference. Students and teachers with similar learning behaviors and approaches to the learning process are matched with each other in the same learning environment. Smith and Renzulli (1984) believe that matching learning characteristics and behaviors of the teacher with those of the student can improve the classroom climate. There is an ease of learning when the environmental demands and expectations for the students are similar to their own system of thought. It is also true that when the environmental demands are outside of the student's range of tolerance, the student finds the learning challenging, hard, and even distasteful (Gregorc, 1984).

Joyce (1984) defined marginality as when the learner has difficulty relating to the educational environment which can result in frustration on the part of the learner, and feelings that he/she can not learn in that particular environment or even that he/she can't learn anything. He continued that marginal learners are "twice" punished, once through frustration and once through stigmatization. Not only does the learner feel inadequate within